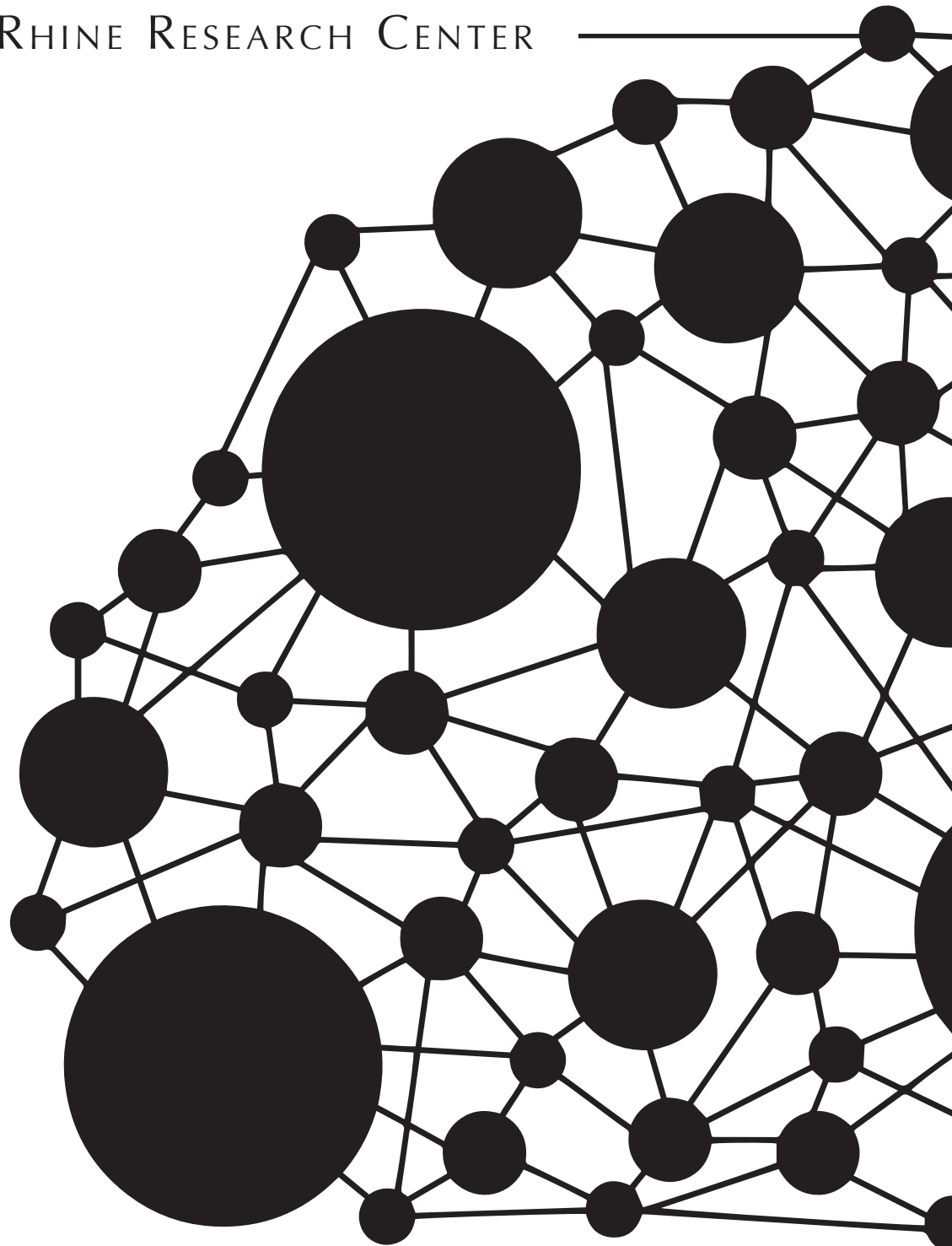


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Table of Contents

Editorial

- Back to the Future in Parapsychology: What Changed, What Didn't? **6**
Sally Ann Drucker

In Memoriam

- Lawrence LeShan **8**
Larry Dossey

- Erlendur Haraldsson **11**
James G. Matlock

- James "The Amazing" Randi **14**
Graham Watkins

Articles

- What's in a Name? A Lot, Actually **16**
Paul Smith

- ESP Contributes to the Unconscious Formation of Preferences **28**
James Carpenter, Christine Simmonds-Moore, Steve Moore, and Ferrell Carpenter

- The Ghostly Character of Childhood Imaginary Companions: **54**
 An Empirical Study of Online Accounts
Brian Laythe, James Houran, and Cindy Little

Historical Review

- A Random Number Generator Experiment: The Origin of Decision **75**
 Augmentation Theory
Edwin C. May

Book Reviews

The Mote in Thy Brother's Eye. A Review of **108**
 The 7 Deadly Sins of Psychology: A Manifesto for Reforming the Culture of
 Scientific Practice, By Chris Chambers
Chris Roe

I Second that Emotion: Looking at Psi in Psychotherapy and Daily Life. A **115**
 Review of Psi in Psychotherapy: Conventional & Nonconventional Healing of
 Mental Illness
 By Alex Tanous, Elaine Schwinge, and Andrew F. Banbrick
Sally Ann Drucker

Sensitive Soul: The Unseen Role of Emotion in Extraordinary States
 By Michael A. Jawer
Sally Ann Drucker

Essays from the Edge. A Review of **119**
 Dangerous Pursuits: Mediumship, Mind, and Music
 By Stephen E. Braude
Kenneth C. Turner

Correspondence

Neil Dagnall **122**
Callum E. Cooper **123**
James Houran, response to Gerald Solfvin (Fall, 2020) **126**
Gerald Solfvin, response to James Houran (Spring, 2021) **128**

Information for Authors **131**

Special thanks for this issue to Paul Smith, Loyd Auerbach, and abstract translators Eberhard Bauer, (German), Renaud Evrard (French), and Ramsés D'León (Spanish).

Editorial

Back to the Future in Parapsychology: What Changed, What Didn't?

Sally Ann Drucker

Rhine Research Center

In 1935, Joseph B. Rhine started the Parapsychology Laboratory at Duke University; a little over 85 years later, we can examine how far we've come. Unfortunately, we're still underfunded, beset by skeptics, and judged by higher research standards than applied to other fields. Younger researchers still find it hard to map career paths in parapsychology; we don't yet have an overarching theory of what psi is and how it functions. Yet it would be a mistake to deny what we've gained since 1935. In this issue of the *Journal of Parapsychology*, some papers look back in order to assess the present, so that we can continue moving forward.

A major advance came in 1969, when the American Association for the Advancement of Science included the Parapsychological Association as a member organization. Terms coined by J. B. Rhine have become standard, but we still discuss whether we should call our field parapsychology. Paul Smith addresses this in his paper, "What's in a Name?"

Inevitably, we continue dealing with skeptics. In his review of Chris Chambers' *The 7 Deadly Sins of Psychology: A Manifesto for Reforming the Culture of Scientific Practice*, Chris Roe shows how criticism of social science research in general is often applied disproportionately to parapsychology. Yet parapsychologists are often more careful than researchers in other disciplines because of how our work is viewed.

In this issue we also have Graham Watkins' obituary of the notorious skeptic Randi, who kept moving the goalposts of proof. To be fair, Randi also publicized the field and uncovered some fraudulent psychics. We continued to develop even tighter experimental designs and controls. As the saying goes, "Caesar's wife needs to be above suspicion."

In reviewing Stephen E. Braude's *Dangerous Pursuits: Mediumship, Mind, and Music*, Kenneth Turner discusses, among other subjects, Braude's perspective on his career in parapsychology. Our researchers often encounter difficulties with academic politics and funding, resulting in some of them no longer being active in parapsychology. Nevertheless, those now in other fields who acquired knowledge of ours can enhance the growth and reach of our community.

I reviewed two books addressing issues of interest to therapists and others: *Psi in Psychotherapy, Conventional & Nonconventional Healing of Mental Illness*; and *Sensitive Soul, The Unseen Role of Emotion in Extraordinary States*. People often ask about practical applications of psi. The first book, by psychic Alex Tanous and therapists Elaine Schwinge and Andrew F. Bambrick, discusses how information obtained by psi can be used in therapeutic settings. It includes comments from Callum E. Cooper, Stanley Krippner, and Adrian Parker, and a bibliography by James Carpenter. The second, with a foreword by Christine Simmonds-Moore, discusses psi in relation to other anomalous states, a perspective that could lead to new research. In addition, our field can be helpful to therapists whose clients have had psychic and other anomalous experiences.

Because of research I did on children's psi, I was glad to include the paper by Brian Laythe, James Houran and Cindy Little, about a subject not often examined: "The Ghostly Character of Childhood Imaginary Companions: An Empirical Study of Online Accounts." They use methodology not available in the time of J. B. Rhine or that of many researchers who tested children in schools and other settings.

In this issue, we have two papers dealing with theories of psi. Looking back at work done in 1979, Edwin C. May presents a paper on "A Random Number Generator Experiment: The Origin of DAT." While not everyone agrees with Data Augmentation Theory – Is there really no such thing as PK? Does all psi really come down to precognition? – knowing its history is valuable to any discussion of it.

In "ESP Contributes to the Unconscious Formation of Preferences," James Carpenter, et al. ask what personality traits, targets, and methods enhance ESP results. They regard this study as a beginning for finding the place of extrasensory processes within unconscious thought. Carpenter's First Sight theory builds on Rex Stanford's Psi Mediated Instrumental Response (PMIR) theory initiated in the 1970s.

The issue also includes obituaries for two well-known parapsychologists; Larry Dossey writes about Lawrence Le Shan and James G. Matlock about Erlendur Haraldsson. The work of these researchers remains significant in the history of our field. As the poet T. S. Eliot said in *Tradition and the Individual Talent*, "...the past should be altered by the present as much as the present is directed by the past." We interpret the past from our present standpoint while we gain from the work of those who preceded us. For all the difficulties still with us, we are part of a community that continues to develop. The *Journal of Parapsychology*, which began in 1937, is flourishing in 2021. I consider it an honor and privilege to serve as Interim Editor for this issue.

In Memoriam Lawrence LeShan, 1920-2020

Larry Dossey

Explore: The Journal of Science and Healing

Many of us recall being uniquely influenced and touched by someone who inspired us by their words, actions, writings, and sheer force of their being. For me, Lawrence LeShan was such a person.

In my home library I have a “LeShan shelf” where most of his authored books rest dog-eared, underlined, and generally defaced through multiple readings. They date to the period in my life following medical school, when many Big Questions were unsettled — the nature of consciousness, its impact in healing, human connectivity, and our fate following physical death.

Lawrence LeShan was born September 8, 1920. He died on November 9, 2020, at the age of 100. His contributions to our intellectual landscape were monumental. Here are a few notable facts.

LeShan held a Ph.D. in human development from the University of Chicago. His teaching appointments included Pace University, Roosevelt University, and the New School for Social Research. He worked as a clinical and research psychologist for 50 years, including six as a psychologist in the U.S. Army. In workshops, he taught rudiments of psychic healing to hundreds. He was a staunch defender of parapsychology; probably no one in modern times has had a clearer understanding of how and why these events occur. His writing was distinguished not just by his original, penetrating insights but also by remarkable clarity of communication. In the actual technique of writing, he was masterful.

He was prolific, author of twenty books and scores of scientific papers exploring the above-mentioned topics. He was also a captivating public speaker, blessed with an engaging, larger-than-life personality. Generous with his friendship, he was eager to assist fellow seekers, as I can attest.

I came across LeShan’s work early in my career as an internal medicine physician in Dallas, Texas, in the early 1970s. At that time, I was fascinated by the role of consciousness in healing. This led to an intense interest in parapsychology research, which continues today. Mind-body medicine was controversial then but gaining traction in the culture. Interest in meditation was erupting everywhere. As a member of the Dallas Institute of Humanities and Culture, headed by psychologist James Hillman, I was instrumental in inviting LeShan to participate in an event dealing with the integration of consciousness and healing. We collaborated in a stimulating dialogue that began a long friendship.

It is not easy to characterize the breadth and depth of LeShan's scholarship, but here are a few highlights. Beginning in the 1960s he wrote authoritatively in the field of parapsychology, most eloquently in his landmark book *The Medium, the Mystic, and the Physicist: Toward a General Theory of the Paranormal*, but also in *A New Science of the Paranormal: The Promise of Psychological Research*, and in *From Newton to ESP*. He clearly saw the relevance of parapsychology to medicine, in terms of diagnosis and therapy. Deeply informed about quantum mechanics, he collaborated with famed physicist-philosopher Henry Margenau of Yale. His *How to Meditate* is a classic in the field of spiritual scholarship. As someone who served as a field battalion surgeon in Vietnam, I found *The Psychology of War* a revelation.

LeShan's profound humanism is key to his entire oeuvre. As a psychologist, he was intensely concerned about people's mental health — but also wrote at length about neoplasia in *Cancer as a Turning Point; You Can Fight for Your Life: Emotional Factors in the Development of Cancer*; and *The Psychosomatic Aspects of Neoplastic Disease*. His *Counseling the Dying* has helped those involved in end-of-life care. He became concerned with broader themes later in his career: *The Pattern of Evil: Myth, Social Perception and the Holocaust*; *Patriotism for Grownups: How to be a Citizen in the 21st Century*; and more. His concerns reached cosmic dimensions with *An Ethic for the Age of Space: A Touchstone for Conduct Among the Stars*.

To say that LeShan inspired me is an understatement. As I worked through his books, I was amazed at his understanding of the role of consciousness in our interface with “the world out there.” This was a pivotal influence in my personal journey. His integration of psychology, healing, quantum physics, and the overlap of western and eastern knowledge systems were dazzling. His influence was lasting. The theme of my most recent book, *One Mind: How Our Individual Mind Is Part of a Greater Consciousness and Why It Matters*, clearly overlaps with one of LeShan's recurring themes — the intrinsic connectedness of all humans.

LeShan did not believe in the materialism that dominated twentieth-century science and medicine or in the extermination of consciousness with physical death, and neither do I. So, although I have lost a great friend, his presence resonates still — evidence that he was correct.

Let us pause and honor his passing. He was a great man.

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In Memoriam Erlendur Haraldsson (1931-2020)

James G. Matlock

Parapsychology Foundation

In Iceland, people are called by their first names followed by a patronymic. Erlendur's father's name was Harald, so he was known as Erlendur Haraldsson. In reference lists his works are attributed to Haraldsson, Erlendur. However, he preferred simply to be called Erlendur, so that name is adopted here when describing an outstanding career in parapsychology.

He was born on November 3, 1931, near Reykjavik. A variety of mystical and paranormal experiences in childhood and youth are recounted in his recently published memoir, *Towards the Unknown*. His higher education was at first devoted to other interests, notably philosophy, pursued at a succession of European universities. In Germany, when required to take classes in German along with other foreign students, he encountered Iraqi Kurds. He became immersed in Kurdish history and politics, for a while abandoning academia for journalism. He spent time in Kurdistan, the topic of his first book (Haraldsson, 1964), published in Icelandic and German but never translated into English.

Returning to graduate school, Erlendur attended a lecture on parapsychology given by Hans Bender. Impressed with what had been done in this area, he decided to pursue it for his doctorate, attained under Bender. He then spent a year with J. B. Rhine at the Foundation for Research on the Nature of Man in 1969-70, followed by a year in clinical psychology with Robert van de Castle at the University of Virginia. There he got to know Ian Stevenson. After receiving his diploma, he accepted an appointment at the University of Iceland but returned to the United States to work with Karlis Osis at the American Society for Psychical Research in 1973 and 1974.

Erlendur was one of the few parapsychologists involved in both laboratory and field research. During his year with Rhine, he looked for physiological correlates of ESP in high-scoring subjects. He performed one of the first PK studies using Helmut Schmidt's random event generator. Later, he examined psi performance in relation to psychological testing instruments, especially the Defense Mechanism Test. He was himself a good subject and apparently a psi-conductive experimenter.

Erlendur published regularly in parapsychology journals and mainstream outlets, with books designed for general readership. The first, *At the Hour of Death* (Osis & Haraldsson, 1977), was about

deathbed visions reported to doctors and nurses in the United States and India. He made eight trips to India over ensuing years to investigate events associated with Sathya Sai Baba, resulting in *Miracles are My Visiting Cards* (Haraldsson, 1987). Erlendur wrote a book about the great Icelandic physical medium Indridi Indridason (Haraldsson & Gissurarson, 2015) and was keenly interested in evidence for postmortem survival. His surveys of apparitions and other psychic phenomena in Iceland led to *The Departed among the Living* (Haraldsson, 2012). In the late 1980s, he joined a project to replicate Stevenson's cases of children remembering previous lives, culminating in *I Saw a Light and Came Here: Children's Experiences of Reincarnation* (Haraldsson & Matlock, 2016).

Erlendur was honored with an Outstanding Career Award by the Parapsychological Association in 1997 and in 2010 was awarded the Myers Memorial Medal by the Society for Psychical Research. He retired from teaching in 1996, leaving more time for research and writing. In later years, he was a prolific lecturer. Erlendur kept a list of publications and speaking engagements on his web site, <https://notendur.hi.is/~erlendur/english/>, which the University of Iceland reportedly has no plans to remove. Erlendur contributed an autobiographical essay to the second volume of Rosemarie Pilkington's *Men and Women in Parapsychology: Personal Reflections* (Haraldsson, 2013). Additional information about his life and work may be found in his *Psi Encyclopedia* biography (Matlock, 2020).

Erlendur preferred to keep his personal life private, rarely writing or talking about it. He tells us in *Towards the Unknown* (Haraldsson, 2021) that he was married three times, had a son, daughter, and two grandchildren. Early in his 89th year, diagnosed with an aggressive cancer, he checked himself into a Reykjavik hospice and died there on November 22, 2020 (Morgunblaðið, 2020). He was one of the most versatile researchers parapsychology has produced; the field is greatly diminished by his passing. He was soft-spoken and gentlemanly in demeanor, his range of experience and knowledge notwithstanding. Those of us who knew him personally mourn him for his ever-supportive friendship.

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In Memoriam James “The Amazing” Randi. (1928 – 2020)

Graham Watkins
Rhine Research Center

James Randi, born Randall Zwinge in Toronto, Canada, was not a parapsychologist or indeed, a scientist of any sort, but over the years came to have a rather close association with the field in many ways, most of which are well-known. He began his career as a stage magician and “escapologist” in 1946. It was an incident that occurred during his teenage years that would inspire his future, though; after encountering a pastor who claimed to be able to read minds, he re-enacted the pastor’s performance before the church’s congregation and was briefly arrested and imprisoned as a result (Limbong, 2020).

In 1972, Randi came to the attention of parapsychologists when he began to accuse Uri Geller of being a fraud. Their conflicts would continue over decades, resulting in multiple lawsuits and arguably Randi’s best-known book, *Flim-Flam: Psychics, ESP, Unicorns, and Other Delusions* (Randi, 1982). In 1973, Geller appeared on *The Tonight Show* with Johnny Carson, expecting to be interviewed. Instead, Carson followed Randi’s advice and insisted that he demonstrate his paranormal powers using materials Carson had provided. Geller was unable to perform, and Randi believed this was the end of Geller’s claims — and even Geller himself believed his career might be over. But instead, the public believed that if Geller had been a fraud he would have been prepared, and his tricks would have worked perfectly. His failure on this occasion was taken as a demonstration that he was genuine (Frum, 2000, p. 132).

Randi’s response to this was to create, along with Ray Hyman and Martin Gardner, the Committee for Scientific Investigation of Claims of the Paranormal (CSICOP), and they were later joined by Isaac Asimov, Carl Sagan, and Paul Kurtz (Higginbotham, 2014). The organization, for which Randi was the primary public face, gained considerable fame over the next few years for “debunking” various paranormal claims. The next year he founded the James Randi Educational Foundation (JREF). The JREF for several years offered a one-million-dollar paranormal prize (the “Million Dollar Challenge”), to anyone who could demonstrate paranormal abilities under controlled conditions.

This prize was never awarded to anyone, was restricted to “public figures” in 2007, and discontinued in 2015. That it was never awarded is hardly surprising (McLuhan, 2010), considering the conditions under which the tests were conducted. A good example can be found in Randi’s treatment of Natalya Lulova, a ten-year-old girl who apparently could read when totally blindfolded. In preliminary tests she did well and seemed poised to claim the prize. But Randi got personally involved, almost encas-

ing the girl’s head in tape and insisting that she perform over and over (while accusing her of cheating and making odd comments about her facial anatomy) until she no longer could perform (Komissarov, 2004). Several other examples of this sort can be found in the article on Randi in the *Psi Encyclopedia* (Wehrstein & McLuhan, (2020).

Randi did, in fact, expose many fraudulent claims of the paranormal. But on the whole, he was not, as he often claimed, an “investigator” rather than a “debunker.” Even a cursory look at his “investigations” shows that he virtually always approached the subject with the preconception that the claimant was a fraud. He shared, or perhaps can be said to have initiated, two attitudes that pervade his work and the work of skeptics in general. One, that if something can be simulated by fraudulent means, it was accomplished by fraudulent means, and two, that the laws of nature are currently well-enough known to scientists that nothing can or ever will be discovered that might violate any of them. Neither of these are logical propositions. Randi is often held up as an icon of rational and critical thinking, and clearly, neither he nor the other skeptics are. Yet they have numerous followers world-wide, especially students who feel that Randi’s style of aggressive skepticism marks them as intellectual and sophisticated. Almost certainly, this also contributes significantly to the hostility scientific parapsychology receives from academia. It is damaging, not just to parapsychology but to science as a whole. The damage James Randi did to science in his lifetime will doubtlessly endure for many years to come.

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What's in a Name? A Lot, Actually

Paul H. Smith, PhD

Advisory Board, the International Remote Viewing Association

Abstract: A research discipline is partly defined by its terms. Parapsychology is no exception. I consider recent calls to change some long-standing terms in the field, primarily “parapsychology” and “extrasensory perception.” I specify desiderata for the terms we want to use to identify the nature of our field and the phenomena we explore, then discuss some reasons the changes in question were proposed, including an exploration of goals and motivations for those proposed changes. Counter-arguments against these reasons are then presented, along with justification for preserving the current terminology. I then argue that, though well intended, the strategies and alternatives presented cannot achieve the goals they intend. The two terms most under pressure are defended, and explanations offered as to why these terms remain the best candidates. One undisclosed motivation for such changes may be what I call “Parapsychology’s Stockholm Syndrome,” reflecting the phenomenon also known as “identity with the aggressor” — suggesting that some of the motivation for offering such name changes may arise from the desire to “fit in” with mainstream science, which has long marginalized scientific parapsychology. Rather than rebranding or renaming, we should instead fight for our terminology against attacks from mainstream “aggressors” and their skeptic allies.

Keywords: parapsychology, extrasensory perception, ESP, psychophysical, anomalous cognition

“You’re just arguing over semantics!” We’ve all heard words like this, and perhaps even used them ourselves. They imply that what has just been said is trivial and a detour from what really matters. I have found though, that people who use this locution either don’t know, or in the moment don’t consider, just what “Semantics” is, and why it is important that we get the semantics right. After all, many arguments and disputes we humans get into boil down to semantics. Once we sort out the semantics, disputes often evaporate.

Semantics as a field is the study of meaning. Semantics in conversation has to do with understanding what we’re actually talking about. Semantics *in* a scientific field has to do with the vocabulary and meanings that set the very boundaries of the subject matter of that field. Who defines the vocabulary also sets much of the agenda for the field. Semantics are not just important. They are *very* important.

Clearly, this paper is not a typical report of research results. Instead, I’m addressing a topic that is at least as important to the parapsychological community.

Parapsychology is in an era of what might be called “semantical confusion.” Some wonder what we should call ourselves and how to refer to the subject matter we study. The term Parapsychology is an example. A recent editorial (Radin, 2018) argued for a change in the name “Parapsychological Association” to something presumably more scientifically appropriate — offered as one suggestion was “Psychophysical Association.” Why this is problematic I will shortly address.

Discussion

We should consider some particular criteria when thinking about terminology for a field. Accuracy, specificity, clarity, and descriptiveness seem obvious. In our necessarily media-driven age, we need to add one further condition: that certain of the relevant terms must also be recognizable and identifying of the organization or subject that they are meant to represent. While it may be difficult to find all these qualities in a given term, we should hope to find at least *some* of them.

The umbrella term for the class of phenomena in which we are interested, “psi,” violates nearly every one of these criteria. It is only the name of a single Greek letter. We claim to study psi phenomena. It has the equivalent in English of saying we study Q or V (or some other arbitrary letter) phenomena or something similar. Since psi purportedly stands for something along the lines of “Something we don’t know what it is,” the label for our scientific subject matter violates the criteria of accuracy, specificity, descriptiveness *and* clarity. And it is certainly recognizable by and identifying *only* to those who are already initiated. It is opaque to most everyone else.

Russell Targ and Stephan Schwartz, among others, have proposed labels such as “nonlocal consciousness” or “nonlocal awareness.” (One can think of the term “nonlocal” as a more convenient way of referring to “action-at-a-distance,” generally taken to mean a result regularly associated with a particular stimulus without any discoverable classically causal connection between the two.) I confess a certain fondness for these terms. “Nonlocal” seems a promising compromise between vagueness and specificity as a possible alternative to the psi label. “Nonlocal,” of course, calls to mind the idea of quantum entanglement, since that phenomenon is also known as quantum nonlocality. Without the modifier “quantum,” the idea of nonlocality is simply that whatever effect is involved occurs independently of accepted principles of causality, without commitment to any particular ontology to account for that causality. That seems *prima facie* right when we consider the behavior of the phenomena with which we are concerned.¹ On the other hand, since no one has a grasp on what founds “consciousness” nor what the underpinnings of “awareness” might be, we lose no ground in adding either of these terms to the “nonlocal” locution. But we do add the virtue of delimiting the terminology to the domain which *prima facie* is the focus of the phenomena:

¹ Note that Stephen Braude (2020) takes exception to deployment of the “nonlocal” terminology. His concerns derive from an apparent assumption that proximity of effect may preclude nonlocal “action at a distance.” For example, since psychics “...can diagnose subtle medical conditions of the client seated before them, that would be an instance of ostensible ESP confined to that small region of space” and “...the distance mentioned in ‘action at a distance’ may actually be quite small” (p. 428). On my understanding of the term, “nonlocal” as a stand-in for “action-at-a-distance” refers not to relative distance, but rather that no classical causal linkage between stimulus and result can be traced. Braude also calls upon counterexamples such as mediumistic ectoplasm materialization, and presumed “psychic” healers who heal themselves. These counterexamples seem to conflate the kinds of phenomena that are normally associated with “nonlocal perception,” such as clairvoyance, remote viewing, and telepathy with phenomena that are strikingly different, and may well owe their occurrence to an altogether different causal nexus. Indeed, it seems plausible that self-healing may even involve a non-paranormal causality, and hence not at all describable as “nonlocal” in the sense I mean here.

Consciousness

To be sure, the idea of the second term mentioned, “awareness,” does have the shortcoming of not including what has come to be called “psychokinesis,” and also seems to exclude those phenomena currently included under the psi rubric that are experienced by humans but of which they are presumably not consciously aware. “Consciousness” construed broadly enough can encompass both.

The much more informal and misused term “psychic” is only slightly less vague than “psi.” At least “psychic” clearly denotes that mind is involved. However, that term suffers from ambiguity. We can literally translate it from the Greek as “soul” or “spirit.” But its modern heritage embraces usages both in psychology (the term of which it is the root) as an adjective for mental states with no connotation of extrasensory perception. And, of course, “psychic” also refers to phenomena that (to all appearances) seem to transcend the standard psycho-physical concept of mind. To know which sense of “psychic” is being referred to, one needs a context.

Parapsychology

The term “parapsychology” has some (though not all) of the same shortcomings as “psi.” As often noted, the “para” in parapsychology means “beside” or “adjacent to.” So, parapsychology means right next door to psychology. Literally, the term means nothing, other than to suggest proximity to the presumably more robust field of psychology. If ever there was a name ripe for change, the “parapsychological” in the Parapsychological Association would seem to qualify.

But not so fast. If it were that simple I, and no doubt many others, would be right onboard. Unfortunately, it is not so simple. We may need to push back against this suggestion for four reasons.

1. *The issue of branding.* Rebranding a long-established organization is always risky: It runs a substantial risk of newly interested people never finding the organization; it risks losing supporters who don't recognize the new organization; and it definitely loses painstakingly won name recognition.
2. *It can be expensive.* The replacement or revision of web sites, the revision of publication titles, stationary, logos, etc. consumes resources that could be used more productively elsewhere.
3. *It weakens the perceived status of the organization.* After all, don't we wonder what is wrong, or what is insufficient, or what has changed in an organization that feels obliged to revise its name after a long history under its long-established one?
4. *The proposed “psychophysical” term.* It violates more of the criteria I suggested above than does our current “parapsychology.”

I am going to address this final issue specifically, using “psychophysical” as an example to point out the problems that might confront any other such candidate. First, though, I sympathize with the editorial writer's position, and welcome the good intentions of his proposal. I recognize, and have several times myself encountered, similar obstacles to those he has in dealing with scientists and academics

when they are faced with the “parapsychology” terminology. Though the risks in being associated with that term are sometimes overblown or imagined, there can be real career threats for many in academia if they admit an interest or belief in such phenomena. This is, of course, not a fault of the term itself but the cultural baggage laid on it by the biases and narrow thinking of our sometimes intolerant and occasionally anti-rational Western academic culture.

With that acknowledged, the term on offer, “psychophysical,” is ambiguous. As mentioned in the editorial, there is already a psychophysics discipline, which studies the physical connections between sensory stimuli and the resultant perceptions they produce. Albeit the writer explains the term originated with a parapsychological sense to it, yet it seems today to be fully embraced by physicalist science. There are also already a couple of psychophysical societies, from which the writer suggests we may be able to differentiate ourselves should we ultimately adopt a similar label. Perhaps that could turn out to be true. But the danger is that we won't know until we try it. And if it doesn't work, it would be too late to undo the damage.

As an alternative for parapsychology, “psychophysical” is also theory laden. Even if we somehow coopt the word as a replacement term, it implies the accommodation of parapsychological effects within the physical world. That has not, however, been proved, and there remains plenty of reason to doubt that such will ever be provable. For all its flaws, parapsychology is at least not terminologically so burdened with theoretical assumptions.

To be fair, Dean Radin, the author of the essay, isn't irrevocably committed to the “psychophysical” term. He included an invitation for anyone with alternative terms on offer to send them in. So far as I know, no interesting alternatives have yet been suggested.

Parapsychology's Stockholm Syndrome

An additional concern — a “meta-concern,” if you will — lurks. I worry about something that may turn out to be the real underlying reason why some in the parapsychology field have hoped to distance themselves from the field's traditional name. The editorial sums it up neatly: The name is toxic. At least, it is toxic in the minds of mainstream scientists. Some among us see the venerable “parapsychology” label as a liability—an important factor in why science won't allow us to become fully-accepted playmates in its sandbox. The hope is that changing our name, our surface identity, away from that horrible, tainted label can grease the skids for our acceptance by and assimilation into the ranks of conventional science. To use a religious metaphor — it's approximately like the Baptists changing their name in hopes that the Jesuits will embrace them as fellow Catholics.

But might this not as well be a symptom of what we could refer to as parapsychology's “Stockholm syndrome”? I'm sure you've heard of this odd psychological phenomenon, described colloquially as “identity with the aggressor.” When kept long enough in captivity, hostages of terrorists or other abusers come to identify with and embrace the agendas and motives of their captors—and even defend their abusers in the aftermath.

Parapsychology has for so many years been suppressed, marginalized and – dare I say it –ridiculed by mainstream science and its fellow travelers, the skeptics. Because of this, do we now pine for their love and acceptance, to the point of being willing to do nearly anything to gain it?

Certainly, there are those in our field who are convinced that they will find a physicalist way of fitting parapsychology into the framework of accepted science. For some, this reflects their own personal beliefs about what the roots of parapsychological phenomena will turn out to be. They themselves are confirmed physicalists. But others merely hope that, once such a reconciliation is achieved, science will *have to accept us*. We the oppressed will be one with *them*, our oppressors.

I confess I find this strategy questionable. Physicalism itself is a dubious enterprise. If there is a point where physicalism is most vulnerable, it is in foundations of physicalism itself. I and others have argued that the basis of physicalism is an ontological mess, held together because so many of its supporters are unaware their emperor wears no clothes. (Smith, 2009, 2010; Targ, 2012; Tart, 2009). Ironically, parapsychology itself poses the greatest threat to physicalism's hegemony. Can a mere name change really suffice to persuade science to gather the parapsychological serpent to its bosom? Not at all. We are more likely to be compelled to altogether surrender our convictions about the plausible reality of the phenomena that are the core of why the Parapsychological Association exists before the mainstream will fully embrace us. And then what would be the point?

This idea of changing names and terminology, trying to come up with something that we think the mainstream will find palatable, strikes me as a phenomenon that finds a parallel in parapsychology research itself. Note that in parapsychological science, experimental paradigms have a shelf life. Many reasons exist for this, but one that seems to run through the research goes like this: A new experimental paradigm is devised. Often ingenious and innovative, the experiments conducted under the paradigm produce good results. Soon, the critics weigh in. Some of their criticism is well founded and leads to improvements in the methodology. Contrary to skeptical expectations, though, in many or most cases the effects persist. Sometimes they are even enhanced by an improved protocol. The criticism, of course, continues nonetheless.

More importantly, even over time few if any people *outside* parapsychology seem persuaded by the evidence. Usually, they don't even so much as pay attention to it. "What?" we ask ourselves figuratively. "There's no one paying attention! Our new experimental paradigm must not be flashy or successful or impressive enough to be persuasive. Let's try something else."

The field bounces from (in no particular order) card guessing and dice rolling to dream telepathy to remote viewing to Ganzfeld to DMILS to presentiment to whatever is next, with many things in between. We learn much, but we gain no more acceptance than we had before. It's not because the research doesn't have merit. It's because it is a threat to the mainstream. I'll not get into Kuhnian and Lakatosian paradigms here. But we all know this. We just think that the next new experiment idea will tip the scales. It never does.

The same thing seems to happen with our labels. It used to be "psychical science," with "psychic" and "paranormal" mixed in. Then "parapsychology," introduced as a presumably more acceptable and (according to J.B. Rhine) more descriptive term. Now there is a new proposal on the table to search for another label to switch to, one with hoped-for greater acceptability.

Sometimes virtue lies in changing. Sometimes the virtue lies in refusing to change. I suggest it's time to stop trying to identify with our oppressors and increase and unify our efforts to fight them. I don't mean this in an overtly confrontational way, but more of a Zen-like approach, perhaps with a few special-ops techniques thrown in. Instead of surrendering our terms and our science, instead of caving into our opponents, we should *defend* our terms and our science. And how to go about that should perhaps be how we spend our energy, rather than searching for just the "right" name to rescue us from scientific leprosy. (And I am obliged to note that the defense is not just against the critics, but also against those of our sympathizers who want to dilute and vernacularize these terms to suit their own metaphysical beliefs.) Perhaps that could be a theme for an upcoming PA conference.

Extrasensory Perception

I want to move on now to another semantics issue with a different context. This also revolves around a time-honored label, in this case "extra-sensory perception," or ESP (for the sake of economy I will drop the hyphen in future mentions, except where quoting).

Perhaps you have noticed a move afoot to replace the ESP term with something more "appropriate." Today's leading competitor is "anomalous cognition," or AC. The term was first defined in a classified paper from the US government's Star Gate Program in 1991 as "a form of information transfer in which all known sensorial stimuli are absent." Terminologically, anomalous cognition is meant to circumscribe "phenomena that are described in the parapsychological literature as extra-sensory perception (ESP), telepathy, clairvoyance, and precognition." (May & Luke, 1991/2018). Semantically, then, anomalous cognition is presumed to be coextensive with the "old" term, extrasensory perception.

As in the desire to replace the parapsychology label with something better, the motivation for developing and recommending the anomalous cognition term is also well-intentioned. There is some hope, for example, that the AC term might be less theory laden than "ESP."

However, I see some difficulties anomalous cognition might present as a descriptor for the subject matter of our research and practice. Borrowing from Webster, anomalous means "inconsistent with or deviating from what is usual, normal, or expected; irregular, unusual," or, alternatively, "marked by incongruity or contradiction; paradoxical." (Retrieved from <https://www.merriam-webster.com/dictionary/anomalous>)

At first, "anomalous" seems a plausible label for phenomena that seem unexpectedly (from a physicalist science perspective) not to conform to physical laws. But let's not be hasty. A truly anomalous effect would presumably fail to conform to *any* sort of law-like behavior. Yet don't we expect to find lawful relations as we explore our chosen areas of interest? And in fact, we *do* find such behavior, though often less robust than we would like. We are often troubled to think that some of our effects are not consistently replicable, but we hope that eventually we will be able to achieve that goal.

Three difficulties with the use of "anomalous" present themselves: First, the term "anomalous" may prove to be overly broad. A 1998 paper expressed this very concern, noting "...all sorts of occurrences

count as anomalous mental phenomena that would not have been classified as ostensible cases of psi," any of which could easily meet this definition. Examples might include not only assorted pathological conditions but also "many non-pathological, but highly unusual desires, thoughts, or volitions that may occur" (Braude, 1998, 142; see also related comments in Braude, 2020). Consider, for example, the experience of an emotionally healthy person inexplicably feeling the urge once only in her life to leap from the lip of a chasm. This would seem to meet the definition of an anomalous mental event that nevertheless does not require the involvement of psi. The article cites other relevant examples which I will not take the time to list here.

Another issue may arise, albeit in the future. Let us suppose that the physicalists among us turn out to be right. Let's suppose that, astonishingly, someone develops a fully vetted theory within which psi (or whatever we might eventually decide to call it) can be reconciled with the larger physicalist paradigm. We think of ESP being anomalous because for now we have no way of fitting it into normal science. But if it later turns out that it *does* fit into normal science, then it could no longer be considered anomalous, and we would be stuck with a term we would be obliged to change yet again.

I see the most important difficulty as being this: Do we really want the phenomena we study to be tainted from the outset? By labeling them as anomalous, are we not encumbering our base phenomena even more deeply with the presumption that they are weird or scientifically marginal or suspect? So "anomalous" seems an awkward word to apply to our areas of research interest. Indeed, I would argue that we don't want the critics who oppose our agenda to latch onto that term and make great hay out of it.

Well, alright—but what about "cognition"? Here we run into a separate issue. Does cognition accurately describe each and every phenomenon involved in the domain generally referred to now as "extrasensory"? Some of the phenomena do clearly include cognition. Of particular note would be remote viewing, and the latter phases of a Ganzfeld experiment, and (assuming dreaming can count as "cognitive") dream ESP. In each of these, participants at some point become cognitively aware of experiences and facts about their respective targets and have to make cognitively directed judgments.

But what about "presentiment"? In such experiments it seems implausible to conclude that autonomic arousal — which rarely or (usually) never arises to the level of conscious awareness — can count as cognitive. And consider remote influencing in DMILS experiments, where positive intentionality exercised by a distant influencer to a statistically significant degree enhances a target person's ability to concentrate. This hardly seems a plausible candidate for consideration as a cognitive process — at least for the person being influenced. If a term is to be applied to the entire phenomenal corpus of a discipline, ought it not be descriptive of *all* the phenomena, not just some of them? The ESP term dodges this issue. Anomalous cognition does not.

The anomalous cognition locution is also difficult because it does not clearly refer. In other words, unlike the ESP term it is meant to replace, when people unfamiliar with the term hears "anomalous cognition," they don't know what it means. And breaking it down into its constituent parts does not make it clearer. I recently spoke with a prominent member of our field who lamented that whenever she uses

that term with anyone not already acquainted with it, she must first explain what it means before she can continue the conversation. The term she uses to explain it with is “extrasensory perception.”

But what about those venerable words that anomalous cognition is meant to replace, “extrasensory perception”? To most of you, the following discussion will seem obvious or trivial, but it’s good to make sure we are all on the same sheet of music. “Extrasensory” does not, as some believe, mean just one sense more, nor sensing beyond the usual five. The “extra” doesn’t mean superfluous nor additional, nor a bonus sense. It does not mean that all, or even some of us have an extra, or additional “sixth sense.” Rather it has the same meaning as the “extra” in words like “extradite,” “extract,” “extramural,” or if you’ll forgive me, “extraterrestrial.” In other words, it means beyond, outside of, or external from. When “extrasensory” is coupled with the word “perception,” it means perceiving beyond or outside the senses. It means having a perceptual experience, but one uninformed and unmediated by the intervention of our physical senses.

In the 1964 edition of his seminal work, *Extra-Sensory Perception*, J.B. Rhine explained his choosing of these particular words:

I began using the term “Extra-Sensory Perception” (ESP) at first with the more tentative meaning, “perception without the function of the recognized senses.” But as our studies progressed it gradually became more and more evident that ESP was fundamentally different from the sensory processes, lacking a sense organ, apparently independent of recognized energy forms, non-radiative but projectory, cognitive but unanalyzable into sensory components – all quite non-sensory characteristics. It seemed to extend the word “sensory” ridiculously to use it to cover this phenomenon. Hence the present interpretation is rather that E.S.P. is, frankly, “perception in a mode that is just *not* sensory,” omitting all question of “unrecognized.” I think we have progressed this far with reasonable certainty. (p. xxix)

Rhine seems confident that perception occurs without the intercession of the senses. Even after many decades, this confidence seems warranted, in that from a physicalist perspective sensing can only occur through the agency of the electromagnetic spectrum (vision) or some mechanical or chemical process (touch, smell, taste, hearing).

Take, for example, the fact that in remote viewing accurate perceptions occur even when a subject is sequestered in an isolation chamber sealed against intrusion from any of these channels. All physical sources of direct sensing have been eliminated, yet confirmable perception still occurs. Many other examples of successful experiments done under similar and other protocols support Rhine’s conclusion, including displacement in space and/or time (as in precognition) that would also preclude sensory linkages.

All this, of course, raises the question: If the senses are definitively “out of the loop,” why are the resulting perceptions experienced in ways similar to how they would be if induced by impingement of the actual physical senses? I lack the time here to offer my speculations but, fortunately, for this discussion all that is necessary is to reaffirm that the senses have been confirmed to not be involved. Hence, “extrasensory.”

Though Rhine uses the word “cognitive” in the quote above, we should not take that in the same sense as it is meant in the anomalous cognition term. Later in his book, Rhine notes that one of his students submitted a Masters thesis titled “Extra-Sensory Cognition.” He comments:

But this is not specific enough; rational and mnemonic cognition would also be “extra-sensory.” Perception is cognition of outer objects or relations, and is, therefore, the proper word here. Extra-Sensory, then, limits it in the necessary ways. (p. 175)

Here Rhine seems to be using the “cognition” and “cognitive” terms a bit imprecisely. In one sense (in referring to his student), he seems to be thinking of the conventional meaning of “cognition,” and rejecting its use on grounds compatible with Braude’s argument. In another sense, he seems to be conflating cognition with reception of direct sensory input, which is more properly described as perception of raw sensory experience.

Thus, we are presented a useful segue to the notion of “perception.” Unfortunately, this term is used quite loosely in these debates, without distinguishing among the nuances of its various related (but divergent) meanings. Often, people think of “perceiving” as it is used in the sentence, “She perceived his intent.” This construction and others like it take perception to indicate “understanding” or “comprehending” something. In this formulation, “perception” means very much the same as “cognition.” But this is a more vernacular usage.

There are other nuances that are also relevant to the ESP term. One is the process of categorizing sense experience. Applied in this way, perception does not require the recognition or understanding of what something *is*, but merely that one develops a noticing or awareness of what sort of experience one is having. Having the experience of tasting peanut butter doesn’t require that we have any prior experience with peanut butter, nor know what peanut butter is, but only that we become aware that we are having a taste experience of a certain kind different from other kinds of taste experiences.

Some might argue that this also constitutes a sort of cognition and, though it doesn’t match our most common understanding of that word, perhaps it is. We might in fact accept that there is a transition or bridge here between raw perception and comprehension.

A more fundamental meaning of perception is the one I think is key. That is the detection and parsing of sense experiences and assignment to the appropriate processing centers in the brain. This requires neither understanding, nor cognitive awareness, and yet it is perception — indeed, perception of the most basic kind. This may well be the sort of ESP present in presentiment experiments.

Unlike the term “cognition,” all three of these connotations of “perception” are relevant to the phenomena we study as subject matter under what is currently referred to as “extrasensory perception.” We might even argue that cognition is but a subset in the conceptual domain of perception.

In consequence, I argue that “extrasensory perception” is not only descriptive, but it is — to the extent any term can be in a field where there are still so many unknowns about its causality — also clear, accurate and specific. It also meets, as much so or more than any term thus far suggested, the require-

ment of being recognizable and that it be identifying of the subject matter that it labels. It also has the virtue of being less theory-laden than the alternatives.

It seems less than helpful to move from a term that for decades has proved to be both useful *and* descriptive to a new construction that is *less* useful and *less* descriptive — indeed more ambiguous (as I argue that anomalous cognition is). ESP is descriptive rather than definitional — and that is really just what we need right now.

My argument for retaining the ESP term is different from my reasons concerning the parapsychology term. As I expressed above, I believe we should retain “parapsychology” not because it is ideal, but because we already have so much invested in it. Replacing it would be similar to — and just as traumatic as — rebranding a major corporation. If there were enough ground to be gained by rebranding, then it might be worth it. But so far, there is at best little more to proposed changes than the proverbial “changing ‘happy’ to ‘glad’.” And at worst there may be quite a lot more at stake.

We should retain extrasensory perception too, but for different reasons, irrespective of tradition or prior usage. Rather, let us keep ESP based on its utility and descriptiveness. Let’s also be careful that the decision not simply become a semantics popularity contest, where the word with the most votes will win. Back in the old video recorder days, the superior product, Sony’s Betamax, lost the marketing battle to VHS, the inferior product. Let’s avoid replaying our version of the Beta vs. VHS fiasco by doing everything we can to have the best terms available under the circumstances. In the end, we don’t need to replace ESP. Let’s rescue it instead.

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Qu'est-ce qu'un Nom? Beaucoup, en Réalité

Résumé : Une discipline de recherche est partiellement définie par les concepts qu'elle manipule. La parapsychologie ne fait pas exception. Je discute les récents appels à changer la terminologie présente de longue date dans ce champ, en premier lieu les termes « parapsychologie » et « perception extra-sensorielle ». Je spécifie les desiderata pour les termes que nous voulons utiliser pour identifier la nature de notre champ et les phénomènes que nous explorons, puis discutons certaines raisons pour lesquelles les changements en question furent proposés, incluant une exploration des buts et motifs pour ces changements. Des contre-arguments contre ces raisons sont ensuite présentés, de même qu'une justification pour préserver la terminologie actuelle. J'affirme ensuite que, malgré leurs bonnes intentions, les stratégies et alternatives présentées ne peuvent pas atteindre les buts fixes. Les deux notions qui sont le plus sous pression sont défendues et des explications sont données pour comprendre pourquoi ces termes restent les meilleurs candidats. Une motivation non dévoilée pour un tel changement pourrait être appelée « le syndrome de Stockholm de la parapsychologie », reflétant le phénomène aussi connu sous le nom d'« identification à l'agresseur » - suggérant que certaines des motivations pour proposer de tels changements de dénomination pourraient provenir du désir de « coller » à la science mainstream, qui marginalise la parapsychologie scientifique depuis très longtemps. Plutôt qu'un rebranding ou un renommage, nous devrions plutôt nous battre pour notre terminologie contre les attaques des « agresseurs » mainstream et leurs alliés sceptiques.

Was steckt hinter einem Namen? Tatsächlich eine Menge

Zusammenfassung: Eine Forschungsdisziplin wird teilweise durch ihre Begriffe definiert. Die Parapsychologie macht da keine Ausnahme. Ich überprüfe die jüngsten Forderungen, einige seit langem gebräuchliche Begriffe in diesem Bereich zu ändern, vor allem "Parapsychologie" und "außersinnliche Wahrnehmung". Ich umreiße die vorgeschlagenen Begriffe, die wir verwenden wollen, um die Natur unseres Gebietes und die Phänomene, die wir erforschen, zu beschreiben, und diskutiere dann einige Gründe, warum die Änderungen vorgeschlagen wurden, sowie eine Untersuchung der Ziele und Motivationen für die vorgeschlagenen Änderungen. Dann werden Gegenargumente gegen diese Gründe vorgestellt, zusammen mit einer Rechtfertigung für die Beibehaltung der aktuellen Terminologie. Ich argumentiere dann, dass die vorgestellten Strategien und Alternativen, auch wenn sie gut gemeint sind, nicht die Ziele erreichen können, die sie beabsichtigen. Die beiden in Frage gestellten Begriffe werden

verteidigt, und es werden Erklärungen angeboten, warum diese Begriffe die besten Kandidaten bleiben. Eine unausgesprochene Motivation für solche Änderungen könnte sein, was ich als “Stockholm-Syndrom der Parapsychologie” bezeichne und das Phänomen widerspiegelt, das auch als “Identifizierung mit dem Aggressor” bekannt ist. Es könnte darauf hindeuten, dass manches an der Motivation, solche Namensänderungen vorzunehmen, dem Wunsch entspringt, sich der Mainstream-Wissenschaft “anzupassen”, die die wissenschaftliche Parapsychologie lange Zeit an den Rand gedrängt hat. Anstatt eine Umwidmung oder eine Umbenennung vorzunehmen, sollten wir stattdessen unsere Terminologie gegen Angriffe von Mainstream-“Aggressoren” und ihren skeptischen Verbündeten verteidigen.

Qué hay en un Nombre? Bastante, de Hecho

Resumen: Una disciplina de investigación se define parcialmente por sus términos. La parapsicología no es una excepción. En el presente artículo, considero las recientes propuestas para cambiar algunos términos de uso prolongado en el campo, principalmente “parapsicología” y “percepción extrasensorial”. Especifico la desiderata de términos que queremos usar para identificar la naturaleza de nuestro campo y los fenómenos que exploramos, luego analizo algunas de las razones por las que se propusieron los cambios en cuestión, incluida una exploración de los objetivos y motivaciones de dichas propuestas. Luego presento argumentos en contra de estas razones, junto con una justificación para preservar la terminología actual. Posteriormente sostengo que, aunque bien intencionadas, las estrategias y alternativas propuestas no pueden lograr los objetivos que pretenden. Luego defiendo los dos términos más cuestionados y ofrezco explicaciones de por qué dichos términos siguen siendo los mejores candidatos. Una motivación inconsciente para proponer tales cambios puede ser lo que llamo “Síndrome de Estocolmo parapsicológico”, que refleja un fenómeno también conocido como “identidad con el agresor” – lo que sugiere que parte de la motivación para proponer tales cambios de términos puede surgir del deseo de “encajar en” la ciencia convencional, que durante mucho tiempo ha marginado la parapsicología científica. En lugar de cambiar el nombre o los tecnicismos, deberíamos defender nuestra terminología contra los ataques de los “agresores” convencionales y sus aliados escépticos.

ESP Contributes to the Unconscious Formation of Preferences¹

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Abstract: First Sight Theory (FST) proposes that ESP is an ongoing unconscious process that contributes to all common experiences, such as judgments, perceptions and feelings. To test this in the case of feelings of preference, we carried out two experiments examining the implicit expression of ESP information in preference ratings of pictures, as moderated by several variables specified by FST. The studies also attempted to demonstrate the influence of unconscious information (extrasensory and subliminal) upon mood, and the subsequent influence of mood upon a person's general orientation toward unconscious influences, including psi. In the first study, variables included 3 facets of openness and 2 facets of anxiety from the NEO-PI, involvement in a creative pursuit, belief that ESP is possible, tolerance for unstructured tasks, and a measure of tolerance for interpersonal merger. Mood was measured indirectly by the valence of autobiographical early memory. Most of the variables were related to ESP influence as predicted, and the relationships tended to be stronger when mood was positive. Multiple regression was used to condense these findings into a cluster of orthogonal variables that might be expected to be most reliable. The second study tested this composite variable in a new sample and validated it significantly. Again, relationships were stronger when mood was better. We also predicted that relationships should be stronger when the information is of more personal relevance – pictures containing human content vs. no human content – and this was confirmed as well. Each study also examined the effect of subliminal stimulation upon other preference trials (participants could not distinguish extrasensory and subliminal trials) and examined the power of variables found in previous research to predict subliminal response. The first study found limited validation for the subliminal predictions, and the second study found no validation for them. Participants' moods were influenced by subliminal cues of merger in the first study, but they were not influenced by comparable extrasensory stimuli in the second. Responses to extrasensorially pre-exposed and subliminally pre-exposed pictures were not correlated with each other in either study.

Keywords: First Sight Theory, implicit psi, sheep-goat, personality tests, ESP, Mere Exposure Effect

Two experiments tested some hypotheses generated by the first sight theory of psi functioning (FST). Both examined the influence of unconsciously-presented pre-exposure on how pictures were liked or disliked by experimental participants, using a variant of the Mere Exposure Effect (MEE) (Zajonc, 1968) protocol, in which the presentation of information tends to lead to its being more liked when presented again at a later time. The effect has been found to be more robust when initial exposure is

subliminal than when it is supra-liminal (Bornstein, 1989). We present pictures subliminally in these studies, but also “present” other pictures extrasensorially, with the assumption that this should also affect later judgements. Contrary to the normal assumption of MEE research, we assume, on theoretical grounds, that the effect with both sources of information is bidirectional, sometimes positive (exposure leading to more liking) and sometimes negative (leading to less liking), and sometimes prior exposure will seem to have no effect at all (Carpenter, 2012; Katz, 2001; Rao, 1965). Reversals of MEE have been reported (e.g., Kruglanski, et al., 1996), as with other subliminal effects, but they have tended to be reported as curiosities (or perhaps not reported at all) and not interpreted, while the basic effect is typically described as unidirectional (increased liking vs. no effect). Negative effects in parapsychology are understood to occur frequently, and are called “psi missing.” FST assumes that positive (assimilative) and negative (disassimilative) responses both occur regularly with unconscious mental processes. Our studies attempt to predict the direction of response to both extrasensory and subliminal prior presentation upon later liking, using sets of easily available variables that are theoretically specified, some of which also have empirical precedent.

Prediction of ESP Performance

FST is a theoretical attempt to explain and organize the large body of findings that parapsychologists have reported, as well as offer a roadmap for planning future research, but it is also an attempt to say how psi works and what use it provides in everyday life. FST assumes psi is not primarily an odd and occasional type of experience and influence; it is almost entirely unconscious in its functioning and its usefulness lies mainly in the implicit guidance it provides for every bit of experience and action. It is only under rather unusual circumstances that its action can be consciously perceived. Normally its ongoing action is invisible.

FST assumes that virtually everything is available to be consulted by the unconscious mind as it continually works to construct the most useful and adaptive experiences and behaviors to meet life’s ongoing concerns and developing situations. This includes information beyond the sphere of sensory experience and the present moment: The extrasensory and the extra-momentary are included. But of course, while everything is consulted, very little is directly expressed. We must unconsciously select what we use and determine how we will use it (to add to our experience or to subtract from it). These processes of selection and direction can only be discerned by arranging experiments in ways that allow us to see what things guide these processes and by examining the experiences and behaviors that result from them.

Ordinarily, events that are close in space and time to one’s immediate situation are most pertinent for experiencing it optimally. For that reason, extrasensory information, although available, will generally be neglected and not expressed. However, if pertinent information is not available in the sensory moment, it may still be grasped and used.¹

FST assumes that more personally and situationally salient information will be used and implicitly expressed more than less salient information. We addressed the issue of salience in these studies by

¹ Parapsychological experiments always make pertinent information unavailable in the sensory moment, and then examine its effects on the experience and action of the experimental participants (or events in the meaningful environment, in the case of PK).

using relatively pleasant pictures as extrasensory primes, with the assumption that pleasant information will generally be of interest, and by priming an interest in ESP by mentioning to participants (Ps) that it would somehow be tested in the experiment. In our second study we also distinguish between pleasant pictures that have human content and others that have no human content, assuming that human content is generally more salient.

Beyond the issue of information salience, FST assumes that individuals have different attitudes about accessing implicit, non-sensory information. Some will be inclined to use it; some will not. Artists and other persons who value creative work, for example, will tend to value the process of drawing meaning out of implicit hints and promptings, while others may be disinclined to use such things at all. FST calls this tendency to value and use implicit, marginally conscious experience *liminality*. In addition to creative openness, related aspects of liminality include the belief that such implicit information can be valid (the frequently validated “sheep-goat” variable (Schmeidler & McConnell, 1958; Storm & Tressoldi, 2017), one’s degree of tolerance for unstructured situations that require such an intuitive approach, and one’s attitude of openness toward inner experiences of fantasy and feeling). Openness as a personality trait has been reported to predict ESP scoring in several studies (e.g. Broughton, 2004; Holt, 2006; van Kampen et al., 1994), and artists have often been reported to score better than non-artists (e.g. Dalton, 1997, Schlitz & Honorton, 1992). A final aspect of liminality that may bear upon the use of extrasensory information is a person’s proneness to experience and perhaps to seek lowered interpersonal boundaries and a sense of merger with others.

FST also assumes that freedom from fear and anxiety should lead one to make more use of implicit, non-sensory information. Fear, current or anticipated, tends to constrict awareness to a narrow focus and exclude material that is merely implicit, unless the material directly pertains to what is feared (Bar-Haim et al., 2007; Palmer 1978, 1982, 1997).

In these studies, we measure these tendencies toward openness to implicit information, attitudes about creativity, comfort with unstructured situations and interpersonal merger, and tendencies toward anxiety, and use these measures to attempt to predict which persons will use extrasensory information by assimilating it and which will reject it and express it negatively instead.

Variables Predictive of Subliminal Response

A few individual-difference moderators of sensory MEE have been reported, and we used them as predictors here. These are the need for structure (Hansen & Bartsch, 2001), boredom proneness (Bornstein et al., 1990), and the need for cognition (Petty et al., 2008). Need for cognition related positively to MEE; the other two related negatively. Only need for cognition was reported to affect response in subliminal situations. Need for Structure and Boredom Proneness were studied with full sensory exposure, so we expected that they might not generalize to a subliminal presentation. Based upon the FST assumption of similar functioning of subliminal and extrasensory processes, we expected that subliminal effects might also be affected in a positive direction by openness, tolerance for merger, and creativity.

The Relation between Responses to Extrasensory and Subliminal Pre-exposures

FST asserts that all processing of unconscious information should generally tend to follow similar patterns. This accords with the finding of Schmeidler (1986) of a tendency for performance on subliminal and extrasensory tasks to be positively correlated when exposure times for subliminal material were “deeply subliminal” (exposure times of 100 ms or less) but not when exposures were longer, presumably permitting more conscious awareness of targets. Our subliminal exposure time of 100 ms is just within her criterion, and none of the studies she examined used implicit psi response, so our hypothesis was ventured cautiously.

The Moderating Effect of Mood

We expected that P’s mood would affect the expression of implicit information but as a higher-order moderating variable. The effect of mood on cognition has received considerable attention in recent years. Initial studies found that positive mood tends to lead a perceiver to rely more upon general and stereotypical information (the forest) in forming judgments, while a negative mood leads to more reliance upon specific items of information (the trees). For a review, see Schwartz, Bless, & Bohner, 1991. Some later studies confirmed this general trend, but others, that made different issues salient, did not. A more recent round of studies has found that the matter is settled by expecting that a good mood acts as a “green light” that privileges whatever cognitive approaches the participant is otherwise oriented toward at the moment, while a bad mood is a “red light” that leads a participant to be less inclined to rely upon those general tendencies (Hunsinger et al., 2012; Isbell et al., 2016). In our experiments, we follow the FST principle that patterns characterizing other implicit cognitive effects should apply to psi as well; we expect that all relationships by which we otherwise predict positive vs. negative expression of implicit information will be confirmed more strongly when P is in a more positive mood. Our measure of mood in these studies was an implicit one, a rating of the valence of a very early memory given by P.

The Implicit Evocation of Mood

Mood itself is often described as a rather liminal thing, subtle and often without clear origin, but with the power to “color” experience and behavior. FST assumes that it arises out of preconscious processes that sometimes include psi. In both of these experiments we attempted to evoke more and less positive moods using implicit primes. In the first experiment, the presentation was subliminal, mixed in with the pictures being flashed subliminally and extrasensorially. In the second study, we presented these primes extrasensorially, as described below. We tried to evoke a positive mood with the words “mommy and I are one” (MIO), and a negative mood with the words “mommy is leaving” (MIL). This “psychodynamic activation technique” has been shown to affect mood in several studies (Bornstein, 1990; Hardaway, 1990; Silverman, Lachman & Millich, 1982; Silverman & Weinberger, 1985; Weinberger & Smith, 2011). Since we planned to use mood as a moderating variable, in the event that this manipulation did not affect mood as hypothesized, we planned to use our implicit mood assessments and divide Ps empirically into more and less positive groups.

Study One

Participants

Ninety-five participants took part, but computer malfunctions caused slower refresh rates than 100 Hz in 17 cases, so they were excluded. Of the remaining 78, 59 were female and 75 were psychology students at Liverpool-Hope University who received course credit for their participation. The other three were volunteers at the Rhine Research Center. Ages ranged from 18 to 78, with a mode of 18 and a median of 25.5. Data collection ended by pre-agreement when a given semester ended at Liverpool-Hope.

Procedure

Unless otherwise noted, details of design and procedure are the same for Studies One and Two.

Individual testing was conducted by an experimenter (E) and was primarily administered by a PC computer using E-Prime 1.1 test administration software, and a CRT monitor with a relatively rapid refresh rate (100 Hz), such that brief exposures of stimuli would be possible. A masking stimulus (a fractal design) was used immediately after each subliminal exposure. Pictures that were used as subliminal and extrasensory stimuli were taken from the International Affective Picture Series and were assembled into 50 pairs of pictures closely matched for valence and intensity. All were relatively pleasant, drawn from the top 35% of the population in terms of valence. The 50 pairs were randomly divided into two sets of 25 pairs to be used as subliminal and extrasensory targets with paired controls. Order of different extrasensory/subliminal presentations was determined for each session using the E-Prime random function which samples the computer's internal clock.

After giving informed consent, each person filled out several individual-difference questionnaires and responded to a packet of further questions. After being seated at the experimental computer, Ps were left alone to view a 5-min video of pictures of galactic structures taken from the Hubble telescope, accompanied by gentle music intended to be pleasant and relaxing. Then E returned and told Ps that the test to follow would involve both extrasensory and subliminal information in a way that would be explained later; the computer would first present a series of exposures of the same complex pattern, during which time they would also be flashed other information too briefly for it to be perceived. Following a series of these exposures, they would be asked for some other information, after which they would give their judgments about a series of photographs. They were informed that we expected that both extrasensory and subliminal information might exert a subtle effect upon their experience, and this also would be explained after the experiment was finished. Then Ps were asked to fixate on the center of the screen at a large **X** while the colored fractal pattern would be repeatedly exposed. Following a white screen with a centered **X**, one of three kinds of information was flashed for 100 ms, immediately followed by a 2-sec exposure of the fractal design. After this, the blank screen with fixation point reappeared for 1 sec. The sequence was repeated 155 times. The briefly presented information was either one of the two mommy messages (MIO or MIL) subliminally exposed on five occasions, or one of 25 randomly selected pictures exposed subliminally on five occasions each, or one of 25 pictures

exposed extrasensorially (completely occluded) once each. Which mood manipulation P received was determined by the session sequence as follows: ABBA, BAAB, etc. The ESP stimuli were exactly like the subliminal stimuli except that the pictures were completely covered by an opaque black rectangle so that absolutely no information is available if the array is viewed at full exposure (analogous to the card-guessing technique of hiding a card away from the participant inside a sealed, opaque envelope). Each of these exposures -- subliminal-pictorial, subliminal-“mommy” and blocked-extrasensory – was randomly placed within one of the 4 quadrants of the screen, rather than centrally presented, to further mask the content of the subliminal material, and then immediately followed by the backward mask.

Following this, Ps were told that the experimenters were interested in early memory and were asked to call in the experimenter who would explain further what was being asked. When the experimenter returned, Ps were told: “Please tell me the earliest memory that you can bring to mind right now. We are interested in how far back memory can reach. Please take a moment to think of some very early memory and tell it like a little story. Give me all the details you can remember.” After Ps recounted an early memory, the experimenter asked for further details if few had been given, such as who was involved in the memory, what were the details of the situation, what feelings were involved, and how the memory ended. The memory was digitally recorded to permit scoring later as an implicit measure of mood. The mood task also served as a distraction and delay, in order to permit a stronger expression of the subliminal exposures, which have been found to be most effective when not tested immediately after exposure (Bornstein et. al. 1990). Ps were then presented with 50 pairs of pictures and asked to select the one of each pair that he or she preferred. Twenty-five of the pairs contained a subliminally-exposed picture with a matched control picture matched for valence and intensity, and 25 contained an extrasensorially-exposed picture with control. Ps were asked to make a choice for every pair, even if the difference in preference was very slight.

Following completion of the preference task, Ps were shown, for their interest, the 25 pictures that had just been used for them as extrasensory targets. Then they were given feedback as to their results – whether their responses to the extrasensory and the subliminal pictures were above chance-expectation or not; in either case they were told to draw no definite conclusions about themselves from a small, exploratory test, in reference to things which science still rather poorly understands. After answering any questions, and thanking P for helping, the experimenter ended the session.

Measures

Dependent Variables

Preference effects.

1. A P's preference score in response to subliminal pre-exposure (subliminal score for short) was equal to the number of times that P preferred the pictures to which they had been subliminally exposed previously. Scores could range from 0 to 25, and MCE was 12.5.
2. The preference score with extrasensory pre-exposure (extrasensory score) was the same: the number of times that the picture preferred was the one that had been randomly picked to be an ESP target, and “presented” in a completely occluded way. Scores could range from 0 to 25, and MCE was 12.5.

Mood. Our measure of mood was implicit, rather than self-report, and was taken from a judge's ratings of the early memories. The judge was a social psychologist with broad experience in such ratings, who had no other involvement in the study. Ratings ranged from 3 (very sad) to +3 (very happy).²

Between-participant independent variables. Ps were randomly assigned to two mood-manipulation groups. One was subliminally exposed to the phrase: "Mommy and I are one" (MIO), and the other to "Mommy is leaving" (MIL).

Within-Participant Independent Variables

1. Attitude about the legitimacy of an extrasensory source of information in this context was assessed from a response to the question: "Do you believe that ESP is possible under the conditions of this experiment?" Responses were either "yes," "unsure," or "no."
2. Fearfulness was assessed by the Anxiety and Vulnerability subscales³ of the NEO-PI personality inventory (Costa & McCrae, 1992). These two facets were expected to be most pertinent to the response to unknown extrasensory material, since Anxiety represents general feelings of fear/discomfort and Vulnerability shows a poor response to surprise and stress.
3. Openness to liminal experience was assessed by Openness to Fantasy, Openness to Aesthetics, and Openness to Feelings subscales of the NEO-PI.
4. Need for Structure was assessed by the 11-item Personal Need for Structure Scale (Neuberg & Newsom, 1993).
5. Need for Cognition was measured by the 18-item Short Need for Cognition Scale (Caccioppo, Petty & Kao, 1984).
6. Boredom Proneness (Bornstein, Kale & Cornell, 1990) was assessed by summing responses on a 6-point scale to the items: I am easily bored, I enjoy working at the same task for long periods of time (reverse scored), Routines that last too long make me very restless, Unless I am doing something exciting I feel very dull, I rarely feel excited about my work.⁴
7. Tolerance for Merger was an empirically-derived factor scale from the Short Boundary Questionnaire (Harrison et. al, 2005). We administered this questionnaire in an exploratory way, and factor-analyzed responses (varimax rotation, eigenvalue = 1.0) to see if any of the factors might be especially pertinent to FST. Most measured some aspect of dysfunction, and one appeared to be a redundant expression of creative openness. This fifth factor, however, seemed to offer something theoretically pertinent and not otherwise assessed. Example items: When something happens to a friend of mine or a lover, it is almost as if it happened to me; In my dreams, people sometimes merge into each other or become other people.
8. Creativity was assessed by the yes-or-no response to the following question:
9. Are you currently engaged in some creative/artistic work?

² Implicit measures of unconscious motives have been found to be much more predictive of actual behavior in most non-self-conscious situations, than conscious self-report measures, and much more validly responsive to non-conscious manipulations (Woike, 2008),

³ Facet scales of the NEO-PI were used to assess pertinent aspects of anxiety and openness, rather than global factor scores, since the facets chosen were particularly relevant according to theory, and considerable evidence shows that facets produce more reliable predictions: e.g. Anglim, et al. (2020).

⁴ These items were taken from Bem (2001).

Hypotheses

1. Subliminal preference scores and extrasensory preference scores will be positively correlated.
2. Mood will be more positive in the MIO condition than in the MIL condition.
3. Preference scores with subliminal pre-exposure will vary as a function of:
 - a. Need for Cognition
 - b. Openness to Feelings
 - c. Openness to Aesthetics
 - d. Openness to Fantasy
 - e. Creativity
 - f. Tolerance for Merger
 - g. Need for Structure (negatively)
 - h. Boredom Proneness (negatively)
4. Preference scores with extrasensory pre-exposure will vary as a function of:
 - a. Openness to Feelings
 - b. Openness to Aesthetics
 - c. Openness to Fantasy
 - d. Belief ESP possible (in the conditions of the experiment)
 - e. Creativity
 - f. Tolerance for Merger
 - g. Anxiety (negatively)
 - h. Vulnerability (negatively)
 - i. Need for Structure (negatively)
5. The salience of attitude/motivation predictors on preference scores in response to subliminal and extrasensory pre-exposure will both be enhanced in the MIO condition relative to the MIL condition.

Analyses

We analyzed data in several stages. First, we compared the strength of preference effects due to either subliminal or extrasensory exposures compared to chance expectation, using one-sample *t*-tests, and examined the effect on mood of the MIO-MIL manipulation, using a *t*-test comparing the mean mood scores of the two message-exposure groups. Since the direction of relationship was specified beforehand, one-tailed test was used. We had no hypotheses in regard to overall preference effects but did expect that mood would be better with the MIO than with the MIL exposures. Then we conducted an ANOVA, with the between-participant variables of gender and mood-induction condition (MIO or MIL), and the within-participant variable of exposure type (subliminal or extrasensory). We hypothesized no significant main or interaction effects. Then, we tested the various hypothesized relationships with Pearson *r*. And finally, in order to generate the most efficient predictive composite for our second study, and to resolve the problem of multiple analysis with correlated variables, we subjected variables showing significant univariate relationships to two stepwise-multiple regression analyses – one for the extrasensory trials, one for the subliminal. These resulted in smaller sets of variables each of which contributed independently to an optimal prediction.

Results of Study One

Mere exposure effects. Neither subliminal nor extrasensory primes produced an overall preference statistically significant at $p < .05$. Thus, we found no simple “mere exposure effects” (increased liking due to pre-exposure). Both mean scores were very close to MCE.

Effect of mood manipulation on mood. Mood scores were significantly more positive in the MIO condition than in the MIL condition, confirming the “psychodynamic activation effect”: ($t = 2.29$, p (1-tail) = .012, Cohen’s $d = .52$).

Relation between preference scores in response to extrasensory and subliminal pre-exposure. No relationship was found. The correlation was virtually nil: $r = -.004$. The hypothesis of a positive relationship was not confirmed.

Main and Interaction effects of stimulus-type, gender and mood manipulation. As expected, none of the main or interaction effects of these between- and within-participants variables were significantly different from chance.

Predictive relations with pictures subliminally pre-exposed. Of the eight variables predicted to affect the subliminal preference scores, Need for Cognition and Boredom-Proneness are significant in the predicted directions. The relationships with facets of NEO-PI Openness, Tolerance for Merger and Creativity are in the right direction but not significant. The relationship with Need for Structure is very slightly in the unpredicted direction.

In order to determine variables independently contributing significantly to the prediction, the two that yielded significant univariate tests were subjected to a multiple regression analysis with criterion for inclusion and exclusion set at .05, against the criterion of preference scores with subliminal pre-exposure. This resulted in the original r of .214 ($p = .03$) with only Need for Cognition being independently significant.

Predictive Relations with Pictures Extrasensorially Pre-Exposed. Of the 9 variables expected to predict response to extrasensory pre-exposure, 7 are significant at the level of .05 or lower, one is suggestively significant, and one is not significant, using 1-tailed tests. Positive relationships are found, as predicted, with Openness to Fantasy, Openness to Aesthetics, Openness to Feelings, Belief that ESP is Possible, and Tolerance for Merger. Negative relationships are found as predicted with Need for Structure, Anxiety (suggestive) and Vulnerability. Creativity showed a non-significant trend in the predicted direction.

The variables making independent predictions by multiple regression ($R = .507$, $p = .004$) are Openness to Fantasy ($p = .002$), Tolerance for Merger ($p = .02$), and Vulnerability (negatively: $p = .02$).

Table 1
Relations of Predictors to Subliminal scores

Predictor	Subliminal Pre-Exposure
Need for Cognition	.21**
Need for Structure	-.02
Boredom-Proneness	-.20**
Openness to Feelings	.04
Openness to Fantasy	.06
Openness to Esthetics	.10
Creative Activity	.11
Tolerance for Merger	.17

** $p < .05$, 1-tail

Table 2
Relations of Predictors to Preference scores with Extrasensory Pre-exposure

Predictor	Extrasensory Pre-exposure
Need for Structure	-.22**
Openness to Fantasy	.33***
Openness to Aesthetics	.20**
Openness to Feelings	.30***
Anxiety	.16*
Vulnerability	-.23**
Belief ESP Possible	.19**
Tolerance for Merger	.26**
Creative Pursuit	.11

* $p < .10$, 1-tail ** $p < .05$, 1-tail *** $p < .01$, 1-tail

Subliminal and extrasensory effects moderated by mood manipulation.

Moderation of mood conditions on relations with response to subliminal pre-exposure. A mixed picture emerges. Need for Cognition, which was significant for the overall sample, is slightly stronger in the MIO (more positive mood) condition. Boredom-Proneness was also significant overall, but this relationship was found to come mostly from the MIL condition (in the context of a more negative mood). Tolerance for Merger, which was not significant overall, is related to preferences in the condition facilitating a positive mood (MIO). The relationship with Need for Structure is marginally significant in the predicted direction in the MIL condition, but shows a trend toward a reversal in MIO.

Table 3

Relationships of Predictors with Subliminal Pre-exposure Scores as a Function of Mood Conditions

Predictor	MIO	MIL
Need for Cognition	.23*	.19
Need for Structure	-.24 (reversed)	.22*
Openness to Feelings	.12	-.04
Openness to Fantasy	.07	.01
Openness to Aesthetics	.09	.14
Boredom-Proneness	-.15	-.29**
Tolerance for Merger	.28**	.03
Creative Occupation	.14	.06

* $p < .10$, 1-tail ** $p < .05$, 1-tail *** $p < .01$, 1-tail

Moderation of relationships with extrasensory pre-exposure. The expectation of stronger predicted relationships in the MIO condition was strongly confirmed for preference scores in the extrasensory condition. Six correlations are statistically significant in the univariate analyses, and the other four are suggestively significant, all in the predicted directions.

In the MIL condition, four correlations drop to a suggestive level and the other six do not approach significance. In general, it may be that the measures of *liminality* (inner openness, tolerance for merger, ESP-possible and creative activity) are more effective when mood is positive. Measures of discomfort/anxiety seemed to be about equally effective in either mood.

Discussion of Study One

The failure to find an overall subliminal Mere Exposure Effect (a general preference for pre-exposed material) is not entirely surprising, since the literature reports other failures to replicate (e.g., Qian, et al., 2017). The relatively short period of delay between initial exposure and assessment of preferences may

have lessened the likelihood of obtaining a simple mere exposure effect, since longer delays have been found to lead to stronger effects (Bornstein, 1989). The failure to find simple overall effects of either subliminal or extrasensory exposure is not a disappointment in terms of FST, since we expected that responses to such exposures are most usefully thought of as bi-directional.

Table 4

Moderation of Mood Conditions on Relationships of Predictors of Response to Extrasensory Pre-exposure

Predictor	MIO	MIL
Openness to Fantasy	.40***	.26*
Openness to Feelings	.38***	.23*
Openness to Aesthetics	.35**	.02
Tolerance for Merger	.44***	.03
Belief ESP Possible	.31**	.05
Creative Pursuit	.21*	.06
Need for Structure	-.25*	-.23*
Anxiety	-.24*	-.14
Vulnerability	-.24*	-.24*

* $p < .10$, 1-tail ** $p < .05$, 1-tail *** $p < .01$, 1-tail

The failure to find a correlation between subliminal and extrasensory scores may suggest that the relatively long exposure times used in the study may not adequately represent the “deeply subliminal” studies reviewed by Schmeidler (1986) or that implicit measures may not follow the same patterns as those with target-identification tasks. It may also be that this within-Ps design, which explicitly presented all participants with both subliminal and extrasensory material, and featured the extrasensory element especially in advertisement, inadvertently pitted one source of information against the other, and this rendered them meaningfully non-equivalent in the estimation of the participants (Rao, 1965).

The correlational findings of Study One, particularly in regard to extrasensory effects, were taken as strong enough to warrant further exploration. We undertook a second study primarily to see if these findings could be confirmed in new data.

Study Two

Participants

Ninety- four participants took part. Seventy-two were undergraduate students at Liverpool Hope

University who earned course credit for participating, and 22 were volunteers at the Rhine Research Center in Durham, NC. Seventy-five Ps self-identified as female. Ages ranged from 18 to 68, with a mean of 31.5 and a mode of 19. Data collection ended by pre-agreement when a given semester ended at Liverpool Hope.

Procedure

Most details of procedure were identical to those in Study One. The following things were different:

1. The messages designed to influence mood (MIO and MIL) were randomly presented to each participant five times as before, but in Study Two they were presented in fully blocked, extrasensory mode, rather than subliminally. We wanted to see if these messages could influence mood through an extrasensory “exposure” as well as through a subliminal exposure.
2. Pictures from the IAPS were used again as subliminal and extrasensory targets and controls. Twenty-four matched pairs of positive pictures were drawn from the 50 pairs used in Study One. Twenty-four additional matched pairs that were relatively unpleasant (bottom 35 % in terms of IAPS valence ratings) were also included for exploratory purposes.⁵ Since Study Two was mainly intended as a replication for Study One, which used only positive pictures, these negative targets will not be discussed further in this report.
3. For each session, 12 of each set of positive pairs were selected randomly and automatically to be used as extrasensory exposure and controls, and the other 12 pairs were selected for subliminal exposure and controls. In addition, six, or half of each set were selected to have human content (whole figures, faces and other parts of persons) and half had non-human content (objects, animals, landscapes). Human content is expected to be generally more salient than non-human content, so it is expected to more clearly express scoring effects. As before, for each P the subliminal pictures were flashed and then masked 5 times each, one of the Mommy messages was flashed (and completely blocked) five times, and the ESP targets were flashed (blocked) and masked once each. Order of picture valence, human vs. non-human content, type of presentation (subliminal or extrasensory), and individual picture selection were determined randomly for each P using the E-Prime random function, which samples the computer’s internal clock.

Measures

Dependent Variables. Extrasensory and subliminal preference scores were calculated as before, except that with the smaller number of pictures presented, MCE was 12. For the positive-valence and negative-valence subsets, MCE was 6. And for the human and non-human subsets of each, MCE was 3.

Mood was measured as before, by ratings of Ps’ early memories carried out by the rater used in Study 1.

Independent Variables. Independent variables were the same as those used in Study One, with one partial exception. The factor of the Boundary Questionnaire used in Study One depended upon the

⁵ Previous research has indicated that subliminal ME effects with negatively-valenced stimuli may tend to be either less robust (William, 2003) or reversed in direction (Young & Claypool, 2010), so their inclusion here was purely exploratory.

factor analysis of that set of responses. We planned to conduct a new factor analysis on the new data, with the expectation that similar factors would emerge. However, we found that in the new data the factor structure was not closely duplicated. Because of this we approximated this factor (Tolerance for Merger) by summing responses to the items that were significantly loaded on it in Study One.

Analyses in Study Two focused on variables that had been found to be significant predictors in Study One. Our primary analyses involved the composite variables determined by multiple regression from the data of Study One. To obtain a complete picture, in addition to these composite predictors, we also planned to test the replication of all predicted variables in Study One that were found to show significant univariate relationships. One-tailed p values were used to test all univariate hypotheses.

Hypotheses

1. Mood will be more positive in the extrasensory MIO condition than in the MIL condition.
2. We did not expect to find overall preference effects with either subliminal or extrasensory exposure, and we did not expect that the extrasensory pre-exposure and the subliminal pre-exposure scores would significantly correlate with each other.
3. All of our hypotheses in regard to extrasensory and subliminal preference scores involved positive-valence pictures only, and are divided into primary and secondary expectations. Primary expectations involved the regression solutions in Study One, secondary expectations involved all variables that showed significant univariate relationships to preference scores in Study One.
 - a. The primary prediction for subliminal scores is that they should vary as a function of Need for Cognition. This relationship is not expected to be moderated by participant mood, but we thought (on theoretical grounds) that it would be stronger for human pictures.
 - b. The secondary predictions regarding subliminal scores for participants with more positive mood was that scores should vary as a function of Need for Cognition, and Tolerance for Merger.
 - c. In regard to participants with more negative mood, preference scores following subliminal pre-exposure should be predicted by Need for Structure and Boredom Proneness (negatively).
 - d. The primary prediction for preference scores following extrasensory exposure was that they should be predicted by a weighted combination of Openness to Fantasy, Tolerance for Merger, and Vulnerability (negative). We also predicted that this relationship would be stronger when Ps are in a positive mood, and when human pictures are involved.
 - e. The secondary predictions for both mood groups pooled, are that preference scores with extrasensory pre-exposure should vary as a function of Openness to Fantasy, Openness to Esthetics, Openness to Feelings, Belief ESP possible, Tolerance for Merger, Need for Structure (negative), and Vulnerability (negative). We expected these relationships to be stronger with human pictures.
 - f. In the positive mood group, extrasensory scores were expected to be more strongly predicted by several variables, and relationships were expected with Openness to Fantasy, Openness to Feelings, Openness to Esthetics, Tolerance for Merger, Creative Occupation, Belief

ESP Possible, Need for Structure (negative), and Vulnerability (negative). All of these were expected to be stronger with human pictures.

- g. In the negative mood group, extrasensory scores were expected to be less strongly predicted, and relationships were expected with Openness to Fantasy, Openness to Feelings, Need for Structure (negative), and Vulnerability (negative). We expected stronger relationships with human content.

Results

Mood manipulation. The extrasensory presentation of MIO and MIL statements did not influence the mood of participants ($t = -1.04, p = .30, d = .22$). Because of this failure of our manipulation to affect mood, we divided the mood scores into positive (42 cases) and negative (30 cases) groups, omitting 16 cases rated neither positive nor negative. This grouping was used for analyses comparing positive and negative mood groups.

Main and Interaction Effects of Mood Manipulation, Type of Exposure and Picture Content (Human/Non-Human) upon Picture Preference Scores. ANOVA of preference scores with the between-participant variable of Mood and the within-participants variables of Content (human or non-human) and Exposure (sensory or extrasensory) did not yield any significant main or interaction effects.

Overall preference effects. As reported above with ANOVA, no overall effects were found for either type of exposure, repeating the negative results of Study 1. Both mean preference scores were very close to chance expectation. The correlation between the two was virtually nil: $r = .01$.

Prediction of response to subliminal pre-exposure. The primary prediction was that scores would be predicted by Need for Cognition (the only variable emerging from multiple regression analysis). We expected that it might be most effective in predicting response to human pictures but not superior with positive mood. Results are all non-significant, as given in Table 5.

The secondary predictions involved other variables that had significant univariate relationships in Study One, when moods were positive and negative. All results are non-significant, as given in Table 6.

Table 5

Correlations of Subliminal Scores and Best Predictor of Study 1 (Need for Cognition)

All Cases N = 92	Positive Mood N = 42	Negative Mood N = 29	Human Content N = 92	Non-Human Content N = 92
-.11	-.14	-.13	-.13	-.04

Table 6*Subliminal Scores as Predicted by Significant Variables in Study 1*

	All Cases	Positive Mood	Negative Mood
Tolerance for Merger	-.113	.079	-.312
Need for Structure	.044	XXX	-.122
Boredom-Proneness	.106	.119	.230

Prediction of Extrasensory Pre-Exposure Effect. The primary prediction was that preference scores for ESP pre-exposed pictures would be predicted by the composite variable composed of Openness to Fantasy, Tolerance for Merger, and Vulnerability. We also expected that this prediction would work best when mood is good and when human picture content is involved. Results were nicely confirming. See Table 7.

Table 7*Prediction of Extrasensory Pre-Exposure Effect by Composite Variable Drawn from Study 1*

	ALL CASES N=92	POSITIVE MOOD N = 41	NEGATIVE MOOD N = 30	HUMAN PICTURES N=92	NON-HUMAN PICTURES N = 92
<i>r</i>	.29	.38	.23	.34	.05
<i>p</i> 1-tail	.003	.007	.11	.0005	NS

In order to clarify the differences found, we carried out an ANOVA of ESP preference scores with mood, picture content and the composite predictor as a dummy variable as independent variables. The main effect of the composite variable was confirmed, but no interactions were significant. Therefore, we can say that the observed effect came primarily from the positive mood group and on human content, but the differences in relationship strength between the levels of mood and content were not significant.

The secondary predictions for extrasensory scores for all moods combined were positive relationships with Openness to Fantasy, Openness to Esthetics, Openness to Feelings, Belief ESP Possible, and Tolerance for Merger, and negative relationships with Need for Structure and Vulnerability. Relationships were expected to be stronger with human content. Results are given in Table 8.

With human/not-human content pooled, significant relationships were found with Openness to Feelings, Openness to Fantasy, Belief ESP Possible, and Tolerance for Merger. Trends in the predicted direction ($p < .10$) were found for Openness to Esthetics and Creative Occupation. Vulnerability and Need for Structure showed no relation. Relationships were generally stronger when only pictures with human content are considered: All relationships significant with pooled groups were more strongly so, Need

for Structure now showed the predicted negative relationship, Creative pursuit is nearly significant, and Vulnerability showed a trend in the predicted direction. With non-human pictures, only Openness to Feelings gave a significant effect, Tolerance for Merger showed a trend, and Need for Structure showed a positive (opposite to prediction) relationship that would be significant with a two-tailed test ($p = .028$).

Table 8

Relationships Between Predictor Variables and Extrasensory Scores for Both Mood Groups Pooled

	ALL PICTURES	HUMAN	NON-HUMAN
OPENNESS TO FANTASY	.22 $P = .02$	.24 $P = .01$	.05
OPENNESS TO ESTHETICS	.15 $P = .07$	.19 $P = .03$	.01
OPENNESS TO FEELINGS	.27 $P = .005$	.12 $P = .03$	.24 $P = .01$
BELIEF ESP POSSIBLE	.22 $P = .02$	.21 $P = .02$	.08
CREATIVE OCCUPATION	.13 $P = .10$	.16 $P = .06$	.02
TOLERANCE MERGER	.25 $P = .009$	.18 $P = .04$	.15 $P = .07$
NEED FOR -STRUCTURE (-)	-.03	-.26 $P = .006$	.23 (reverse)
VULNERABILITY (-)	-.02	-.14 $P = .09$	.12

Secondary predictions for participants in positive moods were positive relationships with all three Openness facets, Tolerance for Merger, Belief ESP Possible, and Creative Pursuit, and negative relations with Need for Structure and Vulnerability. Weaker relationships were expected for the negative mood group, with significance expected only for Openness to Fantasy, Openness to Feelings, Need for Structure and Vulnerability.

Results are given in Table 9. Participants in a positive mood showed significant relationships with the 3 facets of Openness, and a trend with Tolerance for Merger. Those with negative moods showed significant relationships with Tolerance for Merger.

One final analysis was carried out *post hoc* to obviate concerns about over-analysis of data using non-orthogonal variables. Extrasensory scores, pooled across levels of Content and Mood, were analyzed with the variables in Table 8, using stepwise multiple regression, as was done in Study One, to find the most efficient composite predictor using only variables contributing independently to the prediction. In this case, the variables of Openness to Feelings, Belief ESP Possible, and Tolerance for Merger were included, with the multiple *R* against the criterion of .42.

Table 9

Relationships Between Predictors and Extrasensory Scores for Positive and Negative Mood Groups

	Positive Mood <i>n</i> = 42	Negative Mood <i>n</i> = 30
Openness to Fantasy	.37***	.23
Openness to Esthetics	.28**	.16
Openness to Feelings	.51****	.02
ESP Possible	.13	.16
Creative Occupation	.18	.05
Tolerance Merger	.24*	.36**
Need for Structure	-.10	.07
Vulnerability	.04	.18

p*<.10, 1-tail *p*<.05, 1-tail ****p*<.01, 1-tail *****p*<.0005, 1-tail

General Discussion

We have been investigating processes of unconscious thought and the contributions that extrasensory and subliminal considerations make to those processes. Neither source of influence had a consistent effect upon our participants in these studies to the point that they would show an overall tendency to like less or like more the material to which they were pre-exposed subliminally or extrasensorially. However, some clusters of attitudes and emotional considerations were identified that moderated the directions in which participants took those influences. We succeeded better in predicting extrasensory than subliminal influence. This might appear to be an ironic finding to anyone who considers ESP to be even more preposterously unlikely than subliminal perception, but it is the finding that we have.

Pre-exposing participants to the subliminal *suggestion* (content blocked, i.e., extrasensory) of a picture appears to influence their subsequent tendency to like or dislike that material when it is seen again. The influence is bidirectional, sometimes assimilative and sometimes disassimilative. If persons are particularly open to their fantasies and feelings, if they believe that extrasensory perception is a valid source of information, if they are comfortable with intense closeness with other people, and if they

are characteristically interested in their internal liminal processes, then the influence tends to be a positive one – they like the material a bit more than they would if they had not been unknowingly exposed to the suggestion of its presence. If they are not open to their feelings and fantasies, if they believe that extrasensory perception is impossible, if they dislike being too close to others, and if they have no interest in their potentially creative inner processes, then they will tend – not to simply ignore – but to relatively dislike the material that has been suggested to them extrasensorially. Presumably these processes go on in everyday life continually, or they could not have been captured in our laboratories. The fact that positive mood and more meaningful content generally potentiate these influences shows how contextually subtle and complex unconscious thought is. Both the composite measure and the general attitudes of openness as measured by the NEO-PI are more discriminative when mood is positive and extrasensory information is more salient. In a more negative state, or with less important content, these attitudes fade in importance as unconscious thought presumably shrinks its consideration to matters closer to sensory experience and conscious concerns. If the patterns found here prove to be reliable in new data, we will be learning interesting things about how unconscious thinking shifts its criteria by which to employ extrasensory information depending upon emotional state, disposition and relevance of information.

FST predicts that more personally relevant information will be more strongly considered for assimilation/disassimilation than less relevant information. As highly social creatures, human information should be generally more salient for us than non-human information, and we did find that our primary predictor (the composite drawn from Study One) and most of the individual predictors as well, were more effective in predicting the expression of human content than non-human.

We failed to confirm some initial hypotheses. Based upon prior research, we expected to find a simple Mere Exposure Effect using subliminal exposures. Extrasensory “exposure” of the “mommy” stimuli did not influence mood as subliminal exposures had done previously. Subliminal scores and extrasensory scores did not correlate positively as found by Schmeidler (1986).

Failing to find an overall subliminal Mere Exposure Effect in either study may be attributable to the relatively short period of time elapsing between subliminal exposure and test (Bornstein, 1989), or it may have to do with the priming provided by the information that the experiment involved both extrasensory and subliminal information which may have provoked a greater implicit interest in the extrasensory aspect. We did find that it is useful to think of the subliminal Mere Exposure Effect as bidirectional, as FST suggests. This helps us understand why (as in Study One) subliminal priming did not merely fail to elicit greater liking for participants low in need for cognition, but moved them toward avoidance of the information.

We do not know why the extrasensory suggestion of the “mommy” messages in Study Two did not influence mood the way subliminal presentation did in Study One. It may be that unconscious thought selectively expresses mood-evoking information more if it promises to be more imminently actual – and a subliminal stimulus is closer to an actual developing event than is an extrasensory one. In general, this would imply that a basic hypothesis of FST – that subliminal and extrasensory information should be processed in similar ways – needs to be refined. It appears that sometimes in a given situation they

will be handled differently. Of course, this is also implied by our finding that different moderating variables influence their expression. If an internal contrast effect is to blame for this failure this could be determined by further research using a between-participants design that exposes participants to either subliminal or extrasensory information but not both.

The failure of subliminal and extrasensory scores to be correlated may stem from the fact that a relatively long exposure time (.1 sec) was used. This level of exposure is at the upper limit between the set of studies reviewed by Schmeidler (1986) that she defined as “deeply subliminal” as opposed to “marginally subliminal.” She noted a tendency toward positive correlation in the former group and negative correlation in the latter. Further study using shorter exposure times is needed. Perhaps the best paradigm would use “objective thresholds,” in which the exposure is so brief that not even a flicker can be discerned above chance expectation (Snodgrass, 2001, 2006).

A weakness of this study is the *ad hoc* nature of Tolerance for Merger, drawn from Boundary Proneness items. If the construct is as important as our results suggest, it would be worthwhile to develop a psychometrically adequate measure of it, perhaps building upon the items found here.

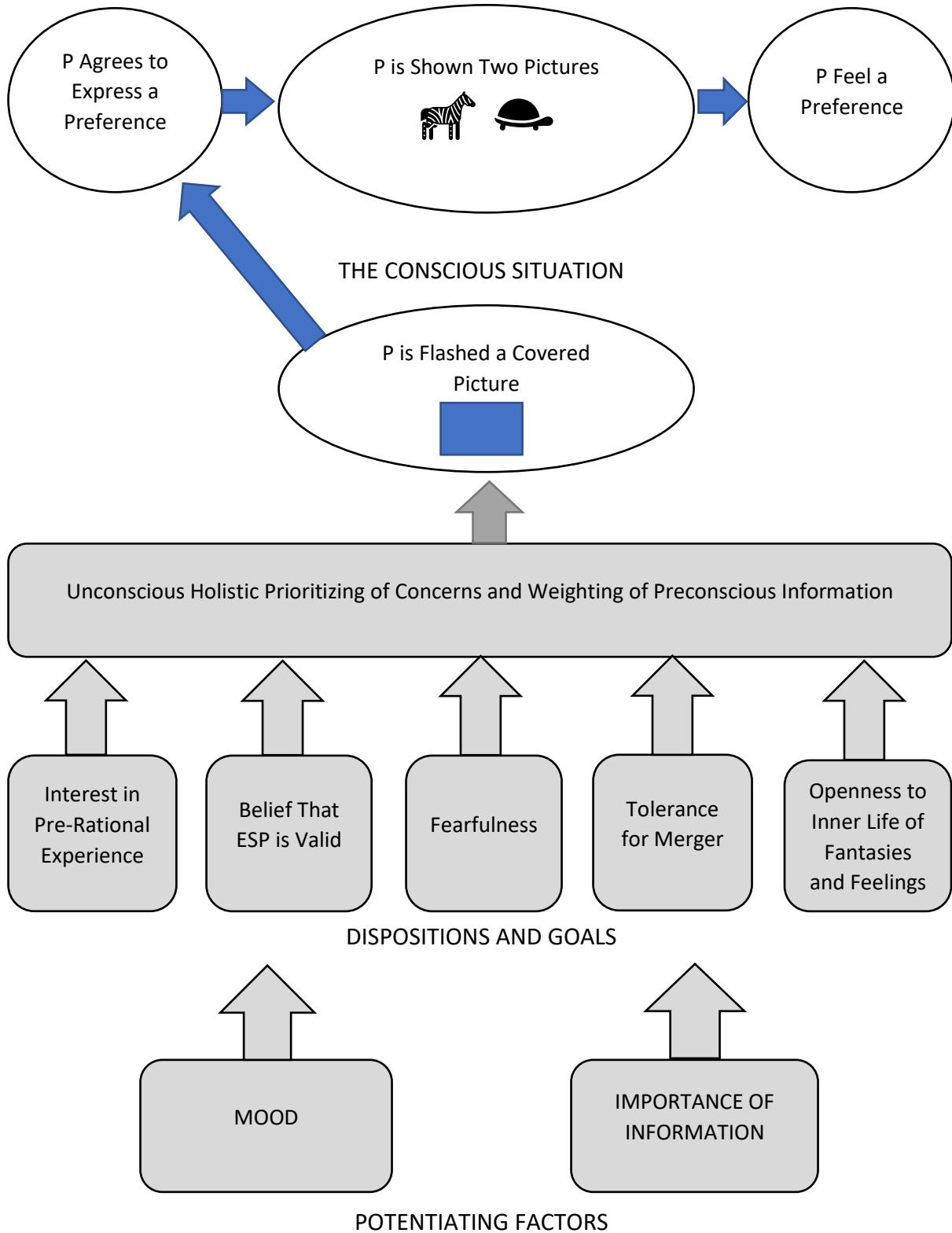
Overview

We are working toward a model for the place of extrasensory and other unconscious information in the processes of unconscious thought by which we produce our behavior and our experience. The following Figure 1 sketches a preliminary picture of this complex, contextualized process. It presumes that our unconscious thinking is always purposive, and that the purposes that are regnant at any moment have been called up by many things, including dispositional attitudes, and suggestions present in the situation, and that one’s emotional posture, or mood, in the moment makes all of those things more or less operative. And finally, it seems that the information being accessed by psi must be sufficiently meaningful and important for it to be selected, processed and expressed at all.

The top level of Figure 1 represents the situation as our participants consciously experienced it. After watching ambiguous flashes of light and abstract patterns on a monitor for a while, they were asked to provide a personal early memory and then asked to express a preference between pictures in all pairs that were then presented. They consented, then worked through the pairs, selecting pictures that seemed somewhat more pleasing than their companions and expressing each preference with a key stroke. That is all. The situation was more complex for the experimenters, who had contrived a set of things intended to unconsciously sway those preferences and predict the ways in which they would be swayed. Considering only the extrasensory aspect of the situation, participants were exposed to brief flashes of opaque rectangles that completely covered pictures that were present beneath them. Some of the pictures had human content and some did not. Early memories were used to assess momentary mood and responses were gathered to a series of questions, that placed participants on scales that theory and previous research suggest should predict the direction of response to the extrasensory information – whether it would be included positively or negatively in the experience of liking to be aroused by the pictures.

Figure 1

The Implicit Development of a Preference between Stimuli, as Mediated by Dispositional Goals in the Context of Mood and Importance of Extrasensory Information



The experimenters expected that an open and receptive mood would potentiate unconscious goals about making access to unconscious information and the participant would express those goals by directing unconscious interest accordingly. For example, someone more typically open to the inner life of feelings would turn positively to subtle indications of emotional material, whereas someone characteristically inclined to not consult such things would turn with a negative interest to that material. The positive and receptive mood would implicitly encourage the participant to express such proclivities more strongly. The experimenters also expected that more salient extrasensory information would be more strongly attended to unconsciously than less salient information and be more likely to show the effects of personal proclivities toward inclusion or exclusion.

We are in a raw beginning place in this elucidation of unconscious thought and the place of extrasensory processes within it. We are encouraged with the evidence that we have so far that extrasensory processes do have an ongoing and meaningful, though consciously invisible, place in our most intimate and commonplace psychological functioning.

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La PES Contribue à la Formation Inconsciente des Préférences

Résumé: La théorie du premier regard (FST) propose que la PES est un processus inconscient continu qui contribue à toutes les expériences communes, telles que les jugements, les perceptions et les sensations. Pour tester ce point, nous avons mené deux expérimentations examinant l'expression implicite d'information perçue extra-sensoriellement dans des évaluations de préférence pour des images, modérées par plusieurs variables spécifiées par la FST. Les études tentent également de démontrer l'influence d'information inconsciente (extrasensorielle ou subliminale) sur l'humeur, et l'influence subséquente de l'humeur sur l'orientation générale d'une personne envers les influences inconscientes, dont le psi. Dans la première étude, les variables incluent 3 facettes d'ouverture et 2 facettes d'anxiété du NEO-PI, l'implication dans une activité créative, la croyance dans la possibilité de la PES, la tolérance pour les tâches déstructurées, et une mesure de la tolérance pour les fusions interpersonnelles. L'humeur était mesurée indirectement par la valence de souvenirs autobiographiques précoces. La plupart des variables furent reliées aux influences PES conformément aux prédictions, et les relations tendaient à être plus fortes lorsque l'humeur était positive. De multiples régressions étaient utilisées pour condenser ces découvertes dans un cluster de variables orthogonales dont on pourrait s'attendre à ce qu'il soit plus fiable. La seconde étude testait cette variable composite dans un nouvel échantillon et la validait significativement. A nouveau, les relations étaient plus fortes lorsque l'humeur était meilleure. Nous avons également prédit que ces relations devraient être plus fortes lorsque l'information est de plus grande pertinence personnelle – des images avec des contenus humains vs non-humains – et cela fut également confirmé. Chaque étude examinait également l'effet de la stimulation subliminale sur les autres essais de préférence (les participants ne pouvaient pas distinguer les essais extrasensoriels et subliminaux) et examinait le pouvoir des variables trouvées dans la recherche précédente pour prédire la réaction subliminale. La première étude a trouvé une validation limitée pour les prédictions subliminales, et la seconde étude n'a trouvé aucune validation pour elles. Les humeurs des participants étaient influencées par les indices subliminaux de fusion dans la première étude, mais elles n'étaient pas influencées par les stimuli extrasensoriels comparables dans la seconde. Les réactions aux images extrasensorielles et subliminales

Der Beitrag von ASW zur Unbewussten Bildung von Präferenzen

Zusammenfassung: Die First Sight Theory (FST) [Theorie zum Ersten Gesicht] geht davon aus, dass ASW ein permanenter unbewusster Prozess ist, der zu allen alltäglichen Erfahrungen, wie Urteilen, Wahrnehmungen und Gefühlen beiträgt. Um dies zu prüfen, führten wir zwei Experimente durch, die den implizite Ausdruck von ASW-Informationen bei Präferenzbewertungen von Bildern untersuchten, moderiert durch mehrere von der FST spezifizierte Variablen. Die Studien versuchten auch, den Einfluss unbewusster Informationen (außersinnlich und unterschwellig) auf die Stimmung und den anschließenden Einfluss der Stimmung auf die allgemeine Orientierung einer Person gegenüber unbewussten Einflüssen, einschließlich Psi, aufzuzeigen. In der ersten Studie umfassten die Variablen 3 Facetten der Offenheit und 2 Facetten der Ängstlichkeit aus dem NEO-PI, die Beschäftigung mit einer kreativen Tätigkeit, der Glaube, dass ASW möglich ist, die Toleranz für unstrukturierte Tätigkeiten sowie ein Maß für die Toleranz gegenüber zwischenmenschlichen Verschmelzungserlebnissen. Die Stimmung wurde indirekt durch die Bedeutung früher autobiographischer Erinnerungen gemessen. Die meisten Variablen standen, wie vorhergesagt, mit dem Einfluss von ASW in Verbindung, und die Zusammenhänge waren tendenziell stärker, wenn die Stimmung positiv war. Mittels multipler Regression wurden diese Befunde zu einem Cluster orthogonaler Variablen verdichtet, von denen erwartet werden konnte, dass sie am reliabelsten sind. Die zweite Studie überprüfte diese zusammengesetzte Variable an einer neuen Stichprobe und validierte sie signifikant. Wieder waren die Zusammenhänge stärker, wenn die Stimmung besser war. Wir sagten auch voraus, dass die Zusammenhänge stärker waren, wenn die Informationen von größerer persönlicher Relevanz waren - Bilder mit Bezug zu Menschen vs. solche ohne diesen Bezug - und auch dies wurde bestätigt. Jede Studie untersuchte auch die Auswirkung der unterschweligen Stimulation auf andere Präferenzversuche (die Teilnehmer konnten nicht zwischen außersinnlichen und unterschweligen Versuchen unterscheiden) und untersuchte die Wirkung von Variablen, die in früheren Untersuchungen zur Vorhersage der unterschweligen Reaktion gefunden wurden. Die erste Studie ergab eine begrenzte Validierung für die subliminalen Vorhersagen, und die zweite Studie fand keine Validierung für sie. Die Stimmungen der Teilnehmer wurden in der ersten Studie durch unterschwellige Hinweise auf eine Verschmelzung beeinflusst, aber sie wurden in der zweiten Studie nicht durch vergleichbare außersinnliche Reize beeinflusst. Die Reaktionen auf außersinnlich präexponierte und unterschwellig präexponierte Bilder waren in beiden Studien nicht miteinander korreliert.

La PES Contribuye a la Formación Inconsciente de Preferencias

Resumen: La Teoría de la Visión Primera, (*First Sight Theory* - FST, por sus siglas en inglés) propone que la percepción extrasensorial (PES) es un proceso inconsciente continuo que contribuye a todas las experiencias comunes, como los juicios, percepciones y sentimientos. Para probar esto, llevamos a cabo dos experimentos para examinar la expresión implícita de la información de la PES en el índice de preferencia de imágenes, moderada por diversas variables especificadas por la FST. Estos estudios también intentan demostrar la influencia de la información inconsciente (extrasensorial y subliminal) sobre el estado de ánimo y, subsecuentemente, la influencia del estado de ánimo sobre la orientación general de una persona hacia las influencias inconscientes, incluyendo los fenómenos psi. En el primer estudio, las variables incluyeron 3 facetas de *Apertura a la Experiencia* y 2 facetas de *Neuroticismo* del

NEO-PI, involucro en actividades creativas, creencia en la posibilidad de la PES, tolerancia a las tareas no estructuradas, y tolerancia ante la unificación interpersonal. El estado de ánimo se midió, implícitamente, mediante la valencia del primer recuerdo autobiográfico. La mayoría de las variables tuvieron una relación con la influencia de la PES como se predijo, y estas relaciones tendieron a ser más fuertes cuando el estado de ánimo era positivo. Se utilizó la regresión múltiple para sintetizar estos hallazgos en un grupo de variables ortogonales que, cabría esperar, fueran las más confiables. El segundo estudio probó esta variable compuesta en una nueva muestra, y fue validada de manera significativa. Una vez más, las relaciones fueron más fuertes cuando el estado de ánimo era positivo. También predijimos que las relaciones deberían ser más fuertes cuando la información tuviera una relevancia personal mayor – ej. imágenes con contenido humano versus sin contenido humano – y esto también fue confirmado. Cada estudio también comparó el efecto de los ensayos con estimulación subliminal versus los otros ensayos (los participantes no pudieron distinguir entre los ensayos extrasensoriales y los subliminales), y el poder de las variables encontradas en investigaciones previas para predecir una respuesta subliminal. El primer estudio encontró una validación limitada para las predicciones subliminales, y el segundo estudio no encontró ninguna validación para ellas. Los estados de ánimo de los participantes fueron influenciados por señales subliminales de unificación interpersonal en el primer estudio, pero no fueron influenciados por estímulos extrasensoriales en el segundo. No hubo correlaciones significativas en ninguno de los estudios entre las respuestas ante imágenes extrasensorial y subliminalmente reexpuestas.

The Ghostly Character of Childhood Imaginary Companions: An Empirical Study of Online Accounts

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Abstract: Reports of childhood imaginary companions (IC) sometimes contain “creepy or spooky” perceptions or themes that suggest such occurrences could be overlooked or disguised forms of a “ghostly episode” or “entity encounter experience.” This idea was explored via a content analysis of vetted narratives from the Reddit website involving ICs with haunt-type features ($n = 143$). We tested whether the phenomenology of these experiences: (a) show an “Age \times Gender \times Anxiety” effect consistent with the assumed psychology of focus persons in poltergeist-like experiences; (b) map to Houran et al.’s (2019b) Rasch hierarchy of anomalies associated with ghostly episodes per the Survey of Strange Events (SSE); and (c) correspond to a specific type of “haunt condition” (i.e., spontaneous, primed, lifestyle, fantasy, or illicit). Results indicated that ICs attributed to “ghosts” corresponded to higher SSE scores. Experiencers’ gender and inferred anxiety likewise showed significant and positive associations with SSE scores. Finally, the SSE features of ghostly IC experiences most strongly correlated to the phenomenologies of “spontaneous” and “induced” haunt conditions as reported in Houran et al. (2019b). We discuss the results in terms of some ICs being anomalous or exceptional human experiences that might require approaches beyond developmental and clinical psychology to understand fully their contents, structure, and ultimate nature.

Keywords: content analysis, ghost, imaginary companion, encounter experiences, phenomenology

A news article by journalist Rosemary Counter (2019) explored an intriguing question, “Why do so many kids ‘see ghosts?’” (para. 1). The literature indeed contains many accounts of children and putative psi experiences (Drewes & Drucker, 1991; Drucker, Drewes, & Krippner, 2001), including apparitional encounters (Bielski, 2010; Houran, 2004). In fact, an entire class of anomalous experiences — poltergeist disturbances — are traditionally characterized as displays of “recurrent spontaneous psychokinesis” (RSPK) that focus on the presence of particular adolescents (notably girls) who are presumably relieving or expressing some type of anxiety (for a critical analysis of these assumptions, see Ventola et al., 2019). However, Counter’s write-up downplayed paranormal interpretations in favor of the idea that children’s “ghostly episodes” (i.e., apparitions, haunts, and poltergeists) are relevant to, if not directly parallel to, the psychological phenomenon of *imaginary companions* (IC).

Also called “pretend” or “imaginary friends,” ICs are defined simply as invisible characters with

whom children converse and interact (Svendsen, 1934; Taylor, 1999; Taylor et al., 2004; Vostrovsky, 1895). These characters have an air of reality to the child but seemingly lack an objective basis. Additionally, for many young children they are a meaningful and stable aspect of their daily lives with well-defined personalities and physical appearances (for a review, see: Armah & Landers-Potts, 2021). Clinical authorities initially believed that ICs correlated with psychopathology or were used as a coping mechanism for mental illness, dementia, or abuse (Klausen & Passman, 2007; Lydon, 2011). Klausen and Passman (2007) further explained that supernatural explanations for ICs were extremely common in the early 20th century and even persist to this day (see, e.g., Hallowell, 2007). This agrees with Armah and Landers-Potts' (2021) finding that ICs are sometimes reported to have special powers, extraordinary appearances (including animals, angels, or ghosts), and the ability to speak to children. In fact, Taylor (2003) reported that 5% of ICs documented across her research surveys were specifically personalized as “ghosts” by experiencers. This characterization carries loaded connotations of paranormal agency (Hill et al., 2018, 2019; Houran et al., 2020), which appear to be bolstered by anecdotal reports of ICs that seemingly “come alive” and behave in ways that correspond to Houran et al.'s (2019a, 2019b) set of subjective and objective anomalies that typify ghostly episodes (for an overview and discussion, see Little, Laythe, & Houran, 2021).

On this point, qualitative and quantitative studies alike indicate that outwardly disparate (*entity*) encounter experiences — e.g., spirits, angels, gods, demons, poltergeists, extraterrestrials, power animals, and folklore-type “little people” — often share similar narrative themes and structures (Evans, 1987, 2001; Houran, 2000; Hufford, 1982; Kumar & Pekala, 2001). In fact, Houran et al. (2019a, 2019b) have found that ghostly episodes can be reliably modelled as a probabilistic hierarchy of different types of encounter experiences. These patterns arguably suggest a “family tree” of systematically connected S/O anomalies that is rooted in a core process, but which can change its appearance with the sociocultural or situational context in which it manifests (Evans, 2001; Houran, 2000). Encounter experiences often can be induced via techniques that alter waking consciousness, e.g., psychedelics (Davis et al., 2020), transcranial magnetic stimulation (Persinger, Tiller, & Koren, 2000), trance and meditative states (Flor-Henry, Shapiro, & Sombrun, 2017), or facilitated exercises like mirror- and eye-gazing (Caputo, Lynn, & Houran, 2021), séance sessions (Laythe, Laythe, & Woodward, 2017), and sitter-group work (McClenon, 2018). But these occurrences are also known to happen unexpectedly or within everyday settings, and recent research in this respect suggests a link between ICs and “ghostly” encounter experiences.

Particularly, Little et al.'s (2021) quali-qualitative analysis identified important similarities between the general features of ICs and trends in the onset and contents of ghostly episodes (or encounter experiences) as derived primarily from our recent psychological studies. For example, ICs are often described using two sub-categories, *invisible friends* (IF) and *personified objects* (PO, i.e., imaginary beings embodied in toys or objects) (Moriguchi & Todo, 2018). These monikers echo the distinctions between *subjective* (S) versus *objective* (O) anomalies in ghostly episodes (for discussions, see Houran et al., 2019a, 2019b). More importantly, specific correspondences identified by Little et al. (2021) include the ostensible demographic and psychometric profile of percipient types (i.e., people across age spans and with high transliminality or “thin” mental boundaries), the likely role of anxiety or “dis-ease” (i.e., one's state of “ease” being imbalanced or disrupted) in spurring or sustaining both episodes via heightened transliminality, and the many overlapping contents of their respective experiences. These can involve sensing invisible “presences,” hearing audible voices, experiencing visions

with and without additional sensory stimuli, and communicating or interacting with entities that exhibit apparent volition.

Following the above, we aim to corroborate Little et al.'s (2021) conclusion that some childhood ICs are a variant of encounter experiences. We speculate that certain instances constitute an interesting hybrid between "spontaneous" and "induced" manifestations. That is, IC experiencers might unwittingly or knowingly possess an ability to generate such encounters (or ghostly episodes) virtually on demand, in naturalistic settings, and seemingly during normal waking states. We tested this idea via a thematic study of retrospective and open-access accounts of childhood ICs with haunt-type contents. Our specific goals were to explore whether such accounts: (a) show an Age \times Gender \times Anxiety interaction effect consistent with the presumed psychological profile of focus persons in poltergeist-like experiences, (b) have perceptual contents that reliably map to the set of S/O anomalies that define ghostly episodes, and (c) plainly correspond to a specific "haunt condition," i.e., an ordering of S/O anomalies that is distinctive either to "spontaneous, primed, lifestyle, fantasy, or illicit" narratives as defined below (cf. Houran et al., 2019b, pp. 174-175).

Method

Dataset

The ethics committee of the Institute for the Study of Religious and Anomalous Experience (I.S.R.A.E.) approved this study, which adhered to commonly accepted guidelines for internet research (e.g., British Psychological Society, 2017). Data derived from purportedly first-hand accounts that were voluntarily shared on the popular Reddit website — an open-access, social news aggregator. This forum contains a network of communities called "subreddits" based on people's interests. As of 2018, there were more than 330 million monthly active users of Reddit who were part of 1.2 million+ communities, with over 150,000 of these being active (Pardes, 2018). Reddit also currently ranks as the 19th-most-visited website in the United States and in the world (Alexa Internet, 2019), with 55% of its user base coming from the United States, followed by the United Kingdom at 7.4% and Canada at 5.8%. Accordingly, Shatz (2017, p. 537) characterized the website as a "fast, free and targeted" platform for recruiting participants online, and indeed these types of samples are commonly used in psychology for their ease of access and low cost (Jamnik & Lane, 2017; Pollet & Saxton, 2019). Consequently, many studies across the social and biomedical sciences have used Reddit to collect behavioral data (e.g., Adams, Artigiani, & Wish, 2019; Nunes & Filho, 2017; Pilkington & Rominov, 2017).

We sourced accounts via a keyword search using the terms: "imaginary friends," "paranormal imaginary friends," "creepy imaginary friends," "scary imaginary friends," "demonic imaginary friends," "angelic imaginary friends," and "imaginary friend tulpas." This was conducted from the Reddit main site (July 10th to 29th, 2020). We vetted the accounts matching these keywords by selecting only those from subreddits that mandated the stories be "true" in order to be posted. Thus, we deliberately avoided IC accounts that seemed to be fan fiction or literary descriptions. This process returned 150 initial written accounts that we qualitatively inspected for their relevance and details using a purposeful cri-

terion sampling strategy (Creswell, 2013), whereby all accounts in the dataset represented people who self-reported ICs with readily apparent “ghostly” contents or themes. We then excluded reports that referenced either (a) an admission of ongoing mental illness related to the experiences, or (b) duplicate accounts by different authors that we judged to be urban fiction. Our screening criteria yielded a total of 143 accounts for content analysis. This dataset represents a selective sample of ICs with potentially parapsychological qualities and thus is not a representative sample of childhood IC accounts. For illustrative purposes, the Appendix provides a sample account used in the present research.

Measures

(1). *Coding of Accounts.* To study qualitative data scientifically, content analysis is often used to simplify complex text-based information into quantifiable data suitable for standardized comparisons or statistical analyses (Krippendorff, 2013; Namey et al., 2008; Ryan & Bernard, 2000). Specifically, this method involves mapping some given qualitative data (i.e., text) into descriptive categories to understand the presence, meaning, and relationships among words, themes, or concepts. This approach has been used in prior IC studies (e.g., Seiffge-Krenke, 1997).

We assessed each IC experience for several demographic variables: *Gender* (Female; $n = 28$, Male; $n = 43$, Transgender; $n = 5$, unspecified; $n = 73$), *Age* (3 to 4, $n = 51$; 5 to 6, $n = 26$; 7 and older, $n = 22$; unspecified, $n = 41$), *Number of Additional Witnesses* to the reported events (individual only, $n = 70$; one additional witness, $n = 53$; two additional witnesses, $n = 17$; and unspecified, $n = 2$), *Religious Themes* present (e.g., accounts couched within a religious framework, $n = 23$), and *Religious Beliefs* expressed (i.e., the witness accounting personal religious beliefs intertwined within the account, $n = 13$). Our breakdown of the age brackets was admittedly not optimal, but it represents a limitation of the data. Particularly, age was easily referenceable within most early childhood accounts, but noticeably absent in accounts of pre-teen to teenage years. This fact did not allow us to distinctly code the age ranges for the teenage and young adult experiences.

The *Narrator* of the account also varied between an adult relating their own childhood IC experiences ($n = 102$) or a parent or relative giving a first-hand account of a child ($n = 40$). *Attribution* was also used to distinguish accounts described as normal IC experiences (i.e., a non-Ghost attribution, $n = 53$) as opposed to the belief that the child was interacting with some form of paranormal agency (i.e., a Ghost attribution, $n = 90$). The distinction between IC classification and paranormal agency was generally defined by SSE item endorsement, whereby accounts that only contained an IC entity (of any type which may or may not have been visually present) which engaged in communication with the child (with few to no other features or events) was defined as an IC, whereas ongoing phenomena experienced by the child and other individuals was coded as a “ghost” account.

From characteristics examined in Little et al. (2021) we also coded cases for “Transition” aspects, i.e., cases where initial childhood ICs led to ongoing haunt-type features representing 39 cases reported at later ages and for extended periods (27.6%). We also addressed Hoff’s (2005) concept of “deep vs shallow” ICs by coding “Agency,” i.e., ICs seemingly displaying independent agency or not, respectively. Seemingly “deep ICs” represented 130 cases (92%), or the bulk of the sample. Finally, we coded for

broad “Anxiety” by combing each account for clear indicators of distress, unease, or fear as a result of the IC experience relative to child experients of ICs (89 cases, or ~63%) and family members or witnesses to the ICs (90 cases, or ~63%). To minimize potential biases from the familiarity with other features of the IC narrative, the coders based their anxiety ratings solely on adjectives or signifiers that were independent from the SSE’s descriptions of S/O events, e.g., “negative feelings,” “unpleasant odors,” or “threatening touches.”

(2). The *Survey of Strange Events* (SSE: Houran et al., 2019b) was used to code the perceptual contents of the ICs. This is a 32-item, “true/false” Rasch (1960/1980) scaled measure of the overall “haunt intensity” (i.e., perceptual depth) of a ghostly account or narrative via a checklist of base *subjective* and *objective* (S/O) events or experiences inherent to these anomalous episodes. The SSE’s Rasch item hierarchy represents the probabilistic ordering of these S/O anomalies according to their endorsement rates but rescaled into a metric called “logits.” Higher logits denote higher positions (or greater rarity of occurrence) of events on the Rasch scale (Bond & Fox, 2015). Rasch-scaled scores range from 22.3 (= raw score of 0) to 90.9 (= raw score of 32), with a mean of 50, $SD = 10$, and a Rasch reliability = 0.87. Higher scores correspond to a greater *number* and *diversity* of anomalies that define the perceptual depth of a ghostly episode — basically analogous to the concept of “depth” in Greyson’s (1983, 1985, 1990) Near-Death Experience Scale. We refer readers to Houran et al. (2019a, 2019b) for details on the development of this instrument, as well as note that follow-up studies with the SSE back its value for content analyses of qualitative reports (Lange et al., 2020; O’Keeffe et al., 2019).

Supporting the SSE’s content and predictive validities, Houran et al. (2019b) found that the phenomenology (i.e., SSE score and associated hierarchy of S/O anomalies) of “spontaneous” accounts (i.e., ostensibly “sincere and unprimed”) differed significantly from four “control” narratives: (a) *Primed*, respondents who had anomalous experiences during commercial ghost tours, which are thus likely attributable to expectation or suggestion or clear-cut demand characteristics; (b) *Lifestyle*, respondents with active memberships in self-styled ghost-hunting or ghost-tour groups and thus likely under the influence of strong context effects like pervasive confirmation biases; (c) *Fantasy*, respondents with no prior ghostly experiences who merely imagined what a vivid and personal experience would be like; and (d) *Illlicit*, respondents with no prior ghostly experiences asked to concoct a bogus but seemingly convincing account. This slightly resembles the Fantasy group above, except that here, narratives would arguably cater more to social approval or cultural norms, especially as related to paranormal themes characterized in popular culture.

Procedure

For each written account, raters trained on the coding materials (BL & CL) documented the respective demographics and applicable perceptual contents and themes per the most relevant SSE items. These judgments were made collectively by an “expert panel” to maximize the accuracy of the final classifications (Bertens et al., 2013; Langfeldt, 2004). Generally speaking, the SSE items mapped effectively to the perceptual contents of the reported ICs. However, our method of classifying an IC as an “apparition” deserves more explanation.

The purported nature of the ICs varied wildly, and, in many cases, towards the macabre. To separate these accounts, any IC/ghost that was humanoid but with “monstrous or gory” features (i.e., undead looking) was coded as SSE item #11 (an “obvious apparition”). On the other hand, IC/ghost descriptions that were deemed to be regular-looking human beings were coded as SSE item #12 (an “alive-looking apparition”). IC/ghost accounts that directly referred to the entity as demonic were coded as SSE item #29 (“mystical-type beings,” e.g., angels or demons). Finally, accounts that referenced tiny individuals or smaller “spirits” were coded to SSE item #3 (“folklore-type entities”). To address the almost universal interaction of the percipient with the IC, any account that contained conversation or communication with an entity was coded as item #17 (“communication with the dead”).

Results

Descriptive Analyses

To our knowledge, no prior studies have assembled a dataset of ICs with haunt-type characteristics. We wanted therefore to provide a preliminary descriptive analysis to highlight the nature and circumstances of these reports. Table 1 gives means, standard deviations, and discrete probabilities for Narrator type (Adult vs. Guardian), Attribution type (IC vs. Ghost), and child-related IC ghost accounts, along with the original probabilities of the SSE reported by Houran et al. (2019b, pp. 173-174). While the IC accounts reliably mapped to items on the SSE, all four IC conditions noted above yielded below-average Rasch scaled scores (< 40) on the SSE. Thus, our sample of IC accounts showed a lower intensity of experiences compared to previously published norms for spontaneous haunts.

Moreover, t tests explored potential differences across Narrator type (Adult vs Guardian) or Attribution type (IC vs. Ghost). Results indicated there was no statistically significant ($t = .487, p = .627$) difference in SSE scores between Adult accounts ($M = 38.21$) and Guardian accounts ($M = 38.23$). Not surprisingly, experiences attributed to ICs ($M_{IC} = 37.33$) were significantly ($t = 2.329, p = .02$) lower in “haunt intensity” than accounts attributed to paranormal agencies ($M_{Ghost} = 38.94$). This was not unexpected, as the latter accounts often contained elements of “paranormal entities or communications.” These findings suggest that the Narrator type does not skew total SSE scaled scores, although accounts attributed to ICs showed significantly lower “haunt intensity” than accounts attributed to ghosts.

Transition, Agency, and Anxiety Effects on SSE Scores

To examine effects of Transition, Agency, and Anxiety on overall aggregate SSE scores, we conducted a dummy-coded regression that tested for mean differences. As shown in Table 2, the overall model was significant ($F = 11.25, p < .001$), with an adjusted R^2 of .23. Results also indicate significant differences in SSE scores from Transition cases and Non-Transition cases ($M_T = 41.25$ v $M_{NT} = 37.38; t = 4.024, p < .001$), as well as indications of Anxiety from the child experiencing the IC ($M_{ANX} = 39.78$ v $M_{NA} = 36.25, t = 3.75, p < .001$). Neither Agency nor family Anxiety differed significantly ($p > .05$).

Table 1.
Probabilities of SSE Items by Narrator and Attribution Type

Items	Original SSE			Conditions				
	Logit	Class	SSE	<i>n</i> = 102 ADULT	<i>n</i> = 40 PARENT	<i>n</i> = 53 IC	<i>n</i> = 90 GHOST	<i>n</i> = 143 TOTAL
1 Deja Vu	-1.65	C	0.839	0.000	0.000	0.000	0.000	0.000
2 Sensed Presence	-1.59	C	0.831	0.157	0.050	0.132	0.122	0.124
3 Unrecognizable Sound	-1.17	C	0.763	0.010	0.000	0.000	0.011	0.007
4 Cold Area	-0.8	C	0.690	0.029	0.000	0.000	0.033	0.021
5 Breeze	-0.73	C	0.675	0.000	0.025	0.000	0.011	0.007
6 Recognizable Sound	-0.62	C	0.650	0.157	0.250	0.094	0.233	0.179
7 Erratic Electronics	-0.62	C	0.650	0.069	0.100	0.038	0.100	0.076
8 Non-descript Visual Form	-0.62	C	0.650	0.078	0.100	0.038	0.111	0.083
9 Negative Feeling	-0.6	C	0.646	0.431	0.275	0.396	0.378	0.379
10 Non-hostile Touch	-0.55	C	0.634	0.020	0.050	0.057	0.011	0.028
11 Obvious Apparition	-0.51	LC	0.625	0.431	0.375	0.302	0.478	0.407
12 Alive-looking Apparition	-0.47	LC	0.615	0.402	0.300	0.170	0.489	0.366
13 Odd Body Sensations	-0.47	LC	0.615	0.088	0.025	0.113	0.044	0.069
14 Object Teleport	-0.1	LC	0.525	0.000	0.050	0.000	0.022	0.014
15 Object Movement	-0.05	LC	0.512	0.137	0.125	0.038	0.189	0.131
16 Recording of Image	-0.05	LC	0.512	0.020	0.000	0.019	0.011	0.014
17 Communication with Dead	0.03	LC	0.493	0.814	0.850	0.906	0.778	0.814
18 Pleasant Odor	0.04	LC	0.490	0.000	0.000	0.000	0.000	0.000
19 Positive Feeling	0.1	LC	0.475	0.235	0.175	0.245	0.200	0.214
20 Recording of Unrecognizable Sound	0.16	LC	0.460	0.000	0.000	0.000	0.000	0.000
21 Recording of Recognizable Sound	0.24	LC	0.440	0.010	0.000	0.019	0.000	0.007
22 Unpleasant Odor	0.42	LC	0.397	0.010	0.050	0.019	0.022	0.021
23 Threatening Touch	0.44	LC	0.392	0.127	0.050	0.094	0.111	0.103
24 Object Breakage	0.51	R	0.375	0.049	0.050	0.019	0.067	0.048
25 Object Levitation	0.65	R	0.343	0.010	0.050	0.000	0.033	0.021
26 Hot area	0.72	R	0.327	0.010	0.000	0.000	0.011	0.007
27 Possession	0.84	R	0.302	0.010	0.025	0.000	0.022	0.014
28 Plumbing Malfunctions	0.9	R	0.289	0.000	0.000	0.000	0.000	0.000
29 Mystical-type Beings	1.07	R	0.255	0.147	0.025	0.189	0.067	0.110
30 Taste	1.08	R	0.254	0.000	0.000	0.000	0.000	0.000
31 Folklore-type Beings	1.61	R	0.167	0.049	0.050	0.057	0.044	0.048
32 Fires	1.71	R	0.153	0.000	0.025	0.000	0.011	0.007
<i>Mean SSE converted score</i>				38.21	38.63	37.33	38.94	38.35
<i>Standard Deviation SSE converted score</i>				4.180	4.780	4.210	4.240	4.33

Notes: Scores after class represent percent probability of occurrence. ADULT = account given by adult about childhood.

PARENT = account given by caregiver about child.

IC = account given as standard imaginary companion.

GHOST = IC with believed features of ghost. TOTAL = total sample of study.

Testing the “Carrie Myth” of Poltergeists

Studies show that ghostly episodes tend to occur around certain individuals; an effect called “person focusing” (see e.g., Laythe, Houran, & Ventola, 2018; Roll, 1977). Ventola et al. (2019, p. 146) re-

Table 2.
Mean Regression of Transition, Agency, and Personal and Witness Anxiety on SSE Scores

	<i>Coefficients</i>	<i>S.E.</i>	<i>t</i>	<i>p</i>
Intercept	35.421	1.210	29.283	0.000
Transition	3.022	0.751	4.024	0.000
Agency	0.417	1.208	0.345	0.731
Anxiety: Personal	2.635	0.702	3.752	0.000
Anxiety: Witness	0.234	0.689	0.340	0.734

ferred to the traditional “Age × Gender × Anxiety” profile of focus persons in poltergeist-like cases as the “Carrie Myth” — an allusion to the title of author Stephen King’s (1977/2002) famous horror story about a shy, unpopular teenage girl who is sheltered by her domineering, religious mother, and subsequently unleashes her psychokinetic abilities after being humiliated by classmates at her senior prom. However, Ventola and colleagues (2019) presented conceptual and empirical evidence that this “repressed teen” characterization was more a cultural meme than a well-specified scientific model. The present data likewise allowed us to further scrutinize this presumed psychology of focus persons.

Specifically, we performed an ANOVA on SSE scaled scores only with cases where both Age and Gender were clearly indicated ($n = 43$), and further inserted Age × Gender, Age × Anxiety, and Age × Gender × Anxiety interactions terms, representing a 2 (“age 3 to 6” vs. “7 or older”) by 2 (“male vs. female”) by 2 (“anxiety vs no anxiety”) ANOVA design. We emphasize for clarity that the sample size was small, so the results should be regarded only as suggestive. As shown in Table 3, the main effects of Age were non-significant ($(1, 38), F = 0.031, ns$). Anxiety approached significance (M 's = 37.57 vs. 39.94; $(1, 38) F = 3.157, p = .083$) indicating a trend towards higher SSE scores in the Anxiety-indicated sample. Finally, there was a significant main effect for Gender (male = 37.57 vs. 39.94; female $(1,38), F = 4.430, p = .042$), whereby females scored higher on the SSE than the males. However, all interaction terms were non-significant (p 's > .58 in all cases).

Table 3.
ANOVA of Age, Gender, and Anxiety on SSE Scores

<i>Variables</i>	<i>S.S</i>	<i>df</i>	<i>M.S.</i>	<i>F</i>	<i>p</i>	<i>η²</i>
Age	0.510	1	0.510	0.031	0.861	0.001
Gender	72.442	1	72.442	4.430	0.042	0.094
Anxiety	51.627	1	51.627	3.157	0.083	0.067
Age × Gender	5.113	1	5.113	0.313	0.579	0.007
Age × Anxiety	1.661	1	1.661	0.102	0.752	0.002
Gender × Anxiety	0.726	1	0.726	0.044	0.834	0.001
Age × Gender × Anxiety	0.959	1	0.959	0.059	0.810	0.001
Residuals	637.689	39	16.351			

Although the lack of significant effects seems congruent with Ventola et al.'s (2019) conclusions about the inaccuracy of the Carrie Myth, we must note that putative Anxiety related to child experients of ICs was statistically significant in the full sample. This finding is consistent with the “dis-ease” model for poltergeist-like experiences (Ventola et al., 2019). Therefore, due to reduced sample size and potentially unaccounted for variance of Age and Gender not analyzable in the accounts that did not clearly reference these variables, we caution readers that these are preliminary findings. Indeed, cases with both Age and Gender represented only 30% of our total sample.

Correspondence Between the Phenomenology of ICs and Ghostly Episodes

The patterns previously outlined do not address individual item endorsement rates. In order to classify the phenomenology of our IC accounts, Table 4 shows the items with the highest probability of being endorsed, along with the original SSE probabilities for “spontaneous” ghost experiences. Notably, many of the IC features were simultaneously witnessed by additional experients — i.e., 34% of “IC” accounts referenced at least one additional witness, compared to 60% for the “Ghost” accounts. Little et al. (2021) predicted such occurrences of multiple experients, although we have neither seen previous discussion nor any data on this issue in the IC literature.

Table 4.
Incidence Rates of SSE Items for Attribution Type

<i>Items</i>	Original SSE			<i>n</i> = 53	<i>n</i> = 90	<i>n</i> = 143
	<i>Logit</i>	<i>Class</i>	<i>SSE</i>	<i>IC</i>	<i>GHOST</i>	<i>TOTAL</i>
17 Communication with Dead	0.03	LC	0.493	0.906	0.778	0.814
9 Negative Feeling	-0.60	C	0.646	0.396	0.378	0.379
11 Obvious Apparition	-0.51	LC	0.625	0.302	0.478	0.407
19 Positive Feeling	0.10	LC	0.475	0.245	0.200	0.214
29 Mystical-type Beings	1.07	R	0.255	0.189	0.067	0.110
12 Alive-looking Apparition	-0.47	LC	0.615	0.170	0.489	0.366
2 Sensed Presence	-1.59	C	0.831	0.132	0.122	0.124
13 Odd Bodily Sensations	-0.47	LC	0.615	0.113	0.044	0.069
6 Recognizable Sound	-0.62	C	0.650	0.094	0.233	0.179
23 Threatening Touch	0.44	LC	0.392	0.094	0.111	0.103
10 Non-hostile Touch	-0.55	C	0.634	0.057	0.011	0.028
31 Folklore-type Beings	1.61	R	0.167	0.057	0.044	0.048
7 Erratic Electronics	-0.62	C	0.650	0.038	0.100	0.076
8 Non-descript Visual Form	-0.62	C	0.650	0.038	0.111	0.083
15 Object Movement	-0.05	LC	0.512	0.038	0.189	0.131
24 Object Breakage	0.51	R	0.375	0.019	0.067	0.048

Note: C = commonly reported, LC = less commonly reported, R = rarely

The probabilities in Table 4 are first for the “IC” features, followed by the “Ghost” features. It can be seen that “Communication with the Dead” is the most prominent feature across both Attribution types,

representing between 78 to 91% of accounts, followed by “Negative Feelings” (38 to 40%), and an “Obvious Apparition” (30 to 47%). Note that “Alive-looking Apparitions” (17 to 49%), “Mystical-type Beings” (19 to 7%), and “Folklore-type Beings” (6 to 4%) when aggregated represent a 69% apparition-type occurrence rate for IC conditions, while representing 100% for accounts attributed to “Ghosts” in which the child both physically and verbally interacted with some form of “entity.”

The above features are followed by “Positive Feeling” (25 to 20%), “Sensed Presences” (13 to 12%), “Odd Bodily Sensations” (11 to 4%), “Recognizable Sounds” (9 to 23%) and “Threatening Touch” (9 to 11%). PK-like physical anomalies were also noted, with clear references to “Object Movements” (4 to 19%) and “Object Breakages” (2 to 7%). Finally, “Non-Hostile Touch” (6 to 11%), “Erratic Electronics” (4 to 10%) and “Non-Descript Visual Forms” (4 to 11%) round out the most frequent features across *both* Attribution types for our sample of IC reports. Little et al. (2021) again predicted these types of co-occurrences of S/O anomalies in IC experiences, although to our knowledge the IC literature has never referenced such effects.

Mapping the Phenomenology of ICs to Specific Haunt Conditions

A key question concerning IC accounts with haunt-type contents is whether their phenomenology best corresponds to one of the five hierarchical structures of S/O phenomena in ghostly episodes documented with the SSE across spontaneous, primed, lifestyle, fantasy, and illicit conditions (cf. Houran et al., 2019b, pp. 174-175). In other words, the stronger that two probabilistic hierarchies are positively correlated, the more their respective phenomenologies (i.e., SSE item orders) align. Thus, as used in previous studies (Lange et al., 2020; O’Keeffe et al., 2019), these correlational analyses can serve diagnostic purposes when one strives to evaluate the likely source of IC accounts that seem ghostly in nature.

Table 5.

Correlations Between Phenomenology of Imaginary Companion Experiences (Ghost and Non-Ghost) and SSE Haunt Conditions

	SSE “Haunt Conditions”				
	Spontaneous	Primed	Lifestyle	Fantasy	Illicit
IC: Non-Ghost	0.106	0.220	0.254	-0.248	-0.165
IC: Ghost	0.209	0.206	0.220	-0.150	0.025
Total	0.176	0.217	0.239	-0.191	-0.046

Note: Bold indicates suggestive findings.

To explore this issue, we conducted correlations on the varying probabilities of the SSE items themselves across our IC and Ghost conditions and compared them to the five SSE conditions mentioned above. Table 5 lists the coefficients, although we note that using correlations in this manner limits sample size to the number of items within the scale (e.g., 32), since participant-level responses are used to create the sum probabilities of each SSE item. In essence, correlations used in this manner act as a rudimentary “fit statistic” to the original SSE hierarchies of items by condition. This method obviously

has reduced statistical power due to low sample size here ($n = 31$), and accordingly all analyses failed to reach statistical significance. Thus, this exercise only considers the direction and size of effects in the interests of aiding model-building and theory-formation.

In this context, correlational patterns clearly show that both non-Ghost and Ghost conditions in ICs are most strongly related to the Lifestyle condition (r 's .22 to .25), although the Primed category was secondary (r 's .20 to .22). Interestingly, both non-Ghost and Ghost attributions for ICs showed positive associations with the phenomenology of “spontaneous” haunts, although this relationship was particularly strong (relatively speaking) in contexts involving Ghost attributions. The zero-order and inverse correlations further suggested that our sample of IC accounts was *unlike* haunt narratives rooted in social expectation (i.e., Fantasy condition, r 's = -.15 to -.25) or outright fabrication (i.e., Illicit condition, r 's = .02 to -.17). Consequently, these cumulative results are consistent with the idea that ICs with haunt-type contents are a hybrid between *spontaneous-* and *induced-* experiences.

Discussion

Consistent with Little et al. (2021), our content analysis of online reports arguably suggests that some childhood ICs can be construed as “disguised or overlooked” forms of a low-intensity ghostly episode or encounter experience (cf. Bielski, 2010; Hallowell, 2007; & Palmer, 2014). Particularly, our sample of accounts consistently referenced anomalies characteristic of hauntings per the SSE mapping, the ICs were often perceived to exhibit independent agency as indicated by SSE items involving external entities, and the experiences sometimes occurred under conditions of dis-ease or anxiety that paralleled previous findings on the psychology of encounter experiencers (Ventola et al., 2019).

In terms of phenomenology, our aggregate sample of ICs appear to be a curious mixture of “haunt conditions” that specifically draws on the roles of attentional *priming* and experiential *immersion*. For experiences explicitly attributed to “ghosts,” this phenomenology becomes increasingly aligned to the features of “spontaneous” haunts. Thus, IC experiencers possibly have the ability to self-induce or -facilitate encounter experiences on demand and in naturalistic settings. There was also some evidence that the onset or mediation of ICs in our sample followed Ventola et al.'s (2019) dis-ease model, although we found no support for the so-called “Carrie Myth” for poltergeist-like experiences, i.e., an Age \times Gender \times Anxiety interaction effect. To be fair, this latter result deserves further scrutiny using larger samples of precise data on experiencers' ages.

Moreover, two of our observations are possibly unprecedented in the literature, namely that deep ICs can: (a) involve an array of S/O anomalies, which might entail that *internal* “imaginary friends” and *external* “personified objects” (or odd physical occurrences within IC experiences) form a single dimension analogous to S/O phenomena in ghostly episodes (Houran et al., 2019b; Houran & Lange, 2001), and (b) apparently be “contagious or memetic” so as to encompass multiple witnesses to S/O anomalies in IC experiences. Attempts to clarify the former finding can use Rasch (1960/1980) scaling with available raw data to explore the factor structure of IC narratives. We plan to pursue this, and other advanced analyses as outlined by Lange and colleagues (Houran et al., 2019b; Lange, 2017; Lange et al., 2019) after first collecting additional data for a conceptual replication and robust comparison with suitable control groups.

Conversely, in-depth interview or survey studies might be required to substantiate and contextualize the latter finding, which seems to undermine the popular conceptualization of ICs as “private or singularly experienced” fantasy constructions (cf. Nagera, 1969; Rucker, 1981; Svendsen, 1934; Taylor, 1999). Such research efforts can also address other important questions pertinent to general model-building and theory-formation. For instance, the macro-PK or RSPK literature might predict that personified objects act as “targets” or focus objects (Roll, 1977) in PK-type displays during ICs, or that IC experiences containing O phenomena may involve instances of ostensibly “responsive PK” (e.g., Fontana, 1991; Laythe & Houran, 2019). Some evidence for this line of thinking might come from the “South Shields Poltergeist” case, for example, which included reports of “toys bursting into life and speaking to investigators” (Hallowell & Ritson, 2008).

We acknowledge that the accounts analyzed here derived from a non-probability sampling method, which took data from a convenient source versus a systematic review or representative survey. It is possible therefore that these were selectively published for their atypical or dramatic content, or that their details were markedly embellished or even wholly manufactured. That said, readers will recall from Table 5 that the phenomenology of IC accounts showed near zero to negative correlations with the features of “illicit” and “fantasy” haunt narratives, respectively.

These patterns appear to support the internal validity of our data, but the use of a convenience sample does limit our ability either to generalize the present results or to infer an incidence rate of ICs with putative parapsychological aspects. Of course, sampling theory would dictate that the mere presence of these accounts implies that “haunt-type ICs” represent a legitimate subset of the broader IC phenomenon. Even still, our interpretations of the content analysis may still reflect some artifacts or biases despite the use of an expert panel procedure and other controls.

Methodologically speaking, our study further underscores the utility of Houran et al.’s (2019b) SSE measure to quantify and scrutinize the phenomenology of spontaneous case material with haunt-type contents. In addition, we previously noted that more research is needed to resolve several outstanding ambiguities related to ICs with paranormal themes (Little et al., 2021). The main issue is whether children interpret ghostly episodes (or encounter experiences) as ICs, or if certain IC constructions can evolve into more complex ghostly episodes or encounter experiences¹. Either scenario might be possible or perhaps these two options somehow work in tandem. This question is further compounded by a range of individual differences or biopsychosocial variables that could potentially mediate or moderate a structural relationship between ICs and ghostly episodes.

Drawing on recent psychometric studies of “encounter-prone” individuals (Davis et al., 2019; Jalal, 2021; Langston et al., 2020; Laythe et al., 2018; Maraldi & Krippner, 2013; Ventola et al., 2019), Little et al. (2021) proposed that either “IC ↔ Ghost” scenario above is likely to involve children and adults with higher levels of transliminality or who are exposed to settings that facilitate transliminal perceptions. Transliminality represents “a hypersensitivity to psychological material originating in (a) the unconscious,

¹ For instance, this might result via *creative dissociation* (Grosso, 1997; Maraldi & Krippner, 2013; Pasi, 2016; Seligman, 2005), the hypothesized concept of *haunted people syndrome* (O’Keeffe et al., 2019; Lange et al., 2020; Laythe et al., 2021), or mechanisms that underlie anomalies such as purportedly *rogue thought-forms* (e.g., Guillette, 2019; Palmer, 2014; Parker, 2021), *visionary abilities* (Obeyesekere, 2012), *channeling/mediumship* (Bastos et al., 2015; Cunningham, 2012; Rock, 2013), or the *transliminal dis-ease model for ghostly episodes* (Laythe et al., 2018; Ventola et al., 2019).

and/or (b) the external environment” (Thalbourne & Maltby, 2008, p. 1618; for an overview, see: Evans et al., 2019). This perceptual-personality variable thus parallels both Hartmann’s (1991) mental boundary construct and the notion of “sensory processing sensitivity” (Aron & Aron, 1997).

However, a host of other traits and tendencies might contribute, including aberrant salience, ambiguity tolerance, creativity, curiosity, emotionality, ideology (e.g., religiosity or paranormal belief), ideological adherence, or sensation-seeking (for a discussion, see Laythe et al., 2021). Other approaches along these lines include Brown (2000), Neppe (2011) and Fach et al. (2013, 2015), who each outlined comprehensive questionnaires or coding systems for clinical and contextual information that may yield crucial data within and across individual cases. For instance, we originally intended also to code the ICs for the variables of time of day, experient’s history of sleep paralysis, single vs. serial event(s), likely hypnogogic and hypnopompic imagery, and the presence of marked religious ideology. But very small sizes precluded us from pursuing these analyses at this time.

Aspects of an experient’s physical environment or setting might also help to stoke anomalous ICs or shape their subsequent interpretation (Dagnall et al., 2020; Gukasyan & Nayak, 2021; Jawer et al., 2020). To be sure, Armah and Landers-Potts (2021) found that adults who reported childhood ICs demonstrated an enhanced emotional response to external stimuli and a tendency to become absorbed in detailed recollections of events. This is where systems (or biopsychosocial) theory comes into play when describing the onset or contents of ghostly episodes and encounter experiences as an interplay of variables found in both the experient and the environment (Drinkwater et al., 2019; Hess, 1991; Hill et al., 2018, 2019; Houran et al., 2020; Laythe, Houran, & Ventola, 2018; Maraldi & Krippner, 2013; O’Keeffe et al., 2019).

We hope that the present results will intrigue researchers enough to pursue additional and increasingly sophisticated studies on this topic. Though this effort was partly exploratory, our empirical findings dovetail well with previous work that challenged simplistic definitions and orthodox models for some deep ICs (Little et al., 2021). We do not contend that ICs with or without haunt-type features are necessarily or consistently parapsychological in nature, but the emerging picture is that some accounts certainly encompass more than meets the eye. At the very least, we surmise that selected instances likely involve enhanced somatic-sensory abilities or particular alterations in consciousness as implicated in transliminality and the potentially tangential phenomena of alienated agency and creative dissociation (see Footnote 1). Expanded research from this standpoint could eventually refine or reinterpret the evidence that some ICs are linked to hallucination-like experience or schizotypal thinking across different age groups (Fernyhough, et. al., 2007; Fernyhough et al., 2019; Jones et al., 2015; Kidd, Rogers, & Rogers, 2010; Sánchez-Bernardos & Avia, 2006).

Our considered opinion is that ICs can be more complex or nuanced than perhaps assumed by many traditional social scientists. Model-building and theory-formation on this issue would thus be stifled if future studies only consider orthodox social-cognitive processes in children and adults. Indeed, the ostensible correlation between certain ICs and haunt (or entity encounter) phenomenology suggests to us that such reports are best situated and studied within the domain of anomalous and exceptional human experiences (see: Cardeña, Lynn, & Krippner, 2014; Cardeña, Palmer, & Marcussion-Clavertz,

2015; Palmer & Hastings, 2013). Critical insights and findings from these perspectives might help to pinpoint the exact nature and meaning of the perceptual contents in this subset of deep ICs. We further anticipate that such learnings will interest and inform some of the experiencers themselves, such as with Portuguese poet and philosopher Fernando Pessoa (1998/2002) who curiously remarked, “Only my ghostly and imaginary friends, only the conversations I have in my dreams, are genuinely real and substantial” (p. 48).

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Appendix. *Sample imaginary companion account with haunt-type characteristics (sourced from Reddit.com).*

I remember when I was younger I had this “imaginary” friend named “Trees.” So, whenever somebody would ask me who my imaginary friend was I would say, “He is not imaginary, he is just a ghost.” Yeah, so hearing that from a six-year old definitely will make you sleep with one eye open for a while. Anyway, my mom tells me stories about how I used to talk to nothing but air, and I would come running in her room screaming because somebody was grabbing my feet. Now that I’m older I look back and say how f*cking scary that would be. I think I can connect with the dead, because whenever I go to a new place and feel eerie, I get like a little shiver through my body and something weird happens after. I’m honestly super scared because yesterday I was in my room watching “The 100” and I saw like a almost invisible shadow move, from the corner of my eye. So, I got up and looked around to see what the hell it was, and I couldn’t find anything. But sometimes my TV is off and it’s so clear it looks like a mirror. Sometimes I can see slight movement through my TV screen, and it scares the sh*t out of me. For some reason I think “Trees” is still here with me. I have a lot of paranormal experiences including Trees and other things happening. I will post those a soon or later.”

**Le Caractère Fantomatique des Compagnons Imaginaires Infantiles :
Une Étude Empirique de Témoignages en Ligne**

Résumé: Les récits de compagnons imaginaires infantiles (IC) contiennent parfois des perceptions ou des thèmes « sinistres ou fantomatiques » qui suggèrent que de telles manifestations peuvent être des formes déguisées ou négligées d’un « épisode fantomatique » ou d’une « expérience de rencontre avec une entité ». Cette idée a été exploré à travers une analyse de contenu de narrations vérifiées en provenance du site internet Reddit impliquant des IC avec des caractéristiques de type hantise ($n = 143$). Nous avons testé si la phénoménologie de ces expériences : (a) montre un effet « âge x genre x anxiété » consistant avec la psychologie supposée des personnes focales dans les expériences de type poltergeist ; (b) correspond au modèle Rasch de hiérarchie des anomalies de Houran et al. (2019b) associé avec les épisodes fantomatiques au travers du Sondage des événements étranges (SSE) ; et (c) correspond à un type spécifique de « condition de hantise » (c’est-à-dire spontanée, amorcée, relative au style de vie, à la fantaisie, ou illicite). Les résultats indiquent que les IC attribués à des « fantômes » correspondent à des scores plus élevés au SSE. Le genre et l’anxiété inférée des expérienceurs montrent des associations positives significatives avec les scores au SSE. Enfin, les caractéristiques SSE des expériences IC fantomatiques se corrélient plus fortement avec les phénoménologies des conditions « spontanées » et « induites » de la hantise, telles que reportées par Houran et al. (2019b). Nous discutons ces résultats en considérant que certains IC sont des expériences humaines exceptionnelles ou anormales qui pourraient réquerir des approches allant au-delà de la psychologie clinique ou développementale pour pleinement comprendre leurs contenus, leur structure et leur nature ultime.

Der Gespenstische Charakter von Imaginären Kindheitsbegleitern: Eine Empirische Studie von Online-Berichten

Zusammenfassung: Berichte über Imaginäre Begleiter (IB) in der Kindheit enthalten manchmal "gruselige oder gespenstische" Wahrnehmungen oder Themen, die darauf hindeuten, dass es sich bei solchen Vorkommnissen um übersehene oder versteckte Formen einer "geisterhaften Episode" oder einer "Begegnung mit einer Wesenheit" handeln könnte. Diese Hypothese wurde mittels einer Inhaltsanalyse von überprüften Erzählungen der Reddit-Website exploriert, die IBs mit spukartigen Merkmalen ($n = 143$) aufweisen. Wir überprüften, ob die Phänomenologie dieser Erfahrungen: (a) einen "Alter \times Geschlecht \times Angst"-Effekt aufweist, der mit vermuteten psychologischen Merkmalen von Fokuspersonen bei spukähnlichen Erfahrungen übereinstimmt; (b) der Rasch-Hierarchie von Houran et al. (2019b) von Anomalien, die mit geisterhaften Episoden gemäß dem Survey of Strange Events (SSE) assoziiert sind, entspricht; und (c) einer spezifischen Art von "Spukzustand" entspricht (d. h. spontan, ausgelöst, Lifestyle, Fantasie oder unerwünscht). Die Ergebnisse zeigten, dass IBs, die "Geistern" zugeschrieben wurden, mit höheren SSE-Werten korrespondierten. Das Geschlecht der Berichterstatter und die vermutete Angst waren ebenfalls signifikant positiv mit SSE-Werten assoziiert. Schließlich korrelierten die SSE-Merkmale von geisterhaften IB-Erfahrungen am stärksten mit der Phänomenologie "spontaner" und "induzierter" Spukzustände, wie sie bei Houran et al. (2019b) berichtet werden. Wir diskutieren die Ergebnisse dahingehend, dass einige IBs anomale oder außergewöhnliche menschliche Erfahrungen darstellen, die möglicherweise Ansätze jenseits der Entwicklungs- und klinischen Psychologie erforderlich machen, um ihren Inhalt, ihre Struktur und ihre grundlegende Natur vollständig zu verstehen.

El Carácter Espectral de los Compañeros Imaginarios de la Infancia: Un Estudio Empírico de Reportes En Línea

Resumen: Los reportes de compañeros imaginarios de la infancia (CI) a veces contienen percepciones o temas "espeluznantes o escalofriantes" que sugieren que tales eventos podrían ser formas disfrazadas de un "episodio fantasmal" o un "encuentro cercano con una entidad". Esta idea se exploró a través de un análisis de contenido de narrativas extraídas del sitio web Reddit, que involucraban CI con características espectrales ($n = 143$). Analizamos si la fenomenología de estas experiencias: (a) muestra un efecto de "Edad \times Género \times Ansiedad" consistente con la psicología asumida de los supuestos agentes en casos poltergeist; (b) corresponde con la jerarquía Rasch de anomalías asociadas con episodios fantasmales de Houran et al. (2019b) según la Encuesta de Eventos Extraños (SSE, por sus siglas en inglés); y (c) corresponde a un tipo específico de "condición espectral" (i.e. espontánea, imprimada, estilo de vida, fantasía, o ilícita). Los resultados indicaron que los CI atribuidos a "fantasmas" correspondían con puntuaciones más altas de la SSE. El género y la ansiedad inferida de los participantes también mostraron asociaciones positivas significativas con las puntuaciones de la SSE. Finalmente, las experiencias fantasmales de CI, relacionadas a las características de la SSE, poseen una correlación mayor a la fenomenología de las condiciones espectrales "espontáneas" e "inducidas" como se reporta en Houran et al. (2019b). Discutimos los resultados en términos de que algunos CI son experiencias humanas anómalas o excepcionales que pueden requerir enfoques más allá de la psicología clínica y del desarrollo para comprender completamente su contenido, estructura y naturaleza final.

A Random Number Generator Experiment: The Origin of Decision Augmentation Theory

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Abstract: In 1979, the research team at SRI International conducted a single random number generator (RNG) experiment. The goal was to replicate and extend the findings from a substantial literature in several ways. Sequential analysis was used to provide a two-fold increase in statistical sensitivity; two fundamentally different physical random sources were used: β -decay of ^{147}Pm and electronic noise from a well-understood silicon noise diode. Substantial engineering effort isolated these sources from environmental effects, and a quantum mechanical model accurately described the known properties of the electronic noise diode. An a priori definition of a successful outcome was more stringent than in the usual study; two participants out of seven must produce independently significant evidence of an effect. Seven participants who were screened for PK ability from a population of 17 candidates took part in the formal study. Two produced independently significant results ($p \leq 0.021$ and $p \leq 0.039$, respectively). While these results were consistent with those in the micro-PK literature, we report definitive evidence of no PK effects at all. Rather, the result appears to arise because of informational psi on part of the participant.

Keywords: RNG; radioactive source; electronic source; sequential analysis; significant engineering details

Introduction

Occasionally reports appear of anomalous failures of electronic equipment that seem caused by the proximity of certain individuals. Of special interest is a class of phenomena involving perturbation of sensitive equipment isolated from human participants by distance or shielding. In certain of these instances the generation of such effects appears to be under volitional control of the individuals involved. This paper is a modified version — edited for journal publication — of a declassified final report to the sponsor (Missile Intelligence Agency) in 1980 of a study, which was carried out at SRI International.² Included in this paper are experiments in which a participant attempts to affect the random output of RNG devices which are derived from electronic noise or radioactive decay. This kind of an experiment has an investigative appeal because it involves no subjective interpretation; that is, the results are expressed in terms of well-understood statistical terminology (May & Hubbard, 1980; May, Humphrey, & Hubbard, 1980).

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² As the declassified SRI International reports — now published in the Star Gate Archives Volume 3 — have limited reach, we considered it appropriate to republish this crucial background paper for the understanding of decision augmentation theory (DAT), relevant for the understanding of micro-psychokinesis as an informational rather than a causal process.

The first such experiment of this type was published by Helmut Schmidt (1969). As of December 1979, there had been 47 other papers published, mostly in the literature on parapsychology. The list, taken from the final report, can be found in the Appendix. These experiments have two points in common:

- A truly random input device for the RNG.
- An individual with motivation and intent to arrange the statistics of the output of an RNG to differ from chance expectation during designated periods.

A representative experiment might proceed as follows. An RNG device, such as the noise associated with a solid-state diode, is used to create a random binary sequence. The accumulated number of ones in the sequence (i.e., the dependent variable) is displayed graphically to the participant as a form of visual feedback. In a successful trial, the participant can (under the PK hypothesis) enforce an excess number of ones. As in the case of biofeedback research, effects have been demonstrated even when little is known about the underlying mechanism.

We examined the body of literature spanning the 10 years from 1970 to 1979 (see Appendix Table A). In this survey, we only considered the RNG experiments published in the three major U.S. parapsychological journals: *Journal of the American Society for Psychical Research*, *Journal of Parapsychology*, and *Research in Parapsychology*. This survey, which represents the vast majority of the published RNG studies from 1970 to 1979, is summarized in Table 1.

Table 1

Early Survey of the RNG Literature

# of References	Year	# Experiments	# Significant
2	1970	3	3
3	1971	6	4
5	1972	22	12
2	1973	7	7
3	1974	14	7
6	1975	17	7
10	1976	43	12
9	1977	46	10
6	1978	28	7
2	1979	28	5
Total: 48		214	74

Forty-eight papers reported a total of 214 individual experiments, 74 of which claimed statistically significant results. Ignoring file drawer considerations, the chance likelihood of such an outcome is approximately 2×10^{-41} .

This impressive statistic must, however, be evaluated with respect to experimental equipment and protocols. All the studies surveyed could be considered incomplete in at least one of the following four areas:

1. No control tests were reported in more than 44 percent of the references. Of those that did, most did not check for temporal stability of the random sources during the course of the experiment.
2. There were insufficient details about the physics and construction parameters of the experimental apparatus to assess the possibility of environmental influences.
3. The raw data were not saved for later and independent analysis in virtually any of the experiments.
4. None of the experiments reported controlled and limited access to the experimental apparatus.

We believe that the serious implications for applications and for science necessitated the design and execution of an RNG experiment that was more complete with respect to the four points enumerated above.

A two-phase program was initiated to accomplish this objective. Phase I aimed to develop a reliable computer-based, noise-driven RNG system and to certify that the binary bit streams produced by the generator met a number of statistical criteria for randomness. During Phase II, seventeen personnel were screened to select seven individuals who participated in the formal portion of this Phase. The testing procedure and the results are described in detail below.

Random Number Generator System

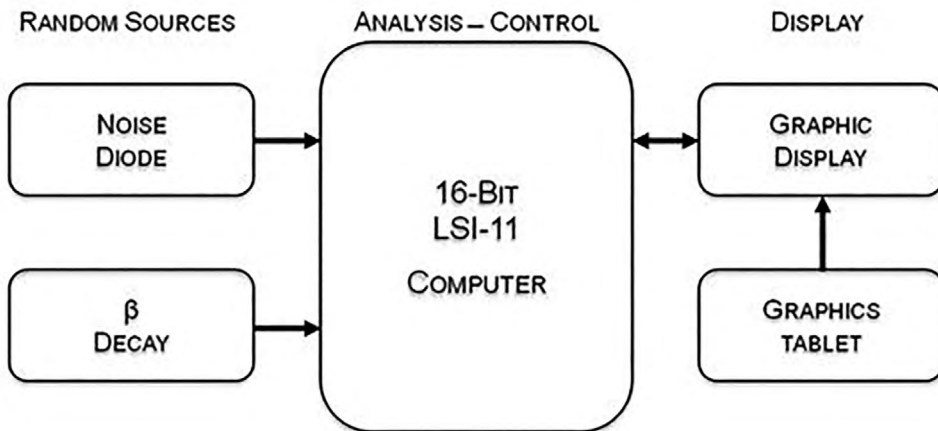
A computer-based random number generator (RNG) was developed with special efforts made in two specific areas: First, extensive testing of the true random sources was carried out to study their response to environmental factors. Second, a variety of statistical tests were applied to the complete system to ensure that the output was truly random under experimental conditions. A detailed report on the Phase I hardware construction and system evaluation was submitted to the sponsor for review prior to the commencement of the study (May & Hubbard, 1980).

Hardware and Software

Figure 1 shows the overall hardware configuration, which consisted of three basic elements: (1) an isolated source of random electronic signals, (2) an analysis and control section, and (3) a graphics display unit. Following the techniques of learning theory, we used the graphics display unit to provide visual feedback of information about the current status of the binary sampling. We hypothesized that in this fashion the participant might learn to influence the sequence more readily.

Figure 1.

*Block Diagram of the Computer Based RNG Hardware
(May, Humphrey, & Hubbard, 1980)*

**Random Sources**

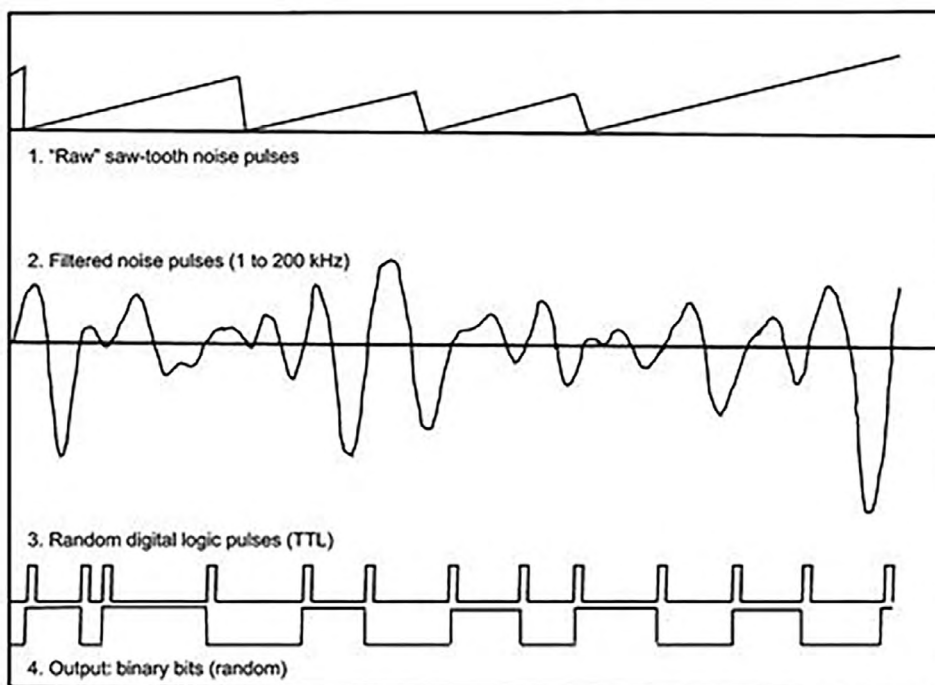
The random source elements consisted of a commercially available noise diode and a radioactive source with an appropriate radiation detector. A Texas Instruments MD-20 planar silicon noise diode was chosen for its large noise output ($\sim 500 \mu\text{V}/\sqrt{\text{Hz}}$) and its well-described functional characteristics (Haitz, 1965, 1966).

Figure 2 shows the process by which random bits were generated from the noise diode source.

Figure 2.

Analogue to Digital Conversion.

(May, Humphrey, & Hubbard, 1980)



A random-amplitude 1-MHz saw-tooth voltage pulses from the diode were filtered by a 1 to 200 kHz band-pass filter (Figure 2.1). At each positive-going zero crossing of the filtered signal a TTL pulse was generated, giving a random digital signal (Figure 2.2). Finally, a divide-by-two circuit changed state at the rising edge of each TTL pulse, yielding a binary bit stream with probability of being in the logical one state of 0.5 (Figure 2.3). This bit stream was sampled and shifted into an 8-bit shift register at a 1-kHz rate, so that a random 8-bit number might be selected at intervals greater than 8 ms. The hardware included a double buffer, so as each 8-bit number was being transferred to the computer, the second buffer was being filled. This technique assured a continuous sampling at a 1 kHz rate.

$^{147}\text{Promethium}$ (^{147}Pm) was selected as a radioactive source because it is nearly a 100-percent β -emitter (i.e., electrons) with essentially no competing decay modes. Detection of the electron energy continuum was accomplished using a well-understood and reliable ORTEC silicon surface-barrier detector.

A completely analogous process occurred with the β -decay source. The major distinction was that electrons of random energy arrived at a detector where they were converted into electrical signals of voltage proportional to the electron energy. A low-level discriminator generated a logic pulse whenever the voltage rose above a threshold corresponding to electron energy of 25 keV. From this point the signal processing was the same as described above in Figure 2.4.

Analysis and Control

The analysis and control portion of the system consisted of Digital Equipment LSI-11 microcomputer. The LSI-11 was programmed to sample one of the noise sources at a specified rate to obtain its random bits. A sequence of such samples was tested by the LSI-11 for an excess or lack of ones on a continuous basis, using a sequential analysis statistical technique (Fisz, 1973; Wald, 1973, p. 94).

Sequential analysis is roughly twice as efficient as traditional methods at reaching a pre-specified level of significance. Traditional methods require that the number of trials be specified in advance (i.e., independent variable) and the level of significance becomes the dependent variable; whereas, sequential analysis sets the level of significance in advance (i.e., the independent variable) and lets the number of trials be the dependent variable.

Before we are able to detect whether the random output of a binary generator has been influenced, we must *a priori* define criteria as to how much distortion of the null hypothesis distribution we require, and what statistical risks we are willing to accept for making an incorrect decision. To meet these criteria, sequential analysis demands the specification of four parameters to determine to which binomial distribution a particular data-sequence belongs; that is, a perturbed distribution or one that is not.

The four parameters are:

1. p_0 : The fraction of ones expected in an undistorted distribution, 0.5 for a binary generator.
2. p_1 : A threshold for the fraction of ones to define the mean of one of two distorted distributions.

3. p_2 : A threshold for the fraction of ones to define the mean of the second distorted distribution.
4. α : The assigned acceptable probability for concluding that the random source is perturbed (i.e., p_1 distribution or greater or p_2 distribution or less) when it is not. This is the Type 1 error.
5. β : The assigned acceptable probability for concluding that the random source is unperturbed (i.e., p_0 distribution) when it is perturbed. This is the Type 2 error.

With these parameters, sequential analysis defines lines in a decision graph as follows: The lines in Figure 3 are defined as $p - p_0 = a + b \times t$, where for the positive lines, b is given by (Wald, 1973):

$$b = \frac{\ln \left[\frac{1-p_0}{1-p_2} \right]}{\ln \left[\frac{p_2}{p_0} \right] - \ln \left[\frac{1-p_2}{1-p_0} \right]}$$

and for the negative line we use $-b$ for the slope. For all lines, t is the sample count. The values for the intercepts, a , for the positive lines are given by:

$$a_+ = - \frac{\ln \left[\frac{\beta}{1-\alpha} \right]}{\ln \left[\frac{p_2}{p_0} \right] - \ln \left[\frac{1-p_2}{1-p_0} \right]}$$

and for the negative lines, the a 's are given by:

$$a_- = - \frac{\ln \left[\frac{1-\beta}{\alpha} \right]}{\ln \left[\frac{p_2}{p_0} \right] - \ln \left[\frac{1-p_1}{1-p_0} \right]}$$

The value used in this experiment and the ones used to create Figure 3 are as follows: $\alpha = \beta = 0.05$, $p_1 = 0.52$, $p_2 = 0.48$, and $p_0 = 0.5$. Then $b = 0.51$, $a_+ = 36.79$ and $a_- = -36.79$. For the downward channel, slope = $-b$, and the a 's are reversed.

For clarity display purposes we limited the maximum bits to 300; however, we used the equations above. Note we display excess hits on the vertical axis.

The Type 1 and Type 2 errors were chosen to provide an individually significant trial and the means of the two binomial distributions were characteristic of the hitting rates found in the literature.

The decision graph in Figure 3 works as follows: After the trial is initiated, we compute the on-going excess binary ones as the data collection continues. If the accumulated excess remains in the white regions of Figure 3, we continue to collect data. Should the excess exceed the upper line and enters Region II, the run stops and we conclude that we are sampling from a perturbed distribution with a mean of 0.52 or greater and the trial is significant with a p -value of 0.05. If the accumulated excess falls below the bottom most line in Figure 3 and enters Region III, the trial stops and we conclude that we are sampling from a perturbed distribution with a mean of 0.48 or less and the run is significant with a p -value of 0.05. This process is illustrated in Figure 4.

Figure 3.
 Sequential analysis decision graph for the RNG experiment.
 (May, Humphrey, & Hubbard, 1980)

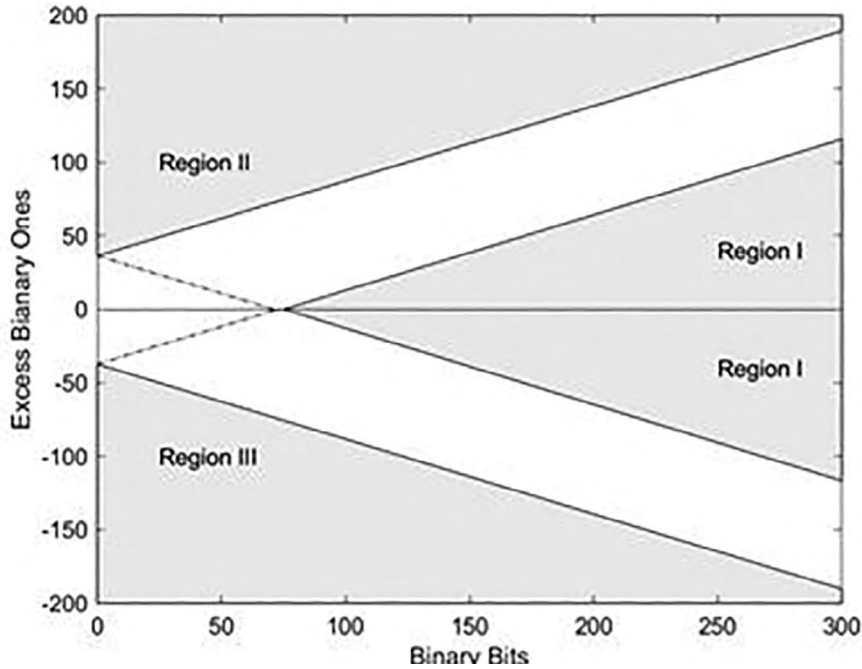
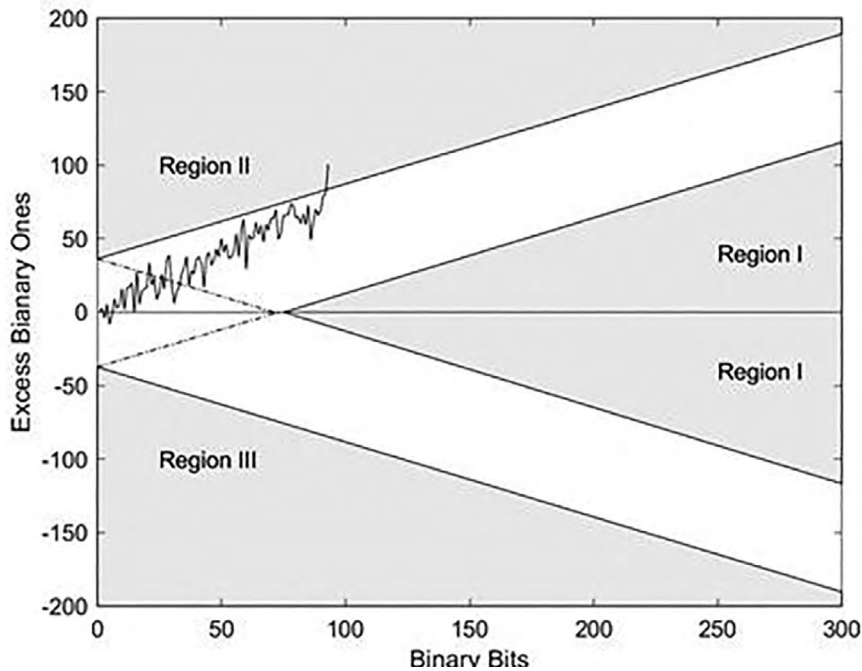


Figure 4.
 An example of a single significant run.
 (May, Humphrey, & Hubbard, 1980)



If, however, the accumulated excess exits into Region I, the trial ends and we conclude that we are sampling from a chance distribution with mean of 0.50. We make that decision with a p -value of 0.05.

Display

The computer-driven graphics display system consisted of two independent 19 inch color video monitors, a Grinnell display controller, and a Summagraphics 20 x 20 inch graphics tablet. Using these components, data from sequential sampling statistics, pulse height analysis, or any other output could be displayed. Figure 5 shows the experimental setup included the display.

Figure 5.

RNG System Setup. (May, 1982, p. 82).



Note: The random sources are contained in the two shoe-box like enclosures before the participant; the computer is located in the rack before her knees; and the display shows a successful run as determined by the sequential sampling algorithm.

System Testing

Noise diodes for use in this system were extensively tested for response to changes in temperature (-40 to $+40$ C), leakage current (40 to 200 μ A), and other environmental factors such as a 6000-gauss dc magnetic field and low-intensity radioactive sources (^{241}Am , ^{60}Co , ^{147}Pm). We found that over the range examined for each factor the spectral noise density was flat within ± 1 dB for the bandpass of the filter (1 to 200 kHz). Furthermore, the filtered noise followed a Gaussian distribution under all conditions tested as long as the leakage current was within 80 to 120 μ A. We confirmed the manufacturer's specification for the dependency of the noise power-spectrum on temperature. This change was insignificant for variations of ± 5 C near room temperature of 20 C.

The random emission of electrons from the β -decay of ^{147}Pm is independent of known external influences. The sensitive element, the surface barrier detector, was tested for changes in leakage current as a function of temperature. At the maximum temperature tested (~ 40 C) the noise contribution was caused by the increased current leakage and was eliminated completely with an appropriate low-level discriminator.

We assumed that the TTL logic circuitry of the major system elements (LSI-11, Grinnell controller, and the like) would continue to operate as specified by the vendor, so that extensive environmental testing of these components was not done. Any possible failures of these components would have been observed in the extensive control investigations described below.

System Isolation and Interference Protection

To prevent spurious signals from known external influences being incorporated into the random source output, numerous precautions were taken. Each random source was encased in a sealed 0.125-inch thick, soft iron box with radio frequency shielding to provide protection against mechanical, magnetic, or radio-frequency intrusion. Batteries supplied the electrical power to eliminate ac-line transients and 60-Hz noise. All data output to the LSI-11 occurred via optical transmission links to ensure complete electrical isolation. In addition, the noise diode was monitored continuously with a precision of ± 0.2 C to determine any temperature changes.

Fail-safe circuits were included in both random sources so that the units would shut off automatically and require manual reset under the following circumstances:

- The battery supply dropped below a critical point (12 V).
- The electron detector leakage current rose above an acceptable level (2.0 μA).
- The diode current deviated from a narrowly defined current window.

System Certification Testing Results

A variety of fixed-length statistical tests were applied to 500,000 sample control runs of random numbers generated by the system described above. In addition, approximately 3×10^6 samples from each source were subjected to sequential analysis. No unexpected deviations from chance expectation were observed in any of these control tests, indicating that the system performed in accordance with design. Complete details of the hardware, computer software, testing procedures, and numerical results are detailed in May and Hubbard (1980).

Experiment Protocol

A complete experiment protocol was prepared and submitted to the client organization for approval in advance of the formal data-acquisition portion of Phase II.

Definitions

We begin the discussion of the Phase II formal test protocol by introducing a set of definitions of terms used in this section (Table 2).

Table 2

Definition of Terms

Term	Definition
Target Bit	The determined single bit of eight possible bits from one of the random sources to be used in the analysis.
Sample	The acquisition of eight binary bits from the RNG of which the fourth bit from the right (starting at zero) was defined as the target bit. The additional bits are to provide a local temporal history of the bit stream in which the target bit is imbedded.
Trial	A number of samples comprising a sequence that meet a set of statistical conditions in the sequential sampling that terminates the sequence.
Run	100 trials
Control Trial	A trial carried out automatically by the computer under the same conditions as the data acquisition session, but with no one present in the session area.
Sequential Analysis	The statistical procedure that provides a decision algorithm for terminating the trial.
Chance Distribution	A binomial distribution of binary digits (0, 1) with a mean probability of 0.5 for observing a one in the target bit and a variance of 0.25.
Perturbed Distribution	Binomial distributions with means greater than or equal to 0.52, or less than or equal to 0.48 (a two-tailed test).

Table 3 shows the timing intervals for a sample — one byte, trial, and run. It is important to note, that no bits in the binary sequence were lost for a single trial, and that data for each trial was a continuous record of bits collected in eight-bit samples. The average trial consisted of 3300 samples and lasted approximately 25 seconds. All bits from the source that were generated between trials were lost.

Table 3

Timing Intervals

Item	Timing Interval
Sample	8 ms
Trial	~25 s
Run	~3 months

A data-acquisition session was divided into three sections: Pre-session, Session, and Post-session:

- *Pre-session:* During the pre-session before the participant's arrival, the hardware was checked for proper functioning, and the set of variables characterizing the session (e.g., time of day, noise source) were entered into the system program. The variables chosen were those specifically determined for that participant during the pilot period. In addition, no less than five control trials were executed with no one present in the session area. These control trials were collected under the same environmental conditions as the session trials, except for the absence of putative human intervention. Once the control session was initiated, an automatic trial sequencer cycled through a sequence of trials, spaced apart by random time intervals Δt , $0 < \Delta t < 20$ s. This random spacing insured that the control trials simulated human interaction with the system as closely as possible.
- *Session:* To begin a session, the participant and a monitor entered the session room. The participant sat in front of the viewing monitor and controlled the start time of the individual trials by means of a start button on a cursor associated with the graphics tablet. This constituted the only form of physical interaction of the participant with the apparatus. The participant's task was to mentally cause either an excess number of ones or an excess number of zeros in the binary sequence. The session lasted no longer than 30 minutes. During the session, the participant received visual feedback for all trials, and auditory feedback (a bell) for trials that sequential analysis indicated belonged to one of the two distorted distributions.
- *Post-session:* The post-session consisted of a debriefing in which the participant discussed the experience. At the conclusion of the debriefing, there was an additional period during which no less than five more trials were conducted with no one present in the session area. Such post-session trials (not to be confused with control trials) were conducted specifically to investigate the claim that there might be a linger effect associated with the putative interaction. This linger effect might be compared to the well-understood physics concept of relaxation time. Post-session trials were recorded separately for later analysis. To allow for a putative possible linger effect, a minimum of one-hour separation between participants was enforced.

Controls

Aside from the pre-session control trials, a total of 1000 additional control trials were taken in sets of 100 or more for each of the participants. These trials were collected at random times on a 24-hour basis to establish the empirical sampling distribution throughout the formal testing period.

Test Requirements

The test requirements for a single trial were determined completely by the formulation of the sequential analysis theory described above. In that analysis a set of decision boundaries completely determines (within the bounds of the Type I and Type II errors specified) from which of the distributions (chance or distorted) a given sequence belongs. For a single trial to be successful, the sequence had to

belong to a distorted distribution corresponding either to a mean ≥ 0.52 or ≤ 0.48 , with a single-tailed confidence factor of 95 percent. The overall chance likelihood for making a decision in favor of a two-tailed distorted distribution on any given trial was 0.1.

Each participant was required to contribute 100 valid trials. To be valid, a trial had to meet certain pre-defined criteria.

The two random sources were equipped with appropriate hardware failsafe circuitry. Nonetheless, to account for possible hardware/software failures, we designated, in advance, the following certain conditions under which a trial would be rejected as invalid (i.e., not counted as part of the formal series):

- If the battery power supply dropped below a preset level, or various other hardware parameters exceeded their pre-specified operating ranges, the source output was inhibited. The system program detected this state and by software forced a “pass” condition for that trial. The trial just prior to system “shut down” was labeled “invalid” regardless of its particular statistic.
- As a further cross-check against possible source hardware difficulty, a trial was labeled “invalid” if the raw data contained five contiguous samples of identical data bytes. The probability of this occurring by chance alone is less than one part in 10^{12} . Because there was no prior evidence that such large-scale effects occur in RNG systems, we concluded that such a sequence of data bytes would most likely have resulted from momentary hardware failure. It is important to note that throughout all the formal trials in Phase II, none were declared as invalid.

Of the 100 valid trials, the number of sequences designated by the sequential analysis as being distorted were tallied by the computer. A simple binomial calculation shows that the probability of obtaining exactly 16 successful trials in 100 trials with the success probability (2-t) of 0.1 is 0.039, whereas for 15 successful trials the probability (2-t) is 0.065. The participant therefore had to produce 16 or more successful formal trials out of a total of 100 to have completed a significant run. As during a pilot period, the participant could choose to exercise a pass option before any given trial, in which case it was labeled as such in the computer record. Regardless of the outcome, a pass did not contribute to the formal series of 100 trials.

For the entire study to have significance, two or more of the seven participants chosen for the formal study were required to complete significant runs. The probability of obtaining two significant runs out of seven attempts by chance is ≤ 0.04 . The probability of a single significant run is ≤ 0.26 . We realize that this requirement is more stringent than the usual summing across all participants. In the Star Gate program, we were more interested in exceptional functioning than population averages.

Records

Two types of data recording were utilized during the formal test period: summary statistical information and the bit-by-bit recording of the raw data. For all trials (passes, pre-session and post-session controls, and the 1000 additional control trials for each participant), and a summary statistic was recorded on an eight-inch single floppy disk.

This data included the following:

- Date
- Time of day (to nearest second)
- Temperature of diode (if used)
- Source
- Pass indicator
- Accumulated number of trials
- Accumulated number of successful trials
- Number of samples in the given trial
- Number of ones in that trial
- Sequential analysis decision.

For all trials except the extra 1000 control trials, raw data was recorded on a second floppy disk. These included:

- All the data for each trial from the summary disk (redundancy check).
- All parameters of the sequential analysis used to analyze the trial in question.
- Two bytes of data for each sample, one byte for the random eight-bits acquired for that sample and one byte of count-rate information for secondary analysis (i.e., β -decay rate or the number of voltage zero crossings from the noise diode)
- Target bit position (i.e., bit number four) was constant for the whole study.

General Considerations

At no time did the participants have access to the generating hardware nor were they left unattended in the session area — a closed, classified area that was secured by combination and four-state cipher lock.

As with all experiments funded by the military, ours was required to meet minimal risk standards set by an Institutional Review Board (a.k.a., ethics, human uses committee). These requirements regarding human experimentation were in effect during the experiment. Since we were entering into a brand-new territory of research, safety of the participants was of primary concern for the IRB. Hence, no permission was granted to use participants who may possibly be pregnant, even unknowingly, as the experimental setup might jeopardize their well-being from some putative PK field during the effort periods.

Pilot Phase

Seventeen SRI International employees were chosen to take part in the pilot phase of this study. They were selected purely upon their own expressed interest in participating in such a study, rather than on any previous psi experience. During this and the final phase, the sample rate was fixed at 125 per second; but the participants were allowed to select their favorite time of day for their individual sessions, including their preferred experimenter, the source which seemed to “work” best, and the number of trials they would do at a single sitting.

Two general experimental parameters emerged from the pilot phase. First, it became rapidly apparent to the experimenters that an arbitrary limit of five trials/session seemed optimal. If the participant continued much beyond this limit, he became bored with the task and began to initiate each successive trial in a “mechanical” or by rote fashion.

Secondly, we felt that more interesting feedback displays might only serve to divert the participant’s attention from the task; therefore, we decided not to design alternatives to the display of the sequential sampling decision lines. Neither of these two viewpoints were based on sufficient data to be statistically significant, but the pilot success rate of a number of participants indicated that these conditions should be included in the formal portion in Phase II.

Because the participants contributed varying numbers of trials, our selection criteria for the formal phase included not only the scoring rate, but also the participant’s interest and availability for a three-month period. Table 4 shows the pilot results for each of the seven participants who were finally chosen for the formal experiment, and an asterisk indicates those participants who were scoring at a significant rate.

Table 4
Results of the Pilot Study

Participant	Source	Trials	Successes†
085	β-Decay	42	5
130	Diode	115	13
146	β-Decay	14	2
346	β-Decay	29	4
531*	β-Decay	74	16
758	Diode	45	5
827*	Diode	228	31
*Individually significant at $p = 0.02$ †Probability of a success of 0.10.			

The combined score for all participants using the diode source approached significance (49 successes for 388 trials, $z = 2.61$, $p = 0.054$, $ES = 0.133$); the total for the β -decay source was significant (27 successes for 159 trials, $z = 3.62$, $p(2-t) \leq 4.4 \times 10^{-3}$, $ES = 0.287$). The difference between the two sources was analyzed by a student's t-test ($t(545) = 1.636$, $p = 0.513$, $ES = 0.07$). Thus, there was no meaningful difference between the two source types.

Global Control Runs

Global control runs were long sessions of trials generated without intentional influence on the apparatus in the absence of all personnel from the experiment environment. The sessions, which consisted of multiples of 100 trials each, were taken at all times of the day throughout the course of the formal experiment and were designed to monitor the long-term statistical behavior of the random sources. Such long runs average over small local deviations and give an accurate measure of the ideal distribution from which the samples are taken.

The protocol required 1000 trials for each participant. These runs were analyzed as 10 runs of 100 trials each. Overall in the two-tailed case, five runs were expected to show a significant deviation, and seven were observed. This result is not significant and confirms that the long-term parent distribution was the expected binomial.

Formal Phase

Each of the seven participants chosen for the formal phase contributed 100 trials over a 3-month period. Table 5 shows the results of the formal experiment as well as for the local controls and post-session trials.

Table 5

Formal Phase Results

Participant	Controls	Formal Results	Post Session
085	8/100	11	5/100
130	10/106	12	9/100
146	12/105	9	10/105
346	7/85	7	7/75
531	8/105	17*	8/105
758	9/95	16 [†]	9/105
827	9/80	15	5/80
* $p(2-t) \leq 0.021$; [†] $p(2-t) \leq 0.039$			

Participants 085, 146, 346, and 531 used the radioactive source; participants 130, 758, and 827 preferred the noise diode. The formal phase results show that participants 531 and 758 produced 17 and 16 successes out of 100 trials, respectively. The odds that chance deviations alone produced this result are greater than 47:1 for 17 successes and greater than 25:1 for 16 ($p = 0.021$, $ES = 0.303$ and 0.039 , $ES = 0.275$, respectively). Therefore, this study met the predefined criteria for being significant. *Post hoc*, we find that the total number of successes was 87 out of 700 trials (binomial $p(2-t) = 0.01$). Also we found, *post hoc*, that there was no significant difference between the two sources ($t(698) = 1.45$, $p(2-t) = 0.146$, $ES = 0.047$).

Discussion

This study was designed to determine the degree to which certain selected personnel were able to interact, by mental means alone, with sensitive electronic equipment. We met this predefined goal, significantly.

Yet, our results might possibly be accounted for by subtle, yet quite ordinary influences. As mentioned above, we noticed four major areas in which the survey of previous work was incomplete, which prevented us from properly assessing these influences in the studies in the survey. The possibility of such influence was one of the principle reasons for repeating the experiment. In our experiment we attended to those insufficiencies as follows:

- We performed detailed analyses of the physics associated with the random sources and determined their particular sensitivities to environmental parameters. We noted that the diode was mildly sensitive to temperature, and it was monitored throughout the experiment. (There were no significant correlations of small temperature fluctuations with statistical successes). A quantum mechanical model of the diode was developed and found to match direct measurement to within one percent error. This model enabled us, by Monte Carlo methods, to simulate temperature fluctuations and assess their influence upon the statistical output. We found that temperature changes of ± 20.0 C did not affect the statistical, single bit probability of the binary sequence, which was the expected effect of the 200-kHz band pass filtering of the diode output. Likewise, large temperature changes in the radioactive source would have added electronic noise to the electron signal, but would not have affected the single bit probability. Considering the isolation precautions and the extensive random source testing, we concluded that the sources were stable against usual and in some cases (magnetic fields, for example), large environmental changes.
- We monitored the output from the sources with global and local control trials throughout the course of the three-month experiment. Because no long- or short-term statistical changes were observed, we concluded that both sources were stable with time.
- We saved a complete record of the sample-by-sample raw data for both the formal experiment effort as well as for the local control trials. These data were archived with the sponsor's organization.
- We conducted the entire experiment in a classified vault: at no time did the participants have unsupervised access to the room.

The experiment described in this paper is more complete with the addition of parameters described above. We have enumerated the individual results for local control, formal, and post-session runs in the previous section. Although the combined results for each of these three categories cannot be reported formally in terms of the protocol, they merit some discussion, nonetheless.

The combined result for the local control runs (63 successes for 676 trials) is not significant (binomial $p(2-t) = 0.09$), whereas the total across all participants for the formal experiment is. Five of the seven participants produced runs above chance expectation (ten successes), which contributed to the overall formal score of 87 successes out of 700 trials (binomial $p(2-t) = 0.01$). The odds that such a deviation would occur by chance alone are greater than 100:1. None of the formal trials were invalidated under the guidelines of the protocol.

The situation for the post-session runs is complex. None of these were individually significant. The binomial two-tailed p -value for participant 085 post session runs was 0.12. The overall total, for the post-session runs was low (53 successes for 670 trials, binomial $p(2-t) = 0.076$). In the protocol we noted that the post-session trials were used as a check on the claim of a linger effect: it had been noted in past experiments that after a significant deviation was observed during a participant's effort period, post-session trials taken just after an effort tended to deviate significantly as well. Usually, these trials would "decay" back to the expected value in a short period of time. We saw no evidence of such a correlation in our data, but we note here the significantly low overall result for the sake of completeness.

We conclude that we have observed an anomalous and, as yet, unexplained effect upon an electronic system, which cannot be accounted for easily by simple engineering considerations because:

- The magnitude of our results is commensurate with previous reported studies.
- Precautions and controls significantly exceeded any former experiments.

If we assume, then, that we have verified our initial hypothesis that an anomalous interactive phenomenon exists, we must then examine the possible mechanisms for this effect.

The first such potential mechanism, and that which is frequently mentioned in the data base, is some form of remote perturbation; that is, a physical change in a system that occurs without a participant's physical intervention. In this model, a participant through his volitional control literally "forces" a random source to change its behavior. This is at odds with currently accepted ideas of physics. However, Aharonov and Verdi (1980) describe that under specific conditions:

... if one checks by continuous observation if a given quantum system evolves from some initial state, to some other final state, along a specific trajectory in Hilbert space, the result is always positive, whether or not the system would have done so on its own accord.

Aharonov and Verdi's reference to "continuous observation" is a critical point in their paper. They note that to enforce a change of state by continuous observation, the time between successive measurements is many orders of magnitude smaller than is presently possible for real measuring devices. Furthermore, it is a long way from a highly speculative consideration about the nature of a quantum system to a physical explanation for a given experiment.

A second possible mechanism, which was mentioned in Schmidt (1970a) entails some form of psychoenergetic data selection via precognition. In this mode of operation, the participant scans the unperturbed binary sequence ahead in time and selects the proper time to initiate the trial. This strategy enables him to take advantage of an unperturbed, yet significantly deviant subsequence and achieve a success for that trial. At first thought, this idea also seems inconsistent with current thinking in physics because it involves obtaining information about a future state of a random system with virtually an infinite number of possible future states available.

Many physicists have speculated upon the time-reversed information flow for quantum systems, but the most detailed discussion has been presented by Costa de Beauregard (1977, 1978). He showed, by using strict covariant formalism, that advanced probability waves can carry information from some future state of a system backward in time to the present. De Beauregard concludes:

... what would the phenomenology of advanced waves, decreasing probability, blind [masked] statistical retrodiction (sic), and information as organizing power, look like? Exactly to what parapsychologists call precognition and/or psychokinesis. Logically these phenomena *should* [emphasis original] show up, no less than thermo-dynamical progressing fluctuations — which indeed they are.

Within the physics community the concept of gaining information from future events may not be inconsistent with current ideas of quantum physics. Even if such physics speculations of de Beauregard should prove to be true, there are many unanswered questions: how does the participant “receive” such information and in what manner does this information reach the participant’s conscious awareness? We must emphasize here that de Beauregard’s hypothesis should not be regarded as proof of mechanism, but only as interesting speculation.

In our experiment, it was premature to attempt to determine what mechanism was involved. The objective simply entailed the verification of the existence of the phenomenon under nearly ideal conditions. Since this objective was met, future work in the area should focus attention in differentiating among the possible mechanisms.

Origin of Decision Augmentation Theory³

The main underlying purpose behind Decision Augmentation Theory is to provide a method to answer the pressing PK questions: are participants changing nature (i.e., causing bits in an RNG to be different as a result of volitional effort (PK) or are participants selecting (DAT) distorted data streams through the process of informational psi ($I\Psi$), which are required for true binary sequences to mimic changes in the device. We define the state of the RNG as the parent distribution and what results from a measurement of the bit stream defines the sampling distribution. Then there are four possible interpretations of a putative PK RNG run:

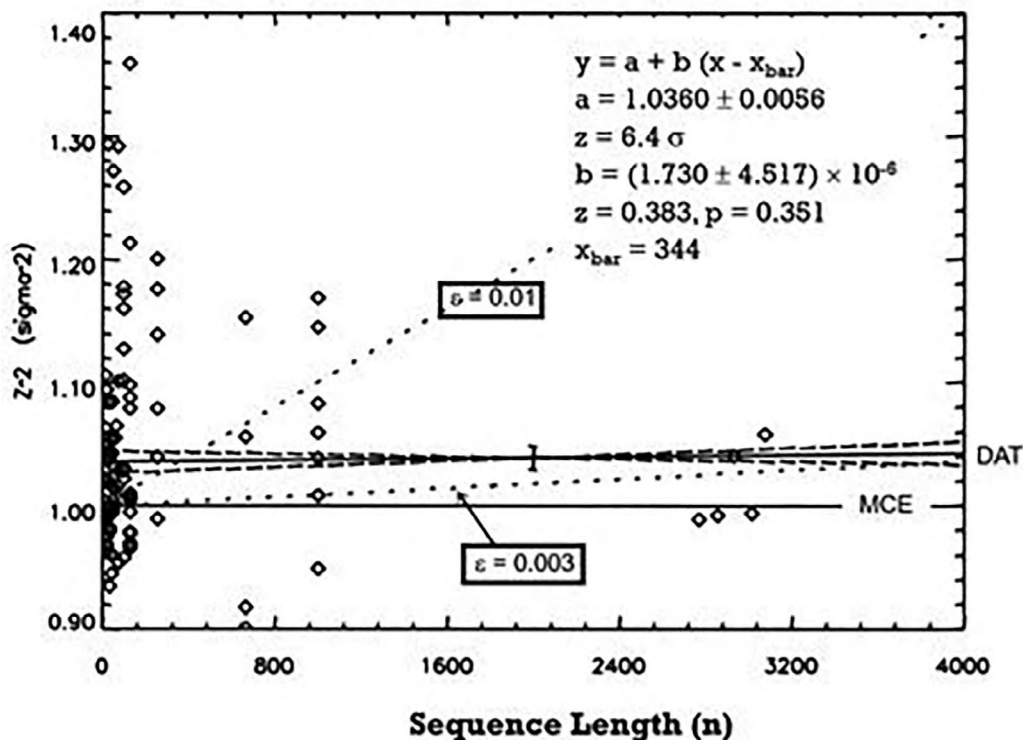
1. Nothing is happening, indicating a mean chance expectation and an *unbiased* sampling from an *unperturbed* parent distribution

³ This section of the paper is drawn from an earlier paper by the author: May, Utts, & Spottiswoode (1995a) with relevant permissions from the co-authors.

2. Nature is modified by an anomalous interaction, indicating a causal force-type interaction (PK), leading to an *unbiased* sampling from a *perturbed* parent distribution.
3. Nature is unchanged but the measurements are biased, where $I\Psi$ introduces a systematic bias in the measurement (DAT), leading to a *biased* sampling from an *unperturbed* parent distribution.
4. Nature is modified and the measurements are biased, where both PK and DAT are operating, leading to a *biased* sampling from a *perturbed* parent distribution.
5. Which of these four possibilities is the underlying process is answered in the mathematical formalism of DAT. As part of this study we analyzed 128 RNG studies using this formalism. Figure 6 shows the results.

Figure 6.

DAT Analysis of 128 RNG Studies. (May, Utts, & Spottiswoode, 1995a).



Note: The lines surrounding the DAT line are the 1σ error for the slope. This figure differs slightly from the reference in that we have added the $\pm 1\sigma$ slope error lines surrounding the DAT line.

The x-axis is the number of binary bits from a single button press, and the y-axis is the squared z-score for the study. The DAT analysis computes the least squares best fit line to the data. The black line labeled MCE is the expected fit for that case. The two dotted lines are what would be the best fit line under two different putative PK effect sizes, shown in the black boxes. The horizontal black line is the actual least squares fit to the data with a slope = $(1.73 \pm 4.157) \times 10^{-6}$. It is labeled DAT because DAT predicts a zero for the slope. Note that the 1σ error in the slope surrounds zero in support of DAT. The error bar for the DAT best fit line indicates a z-score of 6.4 above chance. This analysis clearly rejects the PK hypothesis for the RNG data.

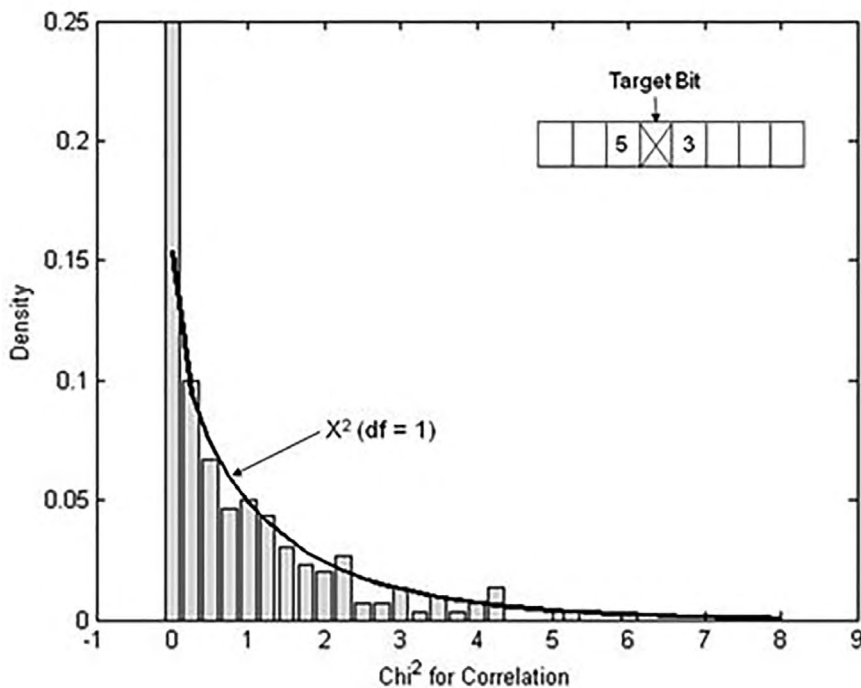
Additionally, this study presents several circumstantial arguments to question the force idea be-

hind remote perturbation or psychokinesis. As we noted above, Schmidt (1970) was beginning to question the force concepts. These include:

- The quantum mechanical model we derived for the MD-20 diode, which was used as one of the sources in the experiment provides a complete description of that device. We were able to derive from first quantum mechanical principles the complete manufacturer's specification sheet for the MD-20 diode. This is primarily a testimony to the theory of quantum mechanics; however, for the experiment described here, it means we had a complete description of the diode that included all the known solid-state physics of the device. That meant we could adjust the parameters of the device to see what would be required to fit the observed data. Using the best techniques of global optimization available, no set of parameters could account for the statistically deviant outcome. This suggests that the physical device was not changed as a result of human focused attention.
- Of the four known forces in nature, the two sources of randomness involved the weak nuclear force and the electromagnetic force, the latter being 10^{11} times stronger. For a putative psi interaction to affect both sources, it requires some form of coupling to each of the highly divergent forces. Perhaps this is possible with the invention of some new physics, but it seems to us highly unlikely. In support of no interaction, we observed no significant difference between the effect sizes that was generated from the two radically different sources of random bits ($t(698) = 1.46$, $p(2-t) = 0.146$)

We tested this idea by looking at only the significant trials from the two successful participants. Keeping in mind that the target bit was bit number four, we computed the correlation between bits four and three, four and five, and three and five. Figure 7 shows the result.

Figure 7.
Correlation Analysis. (May, Utts, & Spottiswoode, 1995a).



The correlation result is the most compelling argument against an interaction of any type involved in the pre- and post-histories from the target bit. There is no known volitional activity that a human can accomplish in a duration of one millisecond — the time between adjacent bits in the data stream. In fact, it is also unlikely that human activity can be turned on and off within eight milliseconds — the time required to gather a single byte from the random sources. Minimally, we might expect that the neighboring bits to the target bit should be “forced” exactly as the target bit, or at least highly correlated with it. Typical CNS times for conscious and unconscious mental active range in the 200 to 500 milliseconds (Libet, 1985; Schelonka et al., 2017). The fastest CNS response we found was approximately 50 milliseconds (Chaumon and Tallon-Baudry, 2008), which is 50 times slower than the millisecond tick shown in Figure 7.

The histogram shows the χ^2 for the various correlations among the bits. The smooth curve is the non-parametric theoretical expectation under the null hypothesis of no correlations among the bits (Mann–Whitney–Wilcoxon Test: $p = 0.193$). So, either there was no force of any type applied to the random sources or we must posit a new high-speed human physiological capacity to turn on and off again within one millisecond.

We think Schmidt (1969) was correct when he indicated that RNG data can be understood in selecting locally deviant subsequences from otherwise unperturbed sources of randomness. This was later developed into Decision Augmentation Theory (May, Utts, & Spottiswoode, 1995b).

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Appendix

Table A.

Random Number Generator Survey From 1970 to 1979. (May, Humphrey, and Hubbard, 1980, pp. 69-72).

Title/Author	Comments	Statistics*
1970		
PK experiments with animals as subjects (Schmidt, 1970b)	cat experiment	1.60×10^{-2}
PK experiments with animals as subjects (Schmidt, 1970b)	cockroach experiment	1.00×10^{-4}
A PK test with electronic equipment (Schmidt, 1970a)		1.00×10^{-3}
1971		
A PK experiment comparing meditating versus non-meditating subjects (Matas and Pantas, 1971)	Meditating / Nonmeditating	2.00×10^{-2} n.s.
PK scoring under preferred and nonpreferred conditions (Pantas, 1971)	Preferred condition / Nonpreferred condition	1.00×10^{-2} n.s.
Psi tests with psychologically equivalent conditions and internally different machines (Schmidt and Pantas, 1971)	Precognition	1.00×10^{-2}
Psi tests with psychologically equivalent conditions and internally different machines (Schmidt and Pantas, 1971)	Psychokinesis/ precognition	1.70×10^{-2}
PK conditioning (Camstra, 1972)	I. Auditory feedback	n.s.
	(a) Subjects asked to concentrate	
	(b) Subjects asked not to concentrate	significant
	II. Enhanced feedback: auditory and visual	n.s.
1972		
PK performance with waking suggestions for muscle tension versus relaxation (Honorton and Barksdale, 1972)	I. Passive concentration/muscle tension	2.00×10^{-3}
	Active/tension	n.s.
	Passive/relaxation	n.s.

	Active/relaxation	n.s.
	II. Replication using individual subjects (not group PK)	
	Active/tension	n.s.
	Passive/relaxation	n.s.
	Active/relaxation	n.s.
	III. Replication using single subject Tension	5×10^{-5}
	Relaxation	5×10^{-4}
Confirmation of PK action on electronic equipment (André, 1972)	I. Experiment 1	
	Morning session	3×10^{-3}
	Afternoon Session	n.s.
	II. Experiment II: Morning Session Only (strong decline effects observed)	5×10^{-3}
Psi tests with internally different machines (Schmidt and Pantas, 1972)	I. Experiment 1: Groups	
	Precognition	1×10^{-2}
	PK	5×10^{-4}
	II. Experiment 2: single subject	
	Precognition	5×10^{-5}
	PK	5×10^{-3}
A subject's efforts towards voluntary control (Kelly and Kanthamani, 1972)	Four-button machine	1×10^{-9}
	Noise source (2 subjects combined)	5×10^{-3}
1973		
PK tests with a high speed RNG (Schmidt, 1973a)	Slow/visual	1×10^{-2}
	Slow/acoustical	1×10^{-2}
	Fast/visual	1×10^{-2}
	Fast/acoustical	1×10^{-2}
PK effects on random time intervals (Schmidt, 1973b)	Several subjects	2.6×10^{-5}
	One subject	1.45×10^{-4}
	Brine shrimp	1.37×10^{-3}

1974		
Psychokinetic influences on an electromechanical random number generator during evocation of "left-hemispheric" vs. right-hemispheric functioning (Andrew, 1974)	Right hemispheric tape	2×10^{-2}
	Left hemispheric tape	1.10×10^{-2}
Observation of subconscious PK effects with and without time displacement (Schmidt, 1974a)	Present time	1×10^{-3}
	Pre-recorded time	1×10^{-3}
	Pre-recorded control	n.s.
Comparison of PK action on two different random number generators (Schmidt, 1974b)	I. Five subjects/200 trials each	
	Simple generator	5.11×10^{-3}
	Complex generator	n.s.
	Simple generator "inactive"	n.s.
	II. Ten subjects/100 trials each	
	Simple generator	6.74×10^{-3}
	Complex generator	n.s.
	Simple generator "inactive"	n.s.
	III. Twenty subjects/50 trials each	
	Simple generator	3.57×10^{-2}
Complex generator	n.s.	
Simple generator "inactive"	n.s.	
1975		
PK experiment with repeated, time displaced feedback (Schmidt, 1975)	Present time	$5 \times 10^{-2**}$
	Prerecorded	$5 \times 10^{-4**}$
Volitional control in a PK task with auditory and visual feedback (Honorton and May, 1975)	High aim	$9 \times 10^{-3**}$
	Low aim	n.s.
A dynamic PK experiment with Ingo Swann (May and Honorton, 1975)	PSI FI	1.10×10^{-2}
A Preliminary PK experiment with a novel computer-linked high-speed random number generator (Millar and Broughton, 1975)	I. RNG 1: 1000/s	n.s.
	II. RNG 2: 100/s	n.s.
	III. RNG 3: 10/s	n.s.

	IV. RNG 4: 1/s	n.s.
Psychokinetic influences on random number generators during evocation of "analytic" versus "nonanalytic" modes of information processing (Braud, Smith, Andrew and Willis, 1975)	I. (see RIP , 1974, p. 58)	
	Physiology monitored/ Experienced monitor	
	Non-analytical mode	$2.50 \times 10^{-2**}$
	Analytical mode	n.s.
	No physiology/naive monitor	
	Nonanalytical mode	n.s.
	Analytical mode	n.s.
Psychokinesis as psi-mediated instrumental response (Stanford, Zenhause, Taylor and Dwyer, 1975)	Experimenter 1: conscious PK	n.s.
	Experimenter 1: unconscious PK	5×10^{-2}
	Experimenter 2: conscious PK	1×10^{-2}
	PK Experimenter 2: unconscious	n.s.
1976		
A test of intentional versus unintentional PK (Millar and Mackenzie, 1976)	Intentional condition	n.s.
	Unintentional condition	n.s.
Effects of meditation and feedback on psychokinetic performance: A pilot study with an instructor of transcendental meditation (Honorton, 1976)	I. Premeditation feedback	
	High-aim	n.s.
	Low-aim	n.s.
	II. Meditation without feedback	
	Theta-alpha	n.s.
	Outside theta-alpha	n.s.
	III. Post-meditation feedback	2.40×10^{-2}
	High-aim	
Effects of meditation and feedback on PK performance: results of practitioners of ajapa yoga (Winnett and Honorton, 1976)	I. Premeditation feedback	
	High-aim	n.s.
	Low-aim	5.00×10^{-3}
	II. Meditation without feedback (no physiology)	n.s.
	III. Post-meditation feedback	
	High-aim	n.s.
	Low-aim	n.s.

The performance of healers in PK tests with RNG feedback algorithms (Bierman and Wout, 1976)	Experiment 1: (RNGS used separately)	
	Group A: False Feedback	
	Fast RNG	n.s.
	Slow RNG	n.s.
	Group B: True Feedback	
	Fast RNG	n.s.
	Slow RNG	n.s.
	Experiment II: (RNGs used simultaneously)	
	Group A: False Feedback	
	Fast RNG	n.s.
	Slow RNG	n.s.
	Group B: True Feedback	
	Fast RNG	n.s.
	Slow RNG	n.s.
	Experiment II: (RNGs used separately)	
	Group A: False Feedback	
Fast RNG	n.s.	
Slow RNG	n.s.	
Group B: True Feedback		
Fast RNG	3.16×10^{-2}	
Slow RNG	3.16×10^{-2}	
PK effects by a single subject on a binary random number generator based on electronic noise (Hill, 1976)	One subject	$1.60 \times 10^{-3**}$
A PK experiment with a covert release-of-effort test (Broughton and Millar, 1976)	Overt trials	n.s.
	"Release-of-effort"	n.s.
Search for a relationship between brainwaves and PK performance (Schmidt and Terry, 1976)	A1pha/enhancement	1.93×10^{-3}
	Beta/enhancement	1.93×10^{-3}
	Alpha/suppression	n.s.
	Beta/suppression	n.s.

A covert PK test of a successful psi experimenter (Millar, 1976)	Altered χ^2 values	n.s.
An investigation of the psi enhancement paradigm of Schmidt (Millar and Broughton, 1976)	Experimenter 1: Present time	n.s.
	Prerecorded	n.s.
	Experimenter 2: Present time	n.s.
	Prerecorded	n.s.
PK effects on prerecorded targets (Schmidt, 1976)	Experiment 1:	
	Present time	$1.00 \times 10^{-3**}$
	Prerecorded	$1.00 \times 10^{-3**}$
	Experimenter 2:	
	Present time	5.00×10^{-2}
	Prerecorded	5.00×10^{-3}
	Experimenter 3	
	Present time	5.00×10^{-2}
	"Easy" trials	n.s.
"Difficult" trials	n.s.	
1977		
Conscious and subconscious PK tests with prerecorded targets (Terry and Schmidt, 1977)	Total conscious	5.00×10^{-3}
	Total subconscious	n.s.
A PK investigation of the experimenter effect and its psi based component (Broughton, Millar, Beloff and Wilson, 1977)	Sixteen experimenters using prerecorded targets (reported as 16 different experiments)	n.s.
Psychokinetic effects upon a random event generator under conditions of limited feedback to volunteers and experimenter (Braud and Braud, 1977)	Experimenter trial-by-trial feedback	
	Subject/feedback	n.s.
	Subject/nonfeedback	5.00×10^{-2}
	Experimenter/global feedback Subject/nonfeedback	$5.00 \times 10^{-2**}$
Computer controlled random number generator PK tests (Jungerman and Jungerman, 1977)	I. $p_0 = 1/2$	4.00×10^{-2}
	II. $p_0 = 1/8$	n.s.

A test of the Schmidt model's prediction concerning multiple feedback in a PK task (Davis and Morrison, 1977)	Direct	n.s.
	Delay one	n.s.
	Delay four	n.s.
Plant PK on an RNG and the experimenter effect (Edge, 1977)	I. Growth in darkness	
	Plants absent	n.s.
	Plants present	n.s.
	II. Plants light-starved	
	Plants absent	n.s.
	Plants present	n.s.
	III. Growth in darkness/addition of florescent light	
	Plants absent	n.s.
	Plants present	1.70×10^{-6}
	IV. Same as III above	
	Plants absent	n.s.
	Plants present	3.60×10^{-2}
Allobiofeedback: Immediate feedback for a psychokinetic influence upon another (Braud, 1977)	I. (Experimenter effecting subject GSR)	1.0×10^{-2}
	Effect on RNG with respect to experimenter feedback	
	A. Audible	n.s.
	B. Inaudible	$5.0 \times 10^{-3**}$
Electronic random number generator operation associated with EEG activity (Heseltine, 1977)	Experiment I	
	High tone	n.s.
	Low tone	1.50×10^{-2}
	Nonfeedback	
	Experiment II	
	Low tone	5.0×10^{-4}
Nonfeedback	n.s.	
A take-home test in PK with prerecorded targets (Schmidt, 1977)	I. Experiment 1: Prerecorded high tone and prerecorded low tone combined result	1.0×10^{-3}
	II. Experiment 2	
	Group/inspected	n.s.

	Group/not-inspected	n.s.
	Individual/inspected	n.s.
	Individual/not-inspected	n.s.
<hr/>		
Electronic random generator operation and EEG activity: Further studies (Heseltine, 1978)	I. Series 3	
	Left hemisphere/feedback	2.0×10^{-2}
	Left hemisphere/no feedback	n.s.
	2. Series 4	
	Right hemisphere/feedback	n.s.
	Right hemisphere/no feedback	n.s.
	3. Series 5	
	Left hemisphere/feedback	n.s.
	Left hemisphere/no feedback	n.s.
Psi correlates of volition: A preliminary test of Eccles' "neurophysiological hypothesis" of mind-brain interaction (Honorton and Tremmel, 1978)	I. Experiment 1	
	Gated EEG/feedback	2.0×10^{-3}
	II. Experiment 2	
	Gated EEG/feedback	$5.0 \times 10^{-3**}$
	Ungated EEG/feedback	n.s.
	Gated EEG/feedback	n.s.
Search for psi fluctuations in a PK test with cockroaches (Schmidt, 1978a)	Algae	n.s.
	Yeast and chlorella	n.s.
	Wingless fruit flies	n.s.
	Cockroach replication	n.s.
Use of stroboscopic light as rewarding feedback in a PK test with prerecorded and momentarily-generated random events (Schmidt, 1978b)	I. Section 1	
	Prerecorded/ON	3.73×10^{-3}
	Prerecorded/OFF	n.s.
	II. Section 2	
	Real time/ON	1.93×10^{-3}
	Real time/OFF	n.s.
PK with immediate delayed and multiple feedback: A test of the Schmidt model's prediction	Direct	n.s.
	Delay one	n.s.

(Morrison and Davis, 1978)	Delay four	n.s.
Intentional observer influence upon measurements of a quantum mechanical system: A comparison of two imagery strategies (Morris, Nanko and Philips, 1978)	I. Study 1 (all subjects used both imagery)	
	Goal-oriented	1.0×10^{-2}
	Process-oriented	n.s.
	Study 2 (all subjects used both imagery)	
	First session:	
	Goal-oriented	n.s.
	Process-oriented	
	Second session (subject's imagery choice)	
	Goal-oriented	1.0×10^{-3}
	Process-oriented	n.s.
1979		
The influence of imagery and feedback on PK effects (Levi, 1979)	Goal-oriented/feedback	5.0×10^{-2}
	Goal-oriented/nonfeedback	4.50×10^{-2}
	Process/feedback	n.s.
	Process/nonfeedback	n.s.
	Control/feedback	n.s.
	Control/nonfeedback (Subject or experimenter start in each case above proved insignificant; reported as 12 separate experiments)	n.s.
An investigation into the use of aversion therapy techniques for the operant control of PK production in humans (Broughton, Millar and Johnson, 1979)	I. Subject 1	
	A	n.s.
	B	n.s.
	A	n.s.
	Release of effort	n.s.
	II. Subject 2	
	A	5.0×10^{-2}
	B	n.s.
A	n.s.	

	Release of effort	n.s.
	III. Subject 3	
	A	n.s.
	B	n.s.
	A	n.s.
	Release of effort	n.s.
	IV. Subject 4	
	A	n.s.
	B	n.s.
	A	n.s.
	Release of effort	n.s.

Une Experience avec un Générateur de Nombres Aléatoires : L'origine de la Théorie de la Decision Augmentée

Résumé : En 1979, l'équipe de recherche du SRI International a conduit une expérience avec un unique générateur de nombres aléatoires (GNA). Le but était de répliquer et d'étendre les résultats issus de la littérature de plusieurs façons. L'analyse séquentielle était utilisée pour fournir une augmentation en deux temps de la sensibilité statistique ; deux formes d'aléatoire de sources fondamentalement différentes étaient utilisées : la désintégration β de ^{147}Pm et le bruit électronique d'une diode en silicone bien comprise. Des efforts d'ingénierie substantiels ont permis d'isoler ces sources de leurs effets environnementaux, et un modèle de mécanique quantique décrivait adéquatement les propriétés connues du bruit électronique de la diode. Une définition a priori d'un résultat positif était donnée de façon plus stricte que dans les études habituelles ; deux participants sur sept doivent produire indépendamment des preuves significatives d'un effet. Ont pris part à l'étude sept participants dépistés pour leur capacité de PK parmi une population de 17 candidats. Deux ont produit des résultats indépendamment significatifs ($p \leq .021$ et $p \leq .039$, respectivement). Bien que ces résultats soient consistants avec ceux émanant de la littérature sur la micro-PK, nous ne reportons aucune preuve définitive d'effets PK. Les résultats apparaissent plutôt comme le produit du psi informationnel de la part des participants.

Ein Zufallszahlengenerator-Experiment: Der Ursprung der Theorie der Entscheidungsausweitung

Zusammenfassung: 1979 führte das Forschungsteam von SRI International ein Experiment mit einem Zufallszahlengenerator (RNG) durch. Ziel war es, bisherige Erkenntnisse, über die eine umfangre-

iche Literatur vorliegt, zu replizieren und zu erweitern. Die sequentielle Analyse wurde verwendet, um die statistische Sensitivität in zweifacher Weise zu erhöhen; zwei grundsätzlich verschiedene physikalische Zufallsquellen wurden verwendet: β -Zerfall von ^{147}Pm und elektronisches Rauschen von einer allgemein bekannten Silizium-Rauschdiode. Durch einen erheblichen technischen Aufwand wurden diese Quellen von Umwelteinflüssen abgeschirmt, und die bekannten Eigenschaften der elektronischen Rauschdiode wurden durch ein quantenmechanisches Modell genau beschrieben. Die a priori-Definition für ein erfolgreiches Ergebnis war strenger als beim üblichen Vorgehen; zwei von sieben Teilnehmern mussten unabhängig voneinander einen signifikanten Nachweis für einen Effekt erbringen. Sieben Teilnehmer, die aus einer Stichprobe von 17 Kandidaten auf ihre PK-Fähigkeit überprüft wurden, nahmen an der formalen Studie teil. Zwei erzielten unabhängig voneinander signifikante Ergebnisse ($p \leq .021$ bzw. $p \leq .039$). Während diese Ergebnisse mit denen in der Literatur über Mikro-PK übereinstimmten, berichten wir über den definitiven Nachweis, dass es sich keinesfalls um PK-Effekte handelt. Vielmehr scheint das Ergebnis mit einer psi-bedingten Information seitens der Teilnehmer zusammenzuhängen.

Un Experimento con Generador de Números Aleatorios: El Origen de la Teoría de Decisión Aumentada

Resumen: En 1979, el equipo de investigación del Instituto de Investigación de Standford Internacional (*SRI International*, por sus siglas en inglés) llevó a cabo un experimento con un único generador de números aleatorios (GNA). El objetivo era replicar y ampliar los hallazgos de la abundante bibliografía en varias formas. Se utilizó el análisis secuencial para duplicar el aumento en la sensibilidad estadística; se utilizaron dos fuentes físicas aleatorias fundamentalmente diferentes: desintegración β de ^{147}Pm , y ruido electrónico de un reconocido diodo de ruido de silicio. Un esfuerzo significativo de ingeniería logró aislar estas fuentes de los efectos ambientales, y un modelo de mecánica cuántica describió con precisión las propiedades conocidas del diodo de ruido electrónico. La definición a priori de un resultado exitoso fue más estricta que en los estudios habituales; al menos dos de siete participantes debían producir evidencias significativas del efecto de forma independiente. Siete participantes que fueron evaluados respecto a sus habilidades psicoquinéticas (PQ), de una población de 17 candidatos, participaron en el estudio. Dos produjeron resultados significativos ($p \leq .021$ y $p \leq .039$, respectivamente) de forma independiente. Si bien dichos resultados fueron consistentes con los de la literatura sobre micro-PQ, reportamos evidencia definitiva de que no hubo efectos PQ en absoluto. Más bien, el resultado parece surgir debido al psi informacional del participante.

The Mote in Thy Brother's Eye

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A Review of *The 7 Deadly Sins of Psychology: A Manifesto for Reforming the Culture of Scientific Practice*, by Chris Chambers. Princeton, NJ: Princeton University Press, 2017. Pp. 274. \$19.95. ISBN: 978-691-15890-7

Chris Chambers has produced a book that provides a welcome response to some of the problems inherent in data collection, analysis, and reporting that have plagued modern psychology. While surely this is a worthy cause, the author adopts a quasi-religious framework (in terms of sins and redemption) that some may find jarring and misjudged, and he does have a tendency to overegg his pudding with generous doses of melodrama. He describes this book as being “borne out of ... a deep personal frustration with the working culture of psychological science ... if we continue as we are then psychology will diminish as a reputable science and could very well disappear” (p. ix), which derives from a sense that “like so many other ‘soft’ sciences, we found ourselves trapped within a culture where the appearance of science was seen as an appropriate replacement for the practice of science” (p. ix). Stirring words intended to energise us into action.

He starts badly. In Chapter 1 (‘The sin of bias’) Chambers surprisingly begins by focusing on Daryl Bem’s (2011) publication of a suite of precognition experiments in the *Journal of Personality and Social Psychology* as the point that changed psychology forever by drawing attention to its deeply flawed nature — not the dramatic high profile revelations of fraud perpetrated by psychologists such as Diederik Stapel or Jan Smeesters, nor the dismal failure of the Open Science Replication project, nor the discovery that many psychologists admitted to questionable research practices such as p-hacking and HARKing (Fanelli, 2009), despite all of these being considered in detail later on in the book. No, it was the capacity for a respected psychology journal to entertain the possibility that psi effects could be empirically demonstrated that acted as cue that something had gone very seriously awry. Chambers quickly disparages Bem’s data as “nonsensical” and self-evidently untrustworthy. He draws comfort from failed replication attempts by Ritchie, French, and Wiseman, which provide a sober correction of this strange anomaly. The logic here is rather puzzling given that Bem’s original 9 experiments involved 1,050 participants, while these replications consisted of just 3 experiments focused on one protocol and tested just 50 participants each. No mention is made of Bem, Tressoldi, Rabeyron, and Duggan’s (2016) report on 90 experiments from 33 laboratories in 14 countries that yielded an overall effect greater than 6 sigma ($p = 1.2 \times 10^{-10}$). In a final swipe, Chambers quotes Wagenmakers et al. who saw Bem’s publication as an

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indication “that something is deeply wrong with the way experimental psychologists design their studies and report their statistical results” while neglecting to mention two articles by Bayesian statisticians that were critical of their analysis and conclusions (Bem, Utts, & Johnson, 2011; Rouder, & Morey, 2011). Incredibly, all this opens a chapter intended to ‘explain how unchecked bias fools us into seeing what we want to see’ — I fear the irony may be lost on Chambers, and I confess that after such an inauspicious start I did not have high hopes regarding the merit of this book.

He goes on to explore the ‘sin of bias’, focusing particularly on confirmatory bias in the refereeing process, which privileges weaker studies that produce unambiguous narratives built around statistically significant results over stronger studies with more nuanced interpretations of a more heterogeneous collection of significant and nonsignificant findings, despite the latter being more likely to reflect the complexities of life outside the laboratory.

Chapter 2 considers ‘The sin of hidden flexibility’ and introduces the notion of HARKing (Hypothesising After Results are Known) and other questionable research practices (QRPs). He elaborates, ‘faced with the career pressure to publish positive findings in the most prestigious and selective journals, it is now standard practice for researchers to analyse complex data in many different ways and report only the most interesting and statistically significant outcomes ... any conclusions drawn from such tests will, at best, overestimate the size of any real effect. At worst they could be entirely false’ (p. 23). He links this to p-hacking; that is, the inflation of the alpha level (likelihood of committing a Type I error) to much greater than .05 by the use of multiple independent analyses and selecting post facto only those that suggest effects (see Simmons, Nelson & Simonsohn, 2011), but it extends to many other analytical decisions (such as how to deal with outliers, how to define the DV, whether to include covariates, etc.). He claims,

in even the simplest experimental design, these [decision] pathways quickly branch out to form a complex decision tree that a researcher can navigate either deliberately or unconsciously in order to generate statistically significant effects. By selecting the most desirable outcomes, it is possible to reject H_0 in almost any set of data (p. 25).

A striking example of this compound effect can be seen in Steegen, Tuerlinck, Gelman and Vanpaemel’s (2016) multiverse analysis of data from a study of the effects on fertility of religiosity and political attitudes. The dramatic variation in the outcome and conclusions drawn as a result of quite subtle changes to various analytic decisions is sobering.

Recourse to QRPs is claimed to be very common. Chambers refers to remarkable survey data from John, Loewenstein, and Prelec (2012) that suggest a very high proportion of experimental psychologists have on at least one occasion selectively excluded data or failed to report all conditions in an experiment. He concludes that ‘far from being a rare practice, p-hacking in psychology may be the norm’ (p. 29), but in doing so makes the same error as Bierman, Spottiswoode, and Bijl (2016) in mistaking the proportion of individuals who ever engaged in a behaviour for a measure of the behaviour’s prevalence (i.e., how frequently they might engage in that practice) — if someone in their childhood once stole on impulse a penny candy, for which they have ever since been ashamed, it does not make them a seasoned shoplifter. Bierman et al.’s QRP model of ganzfeld outcomes achieves optimal fit by assuming prevalences (when practically possible) for QRPs such as relegating confirmatory studies to pilot status

(49%), promoting pilot studies to confirmatory ones (47%), optional stopping (32%), optional extension (44%), publication bias (58%), and post-hoc data exclusion (41%) that in my view are so unrealistic as to be without value; for example, they are orders of magnitude bigger than those suggested by Fiedler and Schwarz (2016) using a more incisive and valid measure (ranging from less than 1% to 10%).

It is not enough to rely on subsequent replication attempts to verify whether novel effects are real or a product of type 1 error (or QRPs), since those studies also can be susceptible to the same decision biases when conducting and reporting analyses. This is especially so when the replication is ‘conceptual’ rather than exact, whereby some finding is deemed to be broadly consistent with the original finding in ways that allow for shoe fitting. Chapter 2 ends by proposing a set of methods for countering the effects of such ‘hidden flexibility’, including pre-registration, disclosure statements, data sharing, controlling optional stopping, and community consensus over standard research practices (in terms of appropriate IVs and DVs, rules for dealing with outliers, standard analyses, etc.).

Chapter 3 considers ‘the sin of unreliability’. Replication is described as “the immune system of science” (p. 47), acting to identify and neutralise deviant findings, but Chambers recognises that in practice it rarely occurs because the mechanisms of science (notably funding and publication) don’t reward direct replications, preferring novelty and innovation (I discuss this in more depth in Roe, 2016b). This section seems to me to retain a naive notion of replication on demand in which any competent person should be able to confirm a published result. Interestingly, the supporters he cites typically come from the natural sciences, where those assumptions might hold. In the social sciences, where participants may be much more sensitive to subtle changes in experimental conditions (including the demeanour of the researcher who interacts with them) there is a much stronger case to be made for experimenter-linked effects (see Roe, 2016c).

A major contributor to replication failures is lack of statistical power. This lesson will be very familiar to those working in parapsychology, thanks to the valuable work of Jessica Utts (e.g., 1999), and don’t require retelling here. Chambers bemoans the failure of researchers to adequately describe the methods they have used, which is often attributed to space constraints when publishing papers and a lack of concern among reviewers about ‘unnecessary detail’. This can contribute to failures to fully replicate conditions but can also disguise some QRPs such as omitting to mention variables (or even conditions) that didn’t work out as expected. Apart from these gross deviations from good practice, however, it seems to me much more complicated in practice to decide what factors need to be described — in how much detail should we describe any preparations we make to be in the right frame of mind as researchers, or to explain our efforts to establish rapport with participants? What might seem to some an unnecessarily meticulous description of prevailing conditions for a supposedly robust psychological effect might seem to others like a genuine effort to capture a complex, subtle human-to-human interaction (see, e.g., Watt, Wiseman & Schlitz, 1998).

In Chapter 4, Chambers moves on to ‘The sin of data hoarding’, which he characterises as follows:

Many psychologists consider sharing data only where doing so brings professional gains, such as working partnerships that lead to joint authorship of papers ... They fear that unfettered

access to data would be to surrender intellectual property to rivals, allow undeserving competitors to benefit from our own hard work and invite unwelcome attention from critics. [In a climate of concern about QRPs] ... who would want their mistakes or dubious decision making exposed to the scrutiny of a rival researcher or (worse) a professional statistician? (p. 76)

Undoubtedly Chalmers is right to draw attention to the many advantages of data sharing, mitigating against error and dubious practices as well as ensuring that data are available to future researchers with previously unthought-of questions or approaches to data analysis. However, there are thorny ethical issues associated with unconstrained data usage such as breaching the terms under which participants originally agreed to provide data, and this requirement might only be achievable prospectively. Additionally, enabling secondary data analysis could actually encourage the kinds of QRP previously discussed in this book. Given access to large amounts of data without the constraints of having to pre-specify hypotheses in the design phase in the way that the study's originators are, and with less time and energy diverted to actually conducting the study and collecting the data, the secondary data analyst is much better placed to subject the data to all sorts of interrogation without feeling obligated to report on all their false trails and missteps as they search for something more interesting to build a journal paper around. One protection against this would be to adopt a policy that all secondary data analysis also needs to be pre-registered.

In practice, data sharing is still very rare. This is starkly illustrated by Wicherts, Borsboom, Kats, and Molenaar's (2006) attempt to secure data from 249 studies published by the American Psychological Association. After sending 400 email requests over 6 months, they had still only received data from 64 studies (25.7% of the total). In support of concerns about dubious practices, Wicherts, Bakker, and Molenaar (2011) found that errors in reporting p values were twice as common in papers by authors who refused to share data than in those where data were provided on request. In a number of cases these errors led nonsignificant outcomes to be reported as significant.

Chapter 5 introduces 'The sin of corruptibility'. Chambers begins with a salutary tale of an early career researcher who travels the slippery slope from playing with data to see what effects analysis decisions might have on the resulting significance value for a putative effect (p-hacking) to outright data manipulation. Although this account is fictitious, he quickly moves on to similar documented cases such as Diederik Stapel (see Roe, 2016a for further details of this case and a comparison with cases from parapsychology). Unfortunately, Chambers succumbs to the temptation to portray Stapel as inadequate, needy and deviant, in a process of othering (in the language of Husserl) that dangerously immunises the wider community — the failings become personal rather than systemic. As the chapter progresses, however, the emphasis shifts to institutional processes. He nicely contrasts, for example, the fairly standard practice of a journal that might review ten papers on the same subject and accept for publication only the two that report statistically significant effects with the dubious practice of a researcher who conducts ten experiments and decides only to submit for publication the two that gave significant outcomes, leaving the others to languish in a file drawer.

Chapter 6 ('The sin of internment') focuses on the restricted way that the results of research are disseminated, criticising the limited access afforded to the general public. Full open access would allow

readers to copy, distribute and display published work in accordance with the particulars of a creative commons attribution licence, often with the result that the financial burden for review, production and publication are carried by the authors rather than readers. This may not be a viable model for many journals, but hybrid approaches are possible, with some 'shop window' articles being free to access while others can be accessed via a paywall. While some journals have opted for these hybrid approaches (such as the APA's journals) psychology as a whole has been slow to shift from restricted access publishing. Chambers attributes this partly to concerns that making pre-publication versions publicly available might draw attention to discrepancies between them and the final published version, which could reflect QRPs such as reframing the aims and hypotheses so they fit better with the reported analyses, but this seems highly speculative. A more likely explanation, also offered here, is that restricted access is in the interest of the highest impact journals and therefore of researchers for whom journal reputation and impact is an important consideration for career advancement. This restriction has severe and unexpected consequences, for example in disadvantaging researchers based in poorer countries, or in making one's work unavailable to policy makers and other key stakeholders (astonishingly, the Higher Education Funding Council for England, which oversees the activity of universities, has 'zero access to non Open Access content' (p. 140)).

Interestingly, articles published in open access journals are cited more frequently than articles with restricted access. Making primary material publicly available would allow the interested neutral to make their own judgements concerning study quality and the plausibility of counter explanations, rather than having to rely on secondary sources. Clearly, a shift toward greater transparency and openness is potentially of great benefit to parapsychology.

The final sin, 'Bean counting', features in Chapter 7. Here, Chambers criticises the metrification of research, which has led to certain parameters (such as grant income and number of outputs) being treated as indicators of research quality and impact. This clearly favours some (expensive) lines of research such as neuroscience over inexpensive lines of research such as qualitative social psychology. Citation indices are seen as particularly pernicious, not least because they are unrepresentative, with 20% of published papers being responsible for 80% of citations (the so-called 80/20 rule). The criteria for calculating impact factors also turns out to be surprisingly susceptible to lobbying and negotiation. Chambers concludes, "whether there is any better metric than JIF [Journal impact factor] is unclear, but it is hard to imagine anything worse" (p. 155).

In the final chapter ('Redemption'), Chambers recaps on the main sources of bias, error, and fraud that have been highlighted throughout the book. He offers solutions that reflect recent initiatives to encourage preregistration and open data. He is particularly keen to promote peer review of papers at the design stage (that is, before data collection has begun), with journal reviewers making recommendations based on rationale and methodology rather than outcomes. Chambers refers to this as a Registered Report, and he notes that while others have made similar suggestions in the past (notably Robert Rosenthal in the 1970s), these have never previously been implemented (p. 179). He is clearly oblivious of the *European Journal of Parapsychology's* policy regarding pre-acceptance, also dating from the 1970s.

Much of the chapter is devoted to lobbying for the adoption of registered reports. A number of additional proposals, such as producing a 'reproducibility index' seem too labour intensive to gain traction, but others such as more co-ordinated multicentre replication attempts, and much better protection for 'whistle blowers' who identify fraudulent activity by colleagues, seem more promising as a model for good practice in parapsychology.

In summary, *The 7 Deadly Sins of Psychology* is elegantly written, very well researched, and clearly has been produced by someone at the heart of the movement for change. There are fulsome endnotes but unfortunately no separate references list. The recommendations are, on the whole, very sensible; indeed, the case for change seems to me compelling. It's just a pity that Chambers didn't take the time to follow his own advice when it comes to his pronouncements about parapsychology generally and the Bem paradigm in particular. Nevertheless, I would highly recommend the book to anyone conducting research, or having an academic interest, in the social sciences (including parapsychology).

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I Second that Emotion: Looking at Psi in Psychotherapy and Daily Life

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Reviews of: *Psi in Psychotherapy: Conventional & Nonconventional Healing of Mental Illness* by Alex Tanous, Elaine Schwinge, and Andrew F. Banbrick. White Crow Books, 2019. Pp. xxix + 184. \$17.99. ISBN978-1-78677-087-5

Sensitive Soul: The Unseen Role of Emotion in Extraordinary States by Michael A. Jawer. Foreword by Christine Simmonds-Moore. Park Street Press, 2020. Pp. xiii + 242. \$16.99. ISBN978-1-64411-082-9

These two recently published books will interest readers looking at relationships between psychology and psi. They illuminate corners of our field not often the focus of laboratory experiments. *Psi in Psychotherapy*, published in 2019 but written several decades earlier, is mostly about psi in therapeutic contexts. *Sensitive Soul* examines psi and other anomalous experiences through the lens of human emotion, using recent findings from numerous sources.

Psi in Psychotherapy has a foreword by parapsychologists Collum E. Cooper and Stanley Krippner. They emphasize that clinical approaches to parapsychology are usually concerned with the impact of anomalous experiences on individuals rather than on investigating the mechanisms involved (p. xviii). This book, however, has a different approach. It documents the work of well-known psychic Alex Tanous when he worked with clinicians to help their clients.

His technique was threefold. After looking at the client's aura, he gave general insights to the clinician and patient. The clinician initiated or enhanced therapy methods based on these insights. Ultimately, the client's progress was reviewed by the psychic, clinician, and client. Tanous felt that the healer's attitude was essential to the healing process, which came not from him but from his connection to universal consciousness. He also looked past the client's memories and traumas to what he saw as genetic and inherited consciousness. To some degree, this resembles recent epigenetic findings described by Jawer (p. 96).

Tanous also did physical healing, which he saw connected to both human psychology and spiritual consciousness. More recent writings by Larry Dossey and other physicians present similar viewpoints. Tanous reports sending healing energy into the ill person, whose symptoms were exacerbated within a short period of time, frequently mimicking final disease stages. Then, "the healing switches within the person are activated and the disease turns on itself, thereby giving way to recovery" (p. 49).

Tanous' family supported the development of his abilities, first demonstrated in childhood. He points out that psychics were prominent diviners and healers in early societies before the western Age of Reason. Today, we can see how recent interest in shamanism and alternative healing encourages re-discovery of these earlier methods and roles. Tanous was tested in laboratory settings and shown to be in altered states when involved in psychic or healing activities. Some tests included OBE manifestations.

The importance of Tanous' work is described by a recent reader (Gebelein, 2020):

The roots of people's psychological problems are usually discovered through traditional methods but also by psychic psychotherapists, without telling their clients or professional colleagues. Alex Tanous, in collaboration with psychotherapists, brought it into the open with clients' permissions. Without this, it would be a trespass, an invasion of privacy. He presents psychic abilities to the professional community as a valid way to detect sources of psychological problems, in the face of prejudices they might have against the existence or value of such abilities. Tanous was tested and received high scores. That should be a basic criterion for any psychic attempting the same. I found the case histories interesting, good examples of how psychic insights can help uncover psychological mysteries. Endorsed by many experts in parapsychology, this book also needs to be recognized by experts within psychotherapy, for making a major contribution to their discipline.

Adrian Parker points out in his afterword that Tanous employed universal conditions for change—empathy, acceptance, and genuineness in relating to the patient (p. 143). While some results could be ascribed to a placebo effect, that can also be a positive healing force needing further research. As stated in the book's postscript, "If psi in psychotherapy is to take its place as a viable alternative approach in the healing of one's psyche, it needs to be tested on a large scale under strict scientific conditions" (p. 136). The volume ends with a bibliography of recent relevant works, compiled by psychologist Jim Carpenter, and an index. This previously unpublished manuscript, enhanced by contemporary researchers' comments, deserves a place in the libraries of those interested in all types of psychological and physical healing.

Our second book, *Sensitive Soul*, examines a number of psychological or mental anomalies, the common thread being heightened physical and emotional sensitivity. These anomalies include savants, child prodigies, children who remember past lives, people with autism spectrum or posttraumatic stress disorders, and people with synesthetic or psychic experiences. A section also covers emotional sensitivities noticed in mammals such as elephants, monkeys, whales, and dolphins.

Jawer has the interesting hypothesis that we might all be born synesthetes or autistic, but perception usually becomes more discrete as neural connections mature. Some parapsychologists have similar theories about psi abilities, since (at least in western societies) spontaneous cases in children seem to peak before age seven (Ehrenwald, 1972). In adults, reports of acute sensory perception can resemble psi. Jawer describes someone who can hear transmissions from a turned-off radio and accurately discuss the program presented (p. 67). Is this heightened hearing or a psychic ability?

His discussion of boundary thinness, transliminality, and synesthesia merit attention from parapsychologists. People with these traits often do better than others on tests of psychic ability, although not everyone doing well on psi tests necessarily has all these traits. Jawer also has interesting hypotheses related to past life memories, ghosts, and near-death experiences, describing heightened emotion as binding most of these experiences together.

He reports on Jim Tucker's tally of 2,500 cases of children who recall past lives, where 70% of these involved violent death (p. 108). Jawer hypothesizes that in sudden and violent situations, a vortex of emotional energy develops, with nowhere to go when the person dies. He suggests that the stage is set for anomalous conveyance of experience and personality, where a person may "effectively impart the essentials of his or her bodily and emotional experience to someone else removed in space and time." One is not reborn but is instead "managing to convey what is most characteristic and intensively *felt* to some new 'home' – at least for a time" (p. 179).

For Jawer, birthmarks and phobias of the deceased shown in interviewed children or adults could be explained by the human ability to create boils, rope marks, stigmata and other physical manifestations under hypnosis or other altered states. These might be created to resemble the person's anomalous memories. An alternative hypothesis, not mentioned by Jawer, is that a child who already has an unusual birthmark or physical configuration might reach out and absorb the feelings and thoughts of someone deceased whose experiences explain this marking.

As for ghosts, he points out that in people near death, electrical signatures of consciousness can often exceed waking state levels. As with sudden death, he asks where this energy goes, stating that what appear to be ghosts are often examples of energy left from a trauma (19). Additionally, ghosts might be unintentional OBEs or leftover energy from the living. He gives an example of how new residents of a house picked up on daily habitual movements of someone who used to live there but now lived elsewhere (p. 69).

Jawer discusses near death experiences (NDEs) in the context of survivors' heightened sensitivities. He mentions that interviews with over three thousand people indicate that close to 80 percent experience major changes afterward, including: synesthesia; unusual sensitivity to light, sound, and electricity; increased allergies; vivid dreams; heightened creativity and aesthetic appreciation; enhanced intuition; and an uptick in psychic experiences (p. 25). For Jawer, these characteristics can be explained by thinning boundaries, due to neurobiological upheaval and profound alterations of consciousness and emotion. Thin-boundary people are sensitive and open, apprehending connections and commonalities more than distinctions and separations (p. 27). In relation to psi, they appear to score well in testing situations.

As stated in Christine Simmonds-Moore's foreword, Jawer finds relationships and connectivity highly important ingredients in our relationship to the world and the information within it (p. xii). Telepathy is reconceptualized as a form of extended empathy, with exceptional experiences a property of intense emotion, in both humans and animals. For parapsychologists, looking at anomalous experiences from this viewpoint has many advantages. It builds bridges to areas of mainstream science, putting the work we do in a larger framework.

Looking at emotion from a parapsychological standpoint, however, various experiments could be mentioned. For instance, Daryl Bem's presentiment work uses targets with positive or negative emotional impact (p. 407). Nevertheless, this book is worth reading for fresh insights, even if it asks more questions than it answers. Highly readable, it includes extensive footnotes, a bibliography, and an index, all allowing further exploration.

The book also includes quotes from contemporary and past researchers and thinkers who have examined the place of emotion in human life. To end with Michael Jawer himself: "Two propositions... The first is that feelings can endure and be conveyed beyond anything we can conventionally explain. The second is that human beings—and other sentient creatures as well—are connected by emotion in a more than human, more than temporal, and more than strictly physical world" (p. 180).

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Essays from the Edge

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A Review of *Dangerous Pursuits: Mediumship, Mind, and Music*, by Stephen E. Braude.
Anomalist Books, 2020. 398 pp. \$18.95 ISBN: 978-1-949501-16-2

Here is another outstanding collection of Braude's shorter works, reminiscent of his *Crimes of Reason*. These are from the period 1993 – 2014, and as in the earlier book, often substantially expanded and revised. It is available from Amazon as a paperback or Kindle format.

Braude's prefaces are as good as any of the essays they precede – they let you know what the book is about and why the individual pieces were selected. I cannot refrain from offering a sample from the preface to this book: "The title of this collection, *Dangerous Pursuits*, is a wry allusion to my obstacle-strewn career path over the past several decades – to the vindictive hostility, ridicule, and condescension I've encountered (both inside and outside the academy) for my decision to look carefully at the data and theoretical issues of parapsychology" (pp. 46-7). The author's wit, honesty, and tenacity shine throughout his writings.

Dr. Braude can always be counted on for either some new and surprising topic or an original view of something familiar. This book is no exception. It looks at several mediums, one personally investigated by the author, and a couple of historical figures, D. D. Home and Carlos Mirabeli. There are some careful discussions clarifying several parapsychological themes and terminology; two pieces, the first and final essays, are in my opinion really "on the edge" – exploring areas about which we seldom think.

I found the first essay, "The Fear of Psi," especially striking. This connects the reduction of effect size of parapsychological phenomena over the last two centuries with methodological problems in present day psi studies. I consider this point so important, that I here offer some fragments from the essay:

...we no longer see such things as Home's accordion and other phenomena. But if we can't explain that fact by appealing to the advent of modern technology (or to a greater degree of gullibility around the turn of the century), what sense can we make of it? I want to suggest that the fear of psi has probably played a major role....great mediums of that era were all sincere spiritists. That is, they believed that they were merely facilitating phenomena produced by discarnate spirits; they didn't believe they actually produced the phenomena themselves. But that means that those individuals were off the hook psychologically no matter what happened. For example, if nothing (or only boring phenomena) occurred, the medium could

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always attribute the failures to an inept communicator or to a “bad connection” between this world and the spirit world. But more important, when impressive phenomena did occur, mediums didn’t have to fear the extent of their own powers. They didn’t have to worry about what psychokinetic havoc they might wreak (consciously or unconsciously) outside the safe confines of the séance room....As time went on....more people, both in and out of the field of psychical research, took seriously the possibility that physical mediums might in fact be PK agents and therefore the actual cause of phenomena attributed by others to surviving spirits.... Mediums knew that even some sympathetic investigators considered them to be causes of — and not simply vessels for — paranormal physical phenomena. So they now had a concern that quite possibly had never entered their minds before — namely, that they might have powers they couldn’t control...Eusapia Palladino’s impressive phenomena in the 1890s and first decade of the twentieth century were less impressive than those of Home twenty years earlier. And it’s even less surprising to find that many of the mediumistic “superstars” in the next several decades of the twentieth century had increasingly less intimidating repertoires of phenomena (pp. 335-357).

The essay explores the “fear effect,” not only in the mediums, but in parapsychologists and other academics as well.

“Reflections on Super Psi,” the sixth essay, is perhaps the most complete and thoughtful discussion of “super psi” that I have encountered. Braude makes clear the complexity of the issues that have provoked this explanation and also how difficult it is even to define the notion. I confess that I have some problems with the eighth essay: “Can the Deceased Have a Perceptual Point of View?” Although much discussion and reasoning are presented, I was disappointed that Braude did not deal with the reports of near death and out of body experiences. Many of these clearly describe firmly located points of view, whether in the hospital or more exotic environments. If we do not insist that consciousness, and hence points of view, are confined to the brain, then mental habit if nothing else would seem to at least *prefer* a localized perspective for observation.

In “Multiple Personality and the Structure of the Self,” Braude offers a short discussion of topics dealt with in much greater detail in his fundamental work *First Person Plural*. He argues that the multiple personalities in cases of dissociative identity disorder (DID) are creative adaptations devised by the self to deal with trauma and not pre-existing “parts” of the self. When this phenomenon was first observed in the early days of hypnosis, it was thought that these “other selves” were pre-existing and not caused or invited by the hypnotists themselves.

Although Braude does not mention it, the work of Hal and Sidra Stone, known as *Voice Dialog*, would seem to demonstrate that similar but non-pathological sub-personalities can be identified as creative mechanisms for dealing with the minor traumas involved in the socialization process we all have undergone.

As an admirer of Carl Jung, I was disappointed not to see some reference to his work and thinking on the complexes as sub-personalities. To illustrate the relevance of this criticism, I insert a quote from

Jung's article, "A Review of the Complex Theory":

So far, I have purposely avoided discussing the nature of complexes, on the tacit assumption that their nature is generally known. The word "complex" in its psychological sense has passed into common speech both in German and in English.

Everyone knows nowadays that people "have complexes." What is not so well known, though far more important theoretically, is that complexes can have us. The existence of complexes throws serious doubt on the naïve assumption of the unity of consciousness, which is equated with "psyche," and on the supremacy of the will. Every constellation of a complex postulates a disturbed state of consciousness. The unity of consciousness is disrupted and the intentions of the will are impeded or made impossible. Even memory is often noticeably affected, as we have seen. The complex must therefore be a psychic factor which, in terms of energy, possesses a value that sometimes exceeds that of our conscious intentions, otherwise such disruptions of the conscious order would not be possible at all. And in fact, an active complex puts us momentarily under a state of duress, of compulsive thinking and acting, for which under certain conditions the only appropriate term would be the judicial concept of diminished responsibility. (para. 200)

The last essay, "The Language of Jazz Improvisation," while it has a small psi discussion toward the end, is, in my opinion, really important in broadening what we mean by "language" – in this case, music. It's not verbal; it doesn't "say" anything expressible in words, but it definitely communicates. Exactly what and how seem to me to be open questions.

The only other place I know of that explores this notion is an old science fiction story from the mid-1960s, "Something Else" deservedly much anthologized. Along these same lines, in the early 1970s a Lama Foundation publication, *Seed*, offered 240 cards with images on both sides to prompt the exploration of some sort of "image language." As far as I know, nothing much ever came of this, but it was an interesting experiment for those of us who played with it.

It is good to see this expansion of Braude's works made easily available to the public.

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Corrigendum to:

Predictors of Hearing Electronic Voice Phenomena in Random Noise: Schizotypy, Fantasy Prone-ness, and Paranormal Beliefs (2020). Kenneth Drinkwater, Andrew Denovan, Neil Dagnall, Andrew Parker. *Journal of Parapsychology*, 84(1), 96-113.

The author Claire Elliot was erroneously omitted from the final list of published authors. The submitted author list was not wholly reflective of contributions at the data collection and formative developmental stages of the project. Accordingly, the authors agree that that Claire Elliot, as an active post-graduate student at the time, should receive appropriate credit for her invaluable input. To align with institutional policy, the author list should read: Neil Dagnall, Claire Elliot, Kenneth Drinkwater, Andrew Denovan, and Andrew Parker.

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To the Editor #1:

In reading the recent paper by Drinkwater et al. (2020), particularly the brief history of Electronic Voice Phenomenon (EVP) research, I noticed what seems to be a *Freudian slip* of a citation in the reference list. Raymond Bayless is indeed quite rightly cited as one of the first people to formally investigate EVP and publish a report on it within the correspondence section of the *Journal of the American Society for Psychical Research* (Bayless, 1959). However, a duplicate of this reference is given with the name listed as 'Cass, R.'. This minor error provides an opportunity to inform readers of the place of 'Raymond Cass' in EVP history (a researcher based in the United Kingdom), who is less mentioned in the literature – and therefore less known about – than the work of Raymond Bayless.



Raymond Cass (1921-2001)

Raymond Cass had a couple of noteworthy relatives involved in the spiritualist movement. For example, in 1773 in North Yorkshire, his ancestor Molly Cass was persecuted as a medium and psychic. Raymond held interest in anomalous phenomena from an early age. In adult life, he joined a psychic society in Hull, where he later learned that one of the founders was also an ancestor of his by the name of Robert Cass. At a séance with Helen Duncan, held in 1938, it was predicted that Raymond Cass would develop 'voice mediumship' – although not specifically stated to be by instrumental means. It wasn't until release of the work by Raudive (1971) that Cass began to pursue his interests in practice and explore EVP further.

Cass had worked professionally as an audiologist, specialising in hearing aids, and was also interested in sound projection and detection. He began attempting to record anomalous sounds, raps, and voices by the late 1970s – which some have commented on as being the finest quality of EVPs produced. He'd admitted due to his own scepticism that he felt somewhat foolish at the prospect of talking

“to thin air” while carrying out recordings, but this was a method which apparently had worked well for Friedrich Jürgenson (1964). Not only had Cass recorded voices with clarity, but he became specifically interested in attempting to contact deceased researchers such as Raudive and claimed he had succeeded. Attempts at contacting deceased survival researchers is something not uncommon in psychical researcher history (e.g., Salter, 1958; Stevenson, 1976).

Cass claimed to have recorded thousands of voices. However, no publications on his research appeared in psychical research or parapsychology related journals, either by Cass or people commenting on his work. Cass did, however, contribute a detailed chapter on his work to a book by Harold Sherman (1981), with the chapter simply entitled ‘The Raymond Cass Report’. The report details his methods and transcripts of what he believed to be some of his best EVPs. Beyond this point in time, little can be found about Cass and his work within the literature. One would have hoped for the claims of EVPs of such clarity, obtained through rigorous methods, to have been examined in detail by others while casting a sceptical eye. Alas, no such report surfaced that I am aware of. However, in more recent times, websites and blogs have appeared dedicated to his life and work, including “The Raymond Cass Foundation.” These have not only offered example soundbites of Cass’s EVPs, but present the claim that they had been played worldwide at lectures and conferences, studied by various research groups, and observed by War Departments in the USA and the Ministry of Defence in the UK. It would be fair to say that Raymond Cass remains an important part – yet often overlooked enigma – of EVP history. His remaining files and tapes would be served well by dedicated EVP researchers and scholars giving them the attention they deserve to produce that much needed critique.

There have been numerous mentions throughout history of people developing methods to allegedly contact discarnate spirits. Although this topic has not been of strong interest to the *Journal of Parapsychology*, the first mentions of this within its pages began with a ‘letter to editor’ from Charles Ozanne (1945). This correspondence gave mention to Thomas Edison’s interview with *Scientific American*, where he proposed to build a device for the purpose of contacting the departed (Lescarbourea, 1920). For a detailed discussion of EVP history, which includes Raymond Cass and others, I would draw readers’ attention to the chapter ‘A brief history of EVP research’ (Cooper & Parsons, 2015), found within the book *Paracoustics: Sound and the Paranormal* by the same authors. This book has also been reviewed within the *Journal of Parapsychology* (Leary, 2016).

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To the Editor #2:

It was disappointing that during the *JP*'s period of editorial transition we were neither notified in advance about Solfvin's (2020) original Letter criticizing the development of our "Survey of Strange Events" measure (SSE: Houran et al., 2019a, 2019b), nor given the opportunity to publish a Rejoinder alongside his commentary. But more importantly, we were dismayed that Selvin mischaracterized or misunderstood our outlook and aims as dismissing or minimizing ghostly episodes as "delusions" — along with an associated charge of implicit "bias" on this point. This latter assertion appeared to us as both audacious and ironic because Solfvin failed to disclose his own ongoing and competing work on operationalizations in this domain.

In particular, Solfvin arguably made many unfounded generalizations about our research in just a few short pages. The issues he highlighted deserve a thoughtful and data-driven treatment, but space restrictions (1200 words maximum) prohibit a sufficiently detailed rebuttal here. Therefore, let us simply state that we disagree with most, if not all, of Solfvin's (2020) rhetorical criticisms on conceptual and empirical grounds. Our collective studies need no justification with regards to the psychometric robustness of the SSE measure or its utility for modeling ghostly episodes and encounter experiences. That said, new studies are underway that use the SSE measure to better explore the complexities and nuances of these anomalous experiences across different conditions and contexts. We will certainly report the findings from these efforts in due course.

Returning to the main issue, readers are referred to our full response — an essay entitled "Ghostly Episodes in Modern Psychometric Perspective" — that will appear in the *Mindfield Bulletin* (13.2 issue). As for Solfvin, we encourage him to dispassionately re-read and contemplate the findings and implications of our SSE papers, as well as to acquaint himself with our broader research on ghostly episodes and encounter experiences published in both parapsychological and mainstream scientific journals. He is certainly invited to contact us for a productive debate and potential collaboration that strives for *cumulative model-building* and *theory-formation* concerning these anomalous episodes. Indeed, our team (Houran et al., 2019a, 2019b) is multidisciplinary in its ideology and academic expertise but united in our goal to move the literature on ghostly episodes and kindred phenomena forwards, not backwards.

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To the Editor #3:

When I first read Houran et al.'s response to my Letter-to-Editor (Solfvin, 2020), I thought, "OMG, what did I put into that letter that so upset and offended them?" It's been a year since I composed it. I recall the general ideas I put in and that I took great pains to be clear, simple, direct, and to avoid any statements which might be perceived as provocative. I read it over several times and got pre-submission feedback from knowledgeable colleagues. They liked, even praised it. I never imagined that Houran et al. would be "...dismayed that Solfvin mischaracterized or misunderstood our outlook and aims as dismissing or minimizing ghostly episodes as 'delusions' — along with an associated charge of implicit 'bias' on this point."

I rushed immediately to re-read my original letter and then relaxed because it was – IMHO - carefully written and free of barbs and negative tone. So let me say that I am truly grateful for their response because it calls attention to the issues raised by my letter, as well as to the important work contained in their paper(s) that triggered it. The first mystery here for me is why were Houran et al. so defensive? The next mystery is why did they think I "mischaracterized or misunderstood" their outlook as being dismissive of "ghostly experiences" as delusions and that I charged them with implicit bias? OK, I plead guilty to the latter. I did, but only to *possible* bias. I have no idea whether or not their results and conclusions are biased, only that they have not convinced me – a skeptical audience – that it is unbiased.

On misunderstanding them, to which I plead innocent, my letter included specific quotes from their published works, precisely to avoid such misunderstandings. I do not know how else one should interpret, "...our research suggests that hauntings and poltergeists are delusional in nature" (Lange & Houran, 2001, p. 305). I did not – *would not* - criticize them for that opinion – I simply make the point that holding this characterization (or any other!) increases the likelihood of bias in one's work. Also, I did not – *would not* – say or imply Houran et al. dismiss or minimize so-called ghostly experiences. Their long and productive years of commitment to this fascinating topic speaks for itself. I do not know to what "many unfounded generalizations" they refer, so I look forward to reading the *Mindfield* article they are preparing (*Mindfield Bulletin* (13.2 issue)).

My letter-to-editor was aimed at anyone with serious interest in spontaneous cases of the poltergeist type. The Houran et al. articles provided an interesting example. It seemed quite clear to me that Houran et al.'s choice to pool all forms of ghostly experiences into a single pot, and to focus upon the similarities, would cloak some viable alternatives, especially the veridicality issue. I can see how Houran et al.'s work would interest those who make the same assumption – "... hauntings and poltergeists are delusional in nature." But what does it say to those of us who do not make the same assumption? Houran et al. are studying something quite different from what I'm studying. Houran et al. adhere to the Anomalistic Psychology tradition (Zusne & Jones) while I'm of the Hans Bender, ARG Owen, and Bill Roll

lineage. I believe Houran et al. share my primary concern with methodology in spontaneous case studies. We are also similar in having an eye for patterns, consistencies, and structure in data that facilitates scientific investigation. However, the target of my scientific curiosity differs from Houran et al. Specifically, my interest is the possible existence of a “jewel” for science associated with the actual physical events people report. These phenomena are not currently operationalizable, since we do not know what they are or how they occur.

I believe there’s an alternative which may open a methodological door to investigating the poltergeist type of anomalous experience (AE). It is suggested by the curiosity that some cases are distinctly *paradoxical*, displaying two equally interesting but quite different types of phenomena: 1) clusters of complex, chaotic physical AE; and 2) a psychosocial (group) context or setting, remarkably consistent across cases, time, and cultures. I argue that a definable subset of reports of anomalous experience (AE) display this paradox. Further, I suggest that this special type of case may offer special benefits for scientific investigation. For one, we can develop an operational definition for this type of case, which will facilitate identifying, collecting, cataloguing and building a purified database which can be queried, and they contain potentially measurable kinetic AE. I call this special type of case “AECKO” (pronounced echo).

Working at the Psychical Research Foundation with Bill Roll, I personally investigated 40+ reports of spontaneous AE. Of those, only 2 or 3 were “good” cases. AECKO is an attempt to isolate and capture those. Because Houran et al. chose to collapse their data pool on the premature (IMHO) assumption that all “ghostly experiences” are the same and focus on the similarities, their results are of little interest or use for my goals. I do not see a way that Houran et al.’s work could facilitate the finding of “good” cases for scientific investigation.

AECKO is not a theory or operational definition of AE. AECKO is the acronym for an operational definition of this type of case. It stands for a set of necessary and sufficient features of a special type of case report: the letters stand for Anomalous Episodic Communal Kinetic Occurrence which will be described in detail in another publication.

AECKO offers two distinct equally important phenomena for investigation: the cluster of kinetic anomalous events (AE) and the psychosocial backdrop with which the AE shares the stage, the actors, and timeframe. AECKO is a tool for identifying and collecting these “good” cases. It can also be conceptualized as a perspective (not a theory) for investigating AE, including dual phenomenal foci, scientific measurability, unbiased observation, and a broad systems-theoretic lens honoring a wide range of theoretical stances. The psychosocial backdrop has clinical implications and may be the most urgent part of an AE case with which to deal.

I believe I understand the perspective of Houran et al. I hope this brief rejoinder explains why there’s little in their work that speaks to me. This is NOT due to the quality or potential importance of their studies but because they address different questions than I do. Unfortunately, my primary research interest - understanding the nature of the physical anomaly itself - is excluded from their studies.

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