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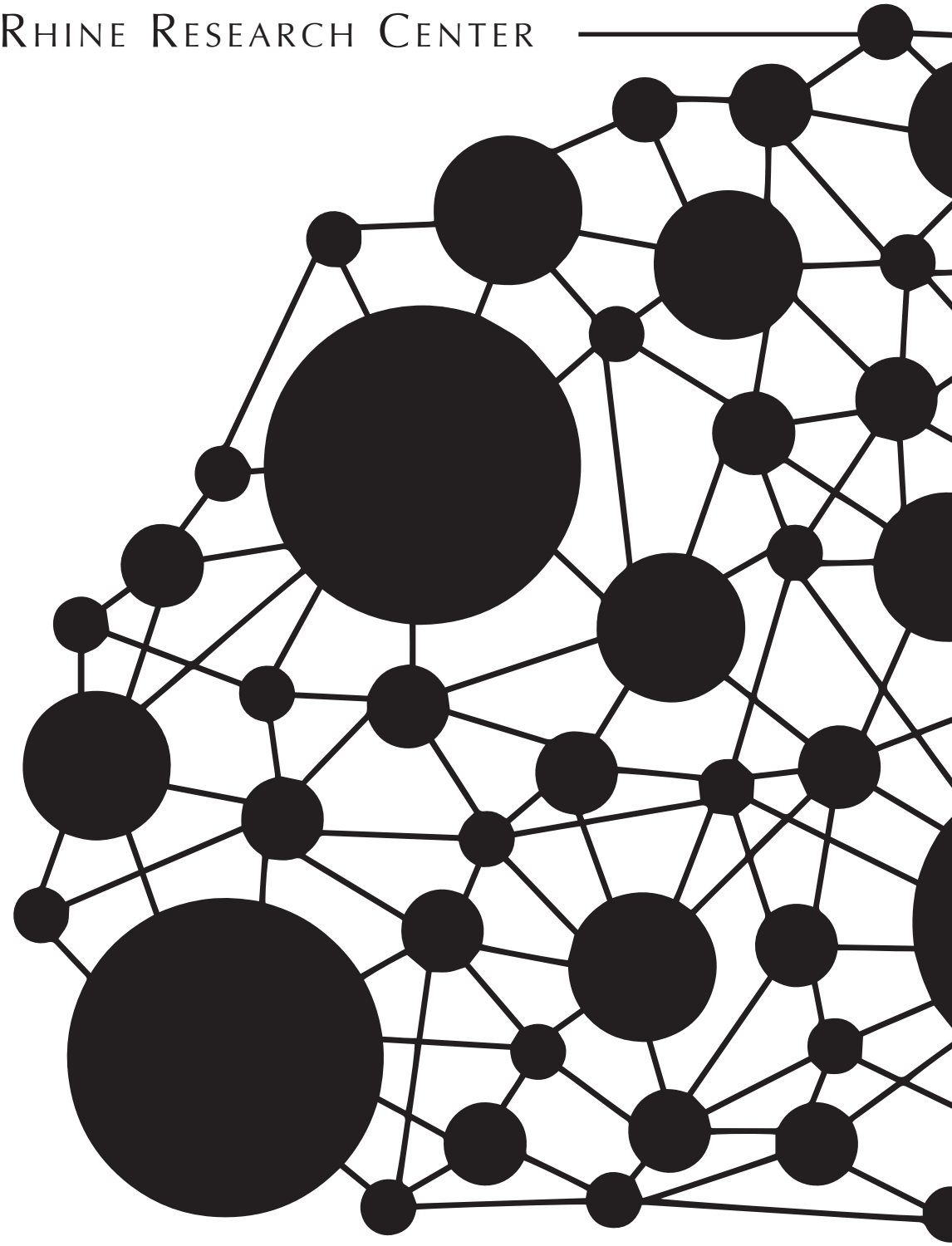

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Parapsychological Association Presidential Address, 2018[1]

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Abstract: In this address, first I discuss with the benefit of historical hindsight why it would have made more sense to call our organization the Psychophysics Association rather than the Parapsychological Association, and then I explore the intimate relations between the esoteric traditions, psi, and magic.
Keywords: magic, esoteric traditions, psychophysics

In my presentation today, I will first discuss why I would like to replace the term "parapsychology," then I will discuss psi, magic, and the esoteric traditions as a strategy for uncovering clues that might inform an explanatory model of psi.

To begin, the good news is that as far as the health of the Parapsychological Association goes, our membership in 2018 is approaching 400, which is higher than it has ever been. This suggests that we are in the midst of a favorable Zeitgeist that is becoming more tolerant about psi research. How can we take advantage of this movement to achieve a membership of 4,000? One way to answer that question is by addressing the elephant in the room. The elephant is the word "parapsychology." This word was coined in 1889 by the German philosopher and psychologist Max Dessoir, who defined it as "the power or means of going beyond or besides the ordinary. One could call the phenomena that step outside the usual process of the inner life as psychical and the science dealing with them parapsychology" (Bringmann, Luck, Miller, & Early, 1997, p.71). That seems reasonable enough, but Dessoir then adds, "The word is not nice. In my opinion it has the advantage to denote a hitherto unknown fringe area between the average and the pathological states." In other words, the person who coined the name of our organization had already anticipated that it was less than desirable because it immediately suggests that psi experiences are both rare and on the edge of pathology. We know from many surveys that this stereotype is not only unhelpful, it is also not true. Psi experiences are frequently reported by perfectly healthy people, including scientists (Wahbeh, Radin, Mossbridge, Vieten, & Delorme, 2018). But the trouble with the term is also reflected in the many dictionary definitions of the prefix "para" which means beside or next to, like parabola or parallel. It also means protection, like parachute or parasol. It means subsidiary to roles with higher status, like a paramedic or paralegal. It means beyond ordinary logic, like a paradox. And it means abnormal or defective, like paranoia and paranormal. These definitions start out relatively

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dispassionate. Who doesn't like a parasol? But then they get progressively darker by referring to subsidiary abnormalities.

If you go to Google and search for images associated with parapsychology, what you immediately find is the fraudulent phone psychic, Miss Cleo. You see images of Ouija boards, the movie Ghostbusters, and books with exciting titles like, "Quantum parapsychology: How science is proving the paranormal" (Jacobs & Soderlund, 2017). These are all at the top of Google's images, which mirror popular beliefs and expectations. If you then go to websites that have slideshows on parapsychology that students created for their classes, most of them repeat old prejudices, like psi is "incompatible with well-established laws of science."

How do we fix this problem? One way that the field has attempted to distinguish parapsychology from the great unwashed paranormal is through the use of euphemisms. Our jargon includes terms like psi, remote viewing, engineering anomalies, transpersonal psychology, anomalous cognition, predictive physiological anticipation, and so on. Such terms can be useful short-term deflections, but they do not get around the fact that, however we define it, parapsychology is about the bridge between mind and matter. And there are no mainstream academic disciplines where this topic is a natural fit. As a result, with few exceptions in the academic world, parapsychology is forced out into the cold (Broderick, 2007). The closest we have to a discipline of mind-matter interaction is captured in the word "psychophysics," which was coined by German physicist Gustav Fechner (1801–1887). Today, the discipline of psychophysics is primarily concerned with the biophysics of sensory systems. But that is not how it began.

Fechner coined the term psychophysics as a result of a mystical vision. His experience, in alignment with that of many mystics, revealed to him that the usual dualistic way of perceiving and thinking about the world is an illusion. Psychophysics was Fechner's attempt to describe and scientifically pursue the truth of that vision, but personal mystical experiences are difficult to convey to others, so the discipline devolved into conventional mathematical ways of modeling the ordinary senses (Fechner, 1860).

However, in his book, *The Little Book of Life After Death,* we find Fechner explicitly writing about psi: "In rare cases, we see the light of consciousness wander out of the narrower body into the wider and return again, bringing news of what happens in distant spaces, in distant time... To the subjective vision there comes a flash so unusually vivid as to bring to the earthly sense an impression rising above the threshold from an otherwise inaccessible distance. Here begin the wonders of clairvoyance, of presentiments, and premonitions in dreams" (Fechner, 1907/2014, p. 95-96). Fechner's metaphysical writings significantly influenced William James's interests in studying what he called the "wild facts" of human experience (Baum, 1935; Murphy, 1949). So psychophysics is much closer to parapsychology than many who work in that field may realize (Hawkins, 2011).

This suggests that the Parapsychological Association might have been called the Psychophysics Association. Well, it is too late for that now, but you may appreciate why I am raising this issue. At one time, parapsychology was a useful neologism. Today it has become a weight that keeps us anchored far off-shore. Academics who have a deep personal interest in the field are well aware of the negative connotations of the term, so they cannot afford to become members of the Parapsychological Association. It is too dangerous for their career. I have heard this complaint expressed to me by at least a dozen

academics who would gladly become members of the Psychophysics Association, but not the Parapsychological Association. There is no easy answer to this problem, and perhaps if we wait long enough parapsychology will outlast the naysayers and become a respectable name. But until then, I do think it is useful to keep it in mind as a nagging problem in search of a solution.

Now let us turn to something less troublesome. Last week (summer of 2018), I spoke at an international science conference in Darmstadt. Germany, called *Curious 2018*. It was sponsored by the pharmaceutical company Merck KGaA, which manufactures pharmaceutical drugs, healthcare products, and precision materials. The conference was advertised as having 35 of the world's most distinguished scientists and entrepreneurs as speakers, including five Nobel Prize winners, Craig Venter (of human genome fame), an address by the CEO of Microsoft, and a congratulatory address by the German minister of science.[2]

I was delighted to be invited as one of the speakers, but also surprised because I hardly know anything about pharmaceuticals, development of healthcare products, or precision materials. I asked the conference organizer what he had in mind for my talk. His reply: Science, psi, and magic. He had read my book *Real Magic* (Radin, 2018), and thought the topic would be perfect to stimulate creative ideas for this conference.

I began my talk by explaining to the audience why I was talking about magic at a scientific conference. I showed a slide with the company logos of Blockbuster, Kodak, Polaroid, RadioShack, and Tower Records. I pointed out that all of these once highly successful companies went bankrupt because they made the same mistake – they failed to innovate. They were too successful at what they were doing, but failed to anticipate change and became stuck in their ways. This lesson was particularly relevant to Merck because the conference was being held in celebration of their 350th anniversary. No company (indeed no entity of any sort) can survive for 350 years without being resilient and open-minded in the face of change. Merck thrived because its corporate culture was forced to take innnovation very seriously, even to the point of embracing exotic concepts like magic (at least, when there is supporting scientific evidence).

I explained that when one is genuinely interested in innovation, anomalies move from the fringe to center court. This is because observations that question the status quo, especially the scientific status quo, might well anticipate the next big breakthrough. My interest in anomalies tends to revolve around human experience. One such example is genius. We know that there are rare Mozarts among us, but we have only the vaguest notions how to explain that level of prodigious talent (Simonton, 2016). Then there is acquired savant syndrome, which is when a normal person gets hit in the head, and tomorrow without prior training they miraculously become a concert pianist (Treffert, 2014). Even stranger, there is sudden savant syndrome, which is where you are perfectly fine, you go to sleep, and then you wake up and you are a concert pianist (Treffert, 2018). There are individuals with dissociative identity disorder, where one personality is sighted and another is blind (Waldvogel, Ullrich, & Strasburger, 2007). The full taxonomy of human anomalies goes on and on (Kelly & Kelly, 2009). These phenomena are very important because they suggest that our understanding of human potential is still in its infancy.

2 https://curious2018.com/

My professional interest in these anomalies has focused on psychic phenomena, because now we are dealing with anomalies that can be studied under laboratory conditions. Rather than relying on spontaneous events or extremely rare people, we can study ordinary people performing simple tasks. I believe that makes our topic of study far more tractable than trying to figure out what made Leonardo da Vinci tick.

With that as a setup for my talk, I then explained that the magic I was interested in was not like "magic whitening toothpaste" or "baby magic shampoo." Those meanings of magic are expressions of awe or wonder. Nor did I mean fictional magic like Harry Potter, or fake magic like Harry Houdini. Instead, I was interested in esoteric practices strongly suggestive of psi and at the same time intimately linked with the scientific enterprise.

One of the first modern books to discuss magic in the context of parapsychology was *Where Science and Magic Meet* (Roney-Dougal, 2010). Other recent references to the psi-magic connection can be found in anthropology (Hunter & Luke, 2014). However, the psi-magic connection does not show up in the index of the largest recent compendium of parapsychological research, *Parapsychology: A Handbook for the 21st Century* (Cardeña, Palmer, & Marcusson-Clavertz, 2015). This suggests a certain professional embarrassment among parapsychologists who would rather not attract attention to the fact that psi and magic are closely related.

By magic, I specifically mean three age-old esoteric practices: *divination* (perception through time or space), *force of will* (intentional mental influence of the physical world), and *theurgy* (communicating with spirits). Defining magical practices in this way, and dropping the occult ceremonial gloss associated with esoteric magic, clearly reveals that magic is exactly what parapsychology studies.

The scholarly study of magic begins with explorations of shamanism, but we do not need to go that far back in history to appreciate the strong relations between science, magic, and psi. We see it in Francis Bacon, the father of scientific empiricism, who wrote about how to test for telepathy and psychokinesis. We see it in Isaac Newton, who wrote far more about alchemy than physics (partially because there was no distinction between alchemy and chemistry in his day; Principe, 2013) . We see it in Galileo, who cast horoscopes (because, as with alchemy, there was little distinction between astronomy and alchemy in his day), or in Robert Boyle, who wrote about clairvoyance. In other words, when you go back to the very origins of science, you find that many of the founders were interested in the same topics we are interested in – the bridge between magic, science, and psi (Thorndike, 1958).

Magic and psi were not just the interests of medieval scientists. We see the same interests in Nobel Laureates J.J. Thomson, Marie Curie, and Charles Richet, pioneer electrochemist William Crookes, and of course, in psychologist William James. All were interested in spiritualism, attended séances, and some of them conducted their own experiments. Closer to the present day we find individuals like J. Edgar Coover, who developed methods that presaged the gold-standard double-blind clinical trial in his studies of ESP at Stanford University in the early part of the 20th century (Coover, 1917); Hans Berger, the German psychiatrist who developed the EEG in an attempt to measure the "psychic energy" he felt was responsible for an episode of telepathy between him and his sister (Millett, 2001); Gustav Fechner, as we have already discussed; and J. B. Rhine, father of modern parapsychology, who among other things helped pioneer the first meta-analysis of ESP card tests. These and many more forgotten connections

between science, magic and psi can be found in Andrea Sommers's informative website, *ForbiddenHistories.com.*

After I motivated the historical connections between magic, science, and psi, the next question I addressed is whether there is any evidence supporting magic/psi. Most people who are not familiar with the relevant literature get their information from Google, which places Wikipedia on the top of the search list, which is in turn the worst possible place to learn about controversial topics[3]. So in my talk for the Merck conference I felt it necessary to give a fast overview of the empirical state of the art. Fortunately, because of the growing number of meta-analyses, it is now straightforward to provide a summary meta-meta-analysis of the psi data. Perhaps the most impressive such analysis available today is Etzel Cardeña's outstanding article published in *American Psychologist*, the flagship journal of the American Psychological Association (Cardeña, 2018). The article reviewed over a dozen classes of psi experiments, involving roughly ten thousand participants overall, and reported by about four dozen labs around the world. The perceptual-psi studies provided extremely high degrees of confidence that telepathy, clairvoyance, and precognition are repeatable effects observed under well-controlled conditions. For mind-matter interaction phenomena the evidence was not quite as strong, but also well above chance.

Because the empirical database is so strong, I now have an easy way to respond to skeptics who argue that there is no scientific evidence for psi. I ask them, rhetorically, what discipline is the best arbiter of the proper interpretation of data? The answer, when we think about it for a while, is statistics. Then I show them what Jessica Utts said about psi as part of her 2016 presidential address to the American Statistical Association (Utts, 2016): "The data in support of precognition and possibly other related phenomena are quite strong statistically, and would be widely accepted if they pertained to something more mundane" (p. 1379).

Now here is why we should be interested in magic: The scientific data argues that magical practices tap into essentially the same phenomena that we call psi, and that implies that some aspects of ancient esoteric principles might not be fairy tales. After all, just like today's technologies are applications of the scientific worldview, ancient magical practices were applications of the esoteric worldview. Understanding that worldview better might offer important clues about how magic and, by association, psi works.

Many of us have been musing with leading edge ideas in physics as a way to understand psi. Such proto-theories are deeply embedded within the scientific worldview, partially because that is the worldview adopted by most parapsychologists today by virtue of our being trained in traditional scientific ways. But it is also because if one seeks mainstream acceptance, or even just acknowledgement, we are required to speak the language of science. Unfortunately, so far these models have not been very useful in advancing our ability to reliably demonstrate psi effects to any disintered observer, nor has the academic mainstream found these theories to be particularly persuasive. Perhaps future theoretical work will bear fruit, perhaps not.

So I decided to look more closely at the esoteric worldview for clues that might help inform new theories. Starting with shamanism, we progress (in the Western tradition) from Pythagoras, to Plato,

3 Wikipedia admits this in an article that paradoxically questions its own reliability: https://en.wikipedia.org/wiki/Wikipedia:Wikipedia_is_not_a_reliable_source

Neoplatonism, Gnosticism, the Kabbalah, the Knights Templar, the Freemasons, the Rosicrucians, Theosophy, Christian Science, and so on. Following this historical trail, one sees a clear lineage of esoteric breadcrumbs, from ancient times to the present day. Today, esoterica is most easily seen in the book genre on affirmations and positive thinking, and in comic book-inspired movies and television shows.

This theme, which runs through both Western and Eastern esoteric traditions, is that *consciousness is fundamental*. A synthesis of these traditions, dubbed the "perennial philosophy" (Huxley, 1945), asserts that there is some sort of primordial awareness, or universal Consciousness, that is prior to the physical world and permeates all space and time. Our personal awareness is also said to be composed of this Consciousness "substance." Precisely how awareness turns into the physical world is unknown, but leading-edge ideas in physics and mathematics, and proposed by mainstream scientific thought-leaders are beginning to tackle this problem. The terms used today are no longer based on esoteric metaphysics, but rather on ideas about information and mathematics (Davies, 2014; Tegmark, 2014; Vedral, 2012).

An interesting facet about this trend is that within the esoteric worldview the "law of correspondence" does not make a strong distinction between physical reality and abstract symbolic representations of reality. Indeed, this law is the basis of most magical spells. But there is a very close parallel within the rising informational worldview because information and mathematics are also abstract, symbolic languages. The similarity between ancient and modern ways of imagining the nature of reality is not often discussed by scientists who are exploring informational models of reality. But the connection is clear.

What this suggests is that today's knowledge hierarchy, starting with physics and ending with psychology, might benefit by adding a new layer of fundamental assumptions below physics. For want of a better term, we could call this layer Consciousness. This approach is neither philosophical idealism nor materialism, but an integration of both. It maintains existing scientific disciplines exactly as we know them today, so there is no need to throw away the textbooks. But it also means that that just as physical forces permeate all of the upper levels of a purely materialistic hierarchy (e.g., the weak and strong nuclear forces are still part of chemistry and biology), now Consciousness permeates all levels above it as well.

This provides an alternative way of thinking about psi and magic from a scientific perspective, because within this view our awareness is essentially the same as universal Consciousness (albeit tightly constrained by physical embodiment), and as such it is not bound by the usual notions of space and time. That is, we can perceive anywhere in space or time not through exchange of conventional fields or forces, and not by transmitting signals, but rather because at a deeper layer of reality our awareness is already everywhere and everywhen, outside of space and time. In addition, the same consciousness "source" from which the physical universe arises is already part of us, so to a limited extent we have the capacity to influence the physical world. This esoterically-augmented scientific worldview suggests that everything is ultimately made of Consciousness, but this does not mean that everything is self-aware, at least not as aware as the average human. Perhaps a certain degree of physical complexity is required to gain self-reflective awareness. If that is so, then complex objects like the sun might be self-aware. In fact, any sufficiently complex system, especially those with inherent forms of recursion, might also gain self-awareness. This is relevant to understanding theurgy, because now the notion of disembodied "spirits" is thinkable rather than unthinkable. That is, a localized, non-physical, bundle of energy, like ball-lightning or a "ghost," might be self-aware.

In closing, I want to emphasize that I am not advocating that we need to drop today's scientific worldview to advance our understanding of psi. This is not about a regression to the past. That would not make sense because scientific materialism has been far too successful in describing a vast swatch of the observable universe. But I am proposing that today's scientific worldview needs to be expanded to accommodate psi, and in the process of crafting that expansion, I speculate that we will run headlong into esoteric concepts that lead directly to magical practices. I have proposed just one way to do this by paying attention to clues offered by the esoteric traditions. I hope to stimulate others to make equally wild proposals.

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Parapsychological Association Discours Présidentiel, 2018

Résumé : Dans ce discours, je discuterai d'abord, en bénéficiant d'un certain recul historique, pourquoi il ferait plus de sens d'appeler notre organisation la Psychophysics Association plutôt que la Parapsychological Association, et j'explorerai ensuite les relations intimes entre les traditions ésotériques, le psi et la magie.

Parapsychological Association Präsidentenansprache 2018

Zusammenfassung: In diesem Vortrag diskutiere ich zunächst, im historischen Rückblick, warum es sinnvoller gewesen wäre, unsere Gesellschaft als Psychophysics Association und nicht als Parapsychological Association zu bezeichnen und untersuche dann die engen Beziehungen zwischen den esoterischen Traditionen, Psi und Magie.

Discurso Presidencial de la Parapsychological Association, 2018

Resumen: En este discurso, primero discuto, con la ventaja de la experiencia, por qué tendría más sentido llamar a nuestra organización la Asociación de Psicofísica que la Asociación de Parapsicología (Parapsychological Association). Luego exploro las relaciones cercanas entre las tradiciones esotéricas, psi, y magia.

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The Selfield: Optimizing Precognition Research [4]

Mario Varvoglis, Peter A. Bancel, Jean-Paul Bailly,
Jocelyne Boban, and Djohar si Ahmed

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Abstract: We report an exploratory forced-choice precognition study based on a protocol that utilized an immersive audiovisual environment to induce a psi-conducive state in participants. Our objective was to assess whether this optimization setup would help produce significant psi results with an unselected population. We also sought to assess whether trial-by-trial feedback would produce superior scoring to no-feedback trials. For each trial, participants selected an opaque graphical sphere that they felt contained a facial image, as opposed to being empty. After selection, the program randomly determined whether the sphere would be empty or not, and whether feedback would be shown. A preset total of 3000 binary choice trials were collected from 82 participants. Each participant contributed either 1 or 2 20-trial series, based on preset scoring criteria. The total hit rate of successful trials was 50.1%, close to expectation under the null hypothesis of no psi effect. Hit rates for feedback and no-feedback trials were in the predicted direction (51.0% vs. 48.6%). A post-hoc analysis showed that hit rates for feedback trials increased over the 20-trial series, suggesting that participants may have progressively found a mental strategy for improved scoring. Additionally, a subgroup of 26 experienced meditators had a hit rate of 52.1%, a result consistent with previous literature that suggests that meditators are particularly good participants for psi research.
Keywords: precognition, optimization, forced-choice, feedback, meditators

A recent meta-analysis (Storm, Tressoldi, & Di Risio, 2010) provided evidence that experimental psi research has benefited from participant optimization or 'noise-reduction' procedures - hypnosis, relaxation, meditation, or the ganzfeld. In particular, the authors show that free-response protocols including such optimization procedures are more likely to yield positive results than free response protocols with no such procedures. In a later meta-analysis the same authors (Storm, Tressoldi, & Di Risio, 2013) show a positive cumulative effect for forced-choice studies as well, but note that their effect sizes are quite small - a full order of magnitude inferior to those of the free-response / optimization studies.

As the authors state, several factors could explain this difference. One of these is that free-response/optimization experiments typically create a meaningful setting for participants, with tasks that are unique and experientially interesting. For example, in a typical Ganzfeld trial participants are likely to remain engaged and "present" throughout the session; by contrast, participant attention and mo-

4 Address correspondence to: contact@mario-varvoglis.com.
The authors wish to acknowledge the generous support of the Bial Foundation for this research.

tivation will tend to decline during a session of repetitive ESP card-guessing trials. Nevertheless, from an investigator's viewpoint, the very strength of free-response/optimization protocols is a weakness, in terms of data-collection efficiency. Data collection for an adequately powered study can be long and arduous, insofar as a single ganzfeld trial can take 1 to 2 hours to complete. By contrast, forced-choice protocols can produce several trials per minute; at the study level, the data collected can be one to two orders-of-magnitude higher than in free-response studies.

From the perspective of both proof- and process-oriented research, it clearly would be desirable to find a way to combine the data-collection efficiency of forced-choice approaches with the participant-optimization qualities of free-response studies. This strategy, however, faces a key challenge: how to induce and maintain participants' optimized state throughout a session, despite the repetitive nature of forced-choice tasks and the stress induced by repeated hit/miss feedback?

Our initial response to this challenge was a within-subjects forced-choice telepathy study (Varvoglis et al., 2013) comparing optimization and control conditions. Each condition involved two participants who, over the course of 20 trials, alternately acted as sender (attempting to "transmit" either a randomly selected visual target or a neutral cloudlike image) or receiver (deciding whether the sender was indeed experiencing a target or just the neutral image). For each trial, the program provided both participants real-time feedback concerning the receiver's choices. The optimization procedures, experienced by both participants, included an immersive head-mounted system to enhance absorption, an initial relaxation sequence, hypnotic task and feedback displays, and a short audiovisual sequence between trials to renew participants' motivation and attention. The 20-trial control session involved a simplified forced-choice task without any of the above optimization procedures.

Overall results were non-significant in both the optimization condition and in the control conditions. Secondary analyses, on the other hand, pointed to significant score variability specifically in the optimization condition and none in the control condition, suggesting that our optimization procedures may have had an effect, but in an unstable manner. Post-session debriefings provided clues as to the possible reasons for this outcome. Over half the participants reported that the head-mounted display system - intended to enhance immersion in the audiovisual displays and tasks – was uncomfortable and distracting, particularly in the latter parts of the session. They also found that the hit/miss trial-by-trial feedback, provided simultaneously to sender and receiver, disrupted the "flow" state and induced an overly stressful performance-oriented mindset. Over half the participants stated that they would have preferred to receive no real-time feedback at all. Finally, from our own perspective as researchers, the setup was demanding and stressful, with challenges that were technical (e.g., frequent desynchronization of the local network connecting the 3 computers) and human (e.g., for each session we had to coordinate the agendas of 2 participants and 3 experimenters).

The Selfield was largely designed to correct the shortcomings of this earlier study. Changes focused on several key areas: a) improving the immersive technologies used, so as to enhance participants' "flow" experience; b) better aligning the audiovisual induction and feedback elements with the psi task; c) redesigning the target set, to render targets more arousing and impactful; d) simplifying administration of experimental sessions by shifting from a dyadic-participant protocol (telepathy) to a single-participant precognition protocol that could be run by a single experimenter.

This shift towards a precognition protocol also reflected the field's current interest in this area of research, as witnessed by the growing database of presentiment studies or time-reversed social psychology studies by Bem and others. Meta-analyses of both these lines of research (Bem, Tressoldi, Rabeyron & Dugan, 2016; Mossbridge, Tressoldi & Utts, 2012) clearly suggest that precognition may be among the more promising approaches for experimental research. In particular, the apparent success of Daryl Bem's studies, often involving college students, could potentially lead to a protocol that produces replicable results with unselected participants.

Precognition protocols are also interesting for theoretical reasons. Marawha and May (2015) have recently suggested that most results of psi research (telepathy, clairvoyance, microPK, even survival) can be reduced to a single anomaly - retrocausation. Thus, in spontaneous psi, the physical experience of an unexpected event (e.g., an accident) can be seen as retrocausally triggering an earlier premonitory dream or presentiment of the event. In experimental research, feedback concerning a trial at time T_2 may retrocausally inform the participant's or experimenter's choices at an earlier time T_1. According to this model, the experience of a result, in one form or another, would be a necessary condition for precognition to occur.

Irrespective of whether or not such retrocausal models are valid, from a pragmatic perspective we need to better understand and manage the psychological or cognitive impact of feedback upon psi scoring, particularly in multiple-trial psi tests. On the one hand, feedback can clearly help engage individuals vis-à-vis the psi task, and even serve as a learning support; over time, it can help them to zero-in on intuitive strategies that seem to produce positive results. On the other hand, as suggested in our earlier study, repeated hit/miss feedback in multiple-trial tests may be experienced as discouraging or create a counterproductive performance-oriented mental set, which could lead to null or even negative scoring.

The current study seeks to neutralize the potentially negative impact of feedback in several ways. First, unlike the previous experiment, in which each person's performance was immediately shown to his or her partner *and* remotely monitored by experimenters, in the Selfield the participant alone knows his or her results in real-time; this may encourage a mindset that is favorable to exploration and learning rather than focused on performance. Second, in the current experiment we randomly intersperse feedback and no-feedback trials over the course of the session, so that participants cannot know in advance which condition to expect; this is intended to alleviate the cumulative stress associated with repeated feedback.

In summary, the current study is a follow-up of our telepathy study, but redesigned as a precognition task, with improvements in terms of the immersive environment, the feedback approach and the targets used, and with an explicit assessment of feedback vs. no-feedback conditions. Our key objectives were to:

1. develop a simple yet powerful tool for research, one that allows both for a psi-conducive participant state and efficient data-collection;
2. assess whether our approach is indeed conducive to success in a multiple-trial precognition task and provide an estimate of the effect size (hit rate);
3. assess whether trials with hit/miss feedback produce superior scoring over no-feedback trials.

Our protocol and procedures were submitted to, and approved by, the Ethical Committee of the Institut Métapsychique International, consisting of 6 members (none of whom were Selfield investigators). The study was pre-registered at the Koestler Parapsychology Unit online study registry (KPU-1032).

Method

Study Length and Participants

The number of trials was set in advance. To estimate this number, we had previously conducted pilot sessions to determine the maximum number of trials we could reasonably introduce per session, before participants began to feel bored or lose their motivation. In parallel, we examined the effect sizes in free-choice and forced-choice research paradigms to help define the power requirements for this study. Free-choice effect sizes provided an upper bound to *d* (ES: $d = Z/\sqrt{N}$, where the ES is taken as Cohen's *d*, Z is a study Z-score, and N is the number of trials). An estimate of ~0.14 was taken from ganzfeld databases, as these tend to have among the highest reported values (Storm, Tressoldi, & Di Risio, 2010; Bierman, Spottiswoode, & Bijl, 2015). Forced-choice studies provided a lower bound of $d = 0.02$ (Storm, Tressoldi, & Di Risio, 2013). The ES have a simple relation to the total binary hit rates (HR): $HR = 0.5+d/2$ and we use both notations, for convenience. The forced-/free-choice estimations in terms of HR are 51% and 57%, respectively. As the objective of our protocol is to achieve an intermediate HR, we took a modest value of 53% as a target HR for power considerations. Based on these criteria, we preset the total number of trials to 3000, to be collected through 150 20-trial series, with participants contributing either a single or double series (20 or 40 trials). Applied uniformly to all trials the target HR yields a 95% power at a 5% level and an 80% power if only the feedback trials (expected N~1800) are associated with the psi effect.

Given these constraints, we recruited 39 male and 43 female participants ranging in age from 25 to 84 years old. Participants were selected from among the experimenters' personal or professional acquaintances, and included 26 meditation practitioners in the Shambhala lineage of Tibetan Buddhism, as well as the two main experimenters (PAB and MV).

Set and Setting

Although all authors of this paper participated in the development phase of this study, the actual sessions were run by the first two. Peter Bancel has conducted parapsychology research since the late 1990s, and Mario Varvoglis since the mid 1970s. Both were moderately optimistic about the study's outcome, with an expectation of 4 out of 5 that the study would yield positive results. We sought to induce a friendly and relaxed ambience for the participants, both in the preparatory phases of the session and during data collection, and to convey to them our confidence that the experiment would constitute an agreeable experience.

Equipment and Experimental Layout

The Selfield was conducted at the Institute Métapsychique International (IMI). The participant room was outfitted with a reclining relaxation chair, headphones, a MacMini computer, a handheld

input device, and a monitor housed within a custom-made immersive display system. This system consisted of a trapezoidal "dark chamber", 1 meter in length, extending outward from the monitor to the level of the participant's temples, mounted on an articulated, extendible arm that can be readily pushed forward, backward, and sideways, as well as allowing for vertical adjustment of angle of view. Internally, the dark chamber is lined with black photographer-cloth that absorbs light and minimizes reflection. The system thus visually isolates participants from the surroundings and enhances the impact of the image displayed on the monitor. A second monitor plus keyboard and track pad were also located in that room; these were used for the preliminary training demonstration, as described below. The administrative post, situated down a short hallway, included a MacMini computer, keyboard, trackpad, and screen and was linked to the participant's computer via a Local Area Network using an Ethernet connection.

Materials

Questionnaires. One or two days before their scheduled session, volunteers received a link to an online poll with 17 questions regarding their belief in psi, prior spontaneous experiences of psi, familiarity with meditation and other mental disciplines, and their susceptibility to absorptive states. Immediately following the experimental session, a 6-item exit questionnaire was filled out; the questions asked participants to rate their experience of the session (agreeable/disagreeable; too long/too short; etc.). All questions for both questionnaires were rated from 1 (low) to 6 (high).

Targets. We constructed a novel target set for the current study, consisting of 50 facial photographs of animals or people - either famous personalities, or people from different cultures with intense facial characteristics. The images were high-resolution photos freely available on the internet. A key criterion of selection was that the person's or animal's eyes should be staring directly at the observer.

Additional audiovisual materials. A 4-minute introductory video sequence was created, to be shown once the volunteer was installed in the immersive space but before actual data collection began. This sequence was based on images taken from the American television series Cosmos and from NASA footage of the sun. The sequence concludes with an image of the rotating Earth, which then fades into the animated graphic of a spherical "image-container" used in the psi task. This introductory sequence was meant to suggest an outer-space/inner-space voyage and help participants shift away from their day-to-day perspective on time.

Software

Programming language: Data collection was automated and run by custom software developed in-house on the Quartz Composer (QC) development platform. Quartz Composer is a free visual programming language, part of the Apple Xcode development environment. It is used primarily for processing and rendering graphical data in real-time (such as animated screen savers or music visualizers). The experiment's software consists of several modules, installed either on the administrator station or in the participant room.

Administrative modules: these are used to input participant and experimenter data, and monitor the unfolding of the experimental session. The administrative post informs the experimenter of the trial

number and time elapsed between trials, but provides no hit or miss information. Experimenters are thus masked to the session results, which are only available by opening the experiment's data file.

Psi-task program. Once initiated, the software controls all aspects of the session, including data acquisition, the sound environment, generation of the background star-field, and various feedback displays. The program also generates the animated blue spherical image-containers that are the focus of the participant's psi task.

Pseudo-random number generation. The computer program uses a 10-7-1 linear feedback shift register (lfsr) as the pseudo-random algorithm for deciding the hit/miss outcome. The lfsr produces a pseudo-random bit string with a 1023-bit cycle length, with its phase determined by an input seed. A new input seed is generated for each trial from the mouse click's input by the participant. The procedure is as follows: A pretrial graphical sequence is launched by the participant via a mouse click; a second click by him/her (to open the target container) initiates the actual trial and feedback sequence. At each of the two clicks, the computer's internal clock is read out in milliseconds and this value is returned modulo 1023. The first value seeds the algorithm and the second is used to select which of the 1023 generated bits should be used for the binary choice of image/no-image. The determination of whether a given trial is followed by feedback or not is made using a native javascript pseudo-random generator seeded once at the beginning of each session. The generator was set to produce a 60-40 ratio, on average, of feedback to no-feedback trials.

Procedure

Prior to the participant's arrival, the designated experimenter confirmed reception of the online pre-test questionnaire and set up the session using the administrative module. Following arrival and some time spent chatting, the experimenter led the participant downstairs to the session room, sat him or her in front of the monitor, and explained the general purpose of the experiment and unfolding of the session. It was first explained that considerable data, both anecdotal and experimental, support the reality of precognition and that the study aimed to further explore its mechanisms. It was also explained that some trials would be followed by feedback and others not, but that in all cases it would be useful to remain in an engaged but fluid state and treat this session as a means to test different strategies for succeeding in precognition. A short training program was then launched, allowing for several simplified trials, while the experimenter explained the user interface and the meaning of the hit, miss, and no-feedback animations.

Following this, the participant moved from the monitor post to sit comfortably in the reclining chair, while also being fitted with the headphones and the immersion environment. The experimenter then handed him/her the input device, turned off the lights and exited the room, taking along the keyboard and trackpad. The participant launched the session with a single button-press that started the introductory video. After 4 minutes, this faded into the animated star-field from which a blue sphere emerged, slowly traveling toward the participant. If s/he did nothing, the sphere wandered off the screen foreground, appearing to bypass him or her, and, a few seconds later, a new one appeared and followed a similar trajectory. When the participant first decided to click the input device, the blue sphere came immediately towards him/her and wavered in the foreground, waiting for the confirmatory second click that initiated a trial (if there is no second click within 25 seconds, the sphere retreats and a new emerges). Once the trial was confirmed, the pseudo-random generator selected a target from

the image pool, decided on a hit or miss outcome, and determined whether or not feedback should be provided. After these random parameters were determined, the program launched the appropriate audiovisual animation:

Hit: The sphere opens and a portrait appears and grows, seemingly approaching the observer; it then slowly fades out. The sound of a gong accompanies this visual.

Miss: The sphere retreats back into the darkness where it came from. A low-frequency, rather disapproving sound is heard.

No-feedback: The sphere remains where it is but slowly dissolves into nothingness; a subtle whooshing sound is heard.

Finally, the program updated the trial counter, stored all data and launched the new visual sequences (with a blue sphere emerging from the background). After 20 such trials, the first series ended, the participant monitor displayed the number of hits (for feedback trials only) and the administrator post indicated to the experimenter whether the participant's hit rate exceeded a criterion level of 35% hits (for the feedback trials only). If so, the experimenter invited the subject to do a second session (under the null hypothesis, roughly 85% of volunteers would pass the second-session criterion.). Participants could decline the invitation for any reason (such as feeling pressed for time, finding the experience unpleasant, etc.). If they accepted, the session continued with a second series. The pause between series one and two was limited to a few minutes to ensure that the participant remained relaxed and engaged with the experiment. Once the second series was completed, the number of hits was displayed to the participant as before (again, for feedback trials only) and the experimenter was notified via the administrator post. After coming out of the immersive environment, the volunteer was taken upstairs to complete the exit survey.

Experimenters were masked to results until the completion of the experiment. Although occasionally participants spontaneously mentioned the number of feedback hits to the experimenter at the end of a session, this did not reveal the session outcome: the experimenter knew neither the total number of feedback trials, nor did the subject receive any information about no-feedback trials.

Analyses

Four analyses were planned and pre-registered. Confidence intervals for the binomial hit rates were estimated using Gaussian distributions with variances of $1/4N=p*(1-p)/N$, where p is the binomial probability = ½.

1. One-tailed binomial p-value and 90% CI of the total trial hit rate.
2. One-tailed binomial p-value and 90% CI of the separate hit rates for feedback and non-feedback trials.
3. One-tailed binomial p-value of the difference hit rate between feedback and non-feedback trials.
4. One-tailed binomial p-value and 90% CI of all trials from participants responding 6 (the highest level) to a questionnaire item regarding mental disciplines: "I practice or have practiced a discipline such as meditation, yoga, tai chi or qi gong."

Three exploratory analyses were undertaken.

1. To assess whether hit rates shifted over the course of the session, the 20 sequential trial-by-trial hit rates for all 150 runs were fit with a linear regression, and the two-tailed *p*-value of the regression slope was determined.
2. One-tailed binomial *p*-value and 90% CI of the separate hit rates for feedback and non-feedback trials for the mental discipline subset of participants.
3. One-tailed binomial *p*-value and 90% CI of the total hit rate and the separate hit rates for feedback and non-feedback trials for 26-participant subset of the mental discipline group. These participants are meditators within the Shambhala lineage of Tibetan Buddhism and are personally known by PAB to have maintained committed practice for at least 5 years.

Results

Main results:

For all trials combined, the hit rate was 50.07% (p = 0.464; CI[48.6, 51.6]; N = 3000). The hit rate for feedback trials was 51.0% (p = 0.18; CI [49.1, 52.9]; n = 1828), which exceeded the no-feedback trials 48.6% (p = 0.82; CI[46.7, 50.55]; n = 1172). The 90% CI's for the two hit rates overlap, and the one-tailed difference p (favoring feedback) = 0.10 .

Secondary results:

To assess whether hit rates shifted over the course of the session, we fit a linear regression to the total trial-by-trial hits in sequence over all 150 runs of 20 trials (Figure 1). The regression has a positive slope m = 0.41, (t(18) = 2.06; p = 0.54) indicating an average increase of 5.5% in the hit rate over the course of a 20-trial run. The 90% CI of the increase is CI[1.1, 9.9].

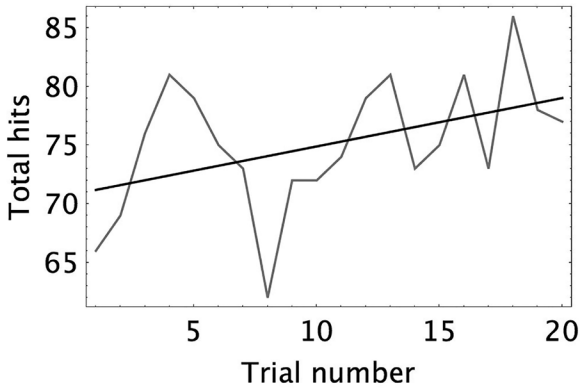

Figure 1. *Linear regression on trial-ordered data*

The 45 participants (55%) reporting the highest level on the mental discipline question had an overall hit rate of 50.9% (p = 0.22; CI[48.9, 52.9], N = 1620). The feedback and no-feedback trials had hit

rates of, respectively, 51.6% (p = 0.15; CI[49.0, 54.2], n = 1010) and 48.9% and (p = 0.52; CI[46.5, 53.2], n = 610).

The 26 participants (32%) with a long-term meditation practice had a somewhat higher overall hit rate of 52.1% (p = 0.09, CI[49.4, 54.7], n = 960). The feedback and no-feedback trial hit rates were 53.3% (p = 0.047, CI[50.00, 56.7], n = 602), and 50.00% (p = 0.479, CI[45.7, 54.3], n=358).

A further suggestion that meditation practice may be associated with psi performance comes from comparing the poll responses with hit rates. Across all 82 individuals, the 6-point scale of reported engagement with meditation correlated positively with hit rate (Spearman rank values of 0.19; p = 0.04).

We did not find other correlations between hit rates and poll responses, including a question addressing psi belief. It should be noted, however, that none of the volunteers reported below 3 on the 6-point scale, so that skepticism was poorly represented by our pool.

A debriefing questionnaire was also given, involving 6 items with ratings from 1 (low) to 6 (high). Statistics for three of these questions are worth underscoring. Concerning the question "Did you find the Selfield session agreeable", 94% gave a score of 5 or 6, and 100% answered "yes" to the question "would you like to participate in a similar experiment in the future?" Finally, concerning the question "do you think your scores would improve with continued training," 89% gave ratings between 4 and 6, and only 11% a rating from 1-3.

Discussion

Our study was designed to explore two main questions related to enhancing effect sizes in a forced choice protocol and to provide us with effect size estimates for future work. The questions we addressed are: 1) does the protocol as a whole produce an effect?, 2) do feedback trials have larger effect sizes?, and 3) do participants practicing a mental discipline have larger effect sizes?

As in the earlier Sharefield telepathy experiment, we did not find an overall effect and, hence no support for our first objective of developing a protocol that is both efficient in terms of data collection and psi-conducive for the general population. For our second objective, we did find that the feedback trials produced a larger hit rate than the no-feedback trials; also, unlike the Sharefield study, feedback here was perceived positively by participants. These results suggest that it is possible to remove the negative motivational effects of feedback and further assess its possible contributions to scoring. Better-powered studies producing similar results would suggest that feedback may constitute a support for learning, or even serve as a retrocausal trigger of precognition (whereby the outcome at time T could inform choices at time T-1).

Another point of interest in our study was the finding of a possible within-series incline effect. Although this does not necessarily demonstrate feedback-based psi-learning, it does suggest that the testing environment may have somehow helped volunteers settle into a more psi conducive mental set as the series advanced. This view is supported by the overwhelmingly positive responses

we found when participants were asked, post-session, if they felt their scores could improve with further practice.

The third question we examined, concerning mental disciplines, also yielded some encouraging results, especially when considered in the context of numerous studies suggesting that meditation may correlate with positive effect sizes in psi (Roney-Dougal, 2015). Of particular interest here are the results of the Shambhala meditators, who scored higher than the general test population. Although these results had not been formally predicted in our study and must be treated with caution, it should be noted that the inclusion of a substantial number of Shambhala meditators in our study was far from accidental. We were quite aware of earlier research linking meditative practice to psi scoring in forced choice tests and one of the key investigators has been intensely engaged in meditative practices for years, and conducted a rather positive pilot psi study with Shambhala meditators in the past (Bancel, 1999).

In terms of limitations, it first should be noted that any conclusions of statistical evidence regarding hit rates and effect sizes are limited, of course, by the study's size. Although a larger *N* is always desirable, we feel that the study size was adequate for this exploratory phase; we had the data to turn our three questions into hypotheses based on power analysis. A related limitation is that our considerations of effect size based on free- and forced-choice protocols could have been stated more clearly as a Bayesian prior. This is easily remedied, and the study's data will allow us to make a Bayesian update of an appropriate prior (for example, the guess of a 53% HR is well represented as a normal probability distribution, $N(\mu, \sigma) = N(53, 1.5)$. Finally, the post-hoc analysis looking at the evolution of effect size over the course of a session is certainly interesting, but it is best addressed once an effect is confirmed. It is wise to keep it in mind when designing future studies so that data can be exploitable on this question (such as standardizing the session *N*).

In general, although participants overwhelmingly rated the Selfield as motivating and affirmed their desire to renew the experience, it seems that immersive environments and agreeable psi tasks are not sufficient to produce good outcomes in the general population. Future optimization approaches should explicitly adopt a more "elitist" recruitment strategy, focusing on promising subpopulations, such as meditators, rather than unselected volunteers. Indeed, in a recent article reviewing a closely related area of research (micro-psychokinesis with random number generators) we came to an identical conclusion; the best results in repetitive psi tasks come from researchers who worked in an intensive, personalized manner with a small number of selected participants (Varvoglis & Bancel, 2016). Thus, for the future we recommend an optimization strategy that brings together three essential components: tasks encouraging a flow state, probably with a non-disruptive form of feedback; experimenters who work regularly with a small number of participants and know-how to motivate and "coach" them; and participants - such as experienced meditators or high hypnotic participants - who show a high level of attention control and absorption in the here and now.

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Le Selfield : Optimiser la Recherche sur la Précognition

Résumé: Nous décrivons une étude exploratoire de précognition à choix forcé basée sur un protocole qui utilise un environnement audio-visuel immersif pour induire un état facilitant le psi chez des participants. Notre objectif est d'évaluer si ce dispositif d'optimisation va aider à produire des résultats psi significatifs avec une population non-sélectionnée. Nous avons également chercher à vérifier si le feedback essai par essai allait produire des scores supérieurs aux essais sans feedback. Pour chaque essai, les participants sélectionnaient une sphère graphique opaque dont ils ressentaient qu'elle contenait une image de visage, par opposition à une sphère vide. Après leur sélection, le programme déterminait aléatoirement si la sphère était vide ou non, et si le feedback était montré ou non. Un total de 3000 choix binaires furent collectés auprès de 82 participants. Chaque participant a contribué à une ou deux séries de vingt essais, en se basant sur des critères de score prédéfinis. Le taux de succès total des essais réussis était de 50,1%, proche de ce qui serait attendu selon l'hypothèse nulle d'aucun effet psi. Les taux de succès dans les conditions de feedback vs sans feedback allaient dans les directions prédites (51,0% vs 48,6%). Une analyse post-hoc a montré que les taux de succès pour les essais avec feedback s'amélioraient progressivement au cours d'une série de vingt essais, suggérant que les participants pouvaient avoir trouvé une stratégie mentale pour améliorer leur score. De plus, un sous-groupe de 26 méditants expérimentés avait un taux de succès de 52,1%, un résultat conforme à la littérature antérieure qui suggère que les méditants étaient des participants particulièrement adaptés pour la recherche psi.

Das Selfield: Zur Optimierung der Präkognitionsforschung

Zusammenfassung: Wir berichten über eine explorative Forced-Choice-Studie, basierend auf einem Protokoll, das mittels einer immersiven audiovisuellen Umgebung bei den Teilnehmern einen psi-begünstigenden Zustand induziert. Unser Ziel war es, einzuschätzen, ob diese Optimierung dazu beitragen würde, signifikante Psi-Ergebnisse bei einer unausgewählten Population zu erzielen. Wir untersuchten auch, ob ein Feedback nach jedem Trial zu höheren Treffern führt als bei Durchführung ohne Feedback. In jedem Durchgang wählten die Teilnehmer eine opake grafische Kugel aus, die nach ihrer Meinung einen Gesichtsausdruck enthalten würde, anstatt einfach nur leer zu sein. Nach der Auswahl des Probanden erfolgte jeweils zufällig die Auswahl der Kugel mit oder ohne Gesicht und ebenfalls zufällig, ob ein Feedback gegeben würde. Eine vorher festgelegte Gesamtzahl von 3000 binären Einzelversuchen kam mit 82 Teilnehmern zustande. Jeder Teilnehmer steuerte entweder 1 oder 2 Durchgänge zu je 20 Einzelversuchen bei, die auf vorher festgelegten Bewertungskriterien beruhten. Die Gesamttrefferrate der erfolgreichen Einzelversuche betrug 50,1% und lag damit nahe der Erwartung unter Geltung der Nullhypothese, dass es keinen Psi-Effekt gebe. Die Trefferraten für die Feedback- und Non-Feedback-Trials lagen in der erwarteten Richtung (51,0% vs. 48,6%). Eine Post-Hoc-Analyse zeigte, dass die Trefferraten für Feedback-Trials im Laufe der Serie von 20 Einzelversuchen gestiegen sind, was darauf hindeutet, dass die Teilnehmer nach und nach eine mentale Strategie zur Verbesserung ihrer Trefferleistungen gefunden haben könnten. Eine Untergruppe von 26 erfahrenen Meditierenden erzielte eine Trefferquote von 52,1%, ein Ergebnis, das mit der bisherigen Literatur übereinstimmt, die darauf hindeutet, dass Meditierende besonders geeignete Teilnehmer für Psi-Experimente sind.

El Selfield: Optimizando la Investigación de la Precognición

Resumen: Describimos un estudio exploratorio de precognición de elección forzada basado en un protocolo que utiliza un entorno audiovisual inmersivo para inducir un estado facilitador de psi en los participantes. Nuestro objetivo fue evaluar si esta configuración de optimización ayudaría a producir resultados significativos de psi en una población no seleccionada. También intentamos evaluar si la retroalimentación prueba por prueba produciría una puntuación superior a las pruebas sin retroalimentación. Para cada prueba, los participantes seleccionaron una esfera gráfica opaca que creían que contenía una imagen facial en lugar de estar vacía. Después de la selección, el programa determinó aleatoriamente si la esfera estaría vacía o no, y si se daría retroalimentación. Un total preestablecido de 3,000 ensayos de elección binaria se obtuvieron de 82 participantes. Cada participante contribuyó con 1 o 2 series de 20 pruebas, según los criterios preestablecidos. La tasa de aciertos totales de las pruebas elegidas exitosamente fue del 50.1%, cercana a la expectativa según la hipótesis nula de que no hay efecto psi. Las tasas de aciertos para la retroalimentación y los ensayos sin retroalimentación fueron en la dirección prevista (51.0% vs. 48.6%). Un análisis post-hoc mostró que las tasas de aciertos en los ensayos de retroalimentación aumentaron durante la serie de 20 pruebas, lo que sugiere que los participantes pueden haber encontrado progresivamente una estrategia mental para mejorar la puntuación. Además, un subgrupo de 26 meditadores con experiencia tuvo una tasa de aciertos del 52.1%, un resultado consistente con la literatura anterior que sugiere que los meditadores son participantes especialmente aptos para la investigación de psi.

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Quantifying the Phenomenology of Ghostly Episodes: Part I - Need for a Standard Operationalization[5]

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Abstract: We review conceptualizations and measurements of base (or core) experiences commonly attributed to haunts and poltergeists (i.e., "ghostly episodes"). Case analyses, surveys, controlled experiments, and field studies have attempted to gauge anomalous experiences in this domain, albeit with methods that do not cumulatively build on earlier research. Although most approaches agree, to an extent, on the base experiences or events that witnesses report, the literature lacks a standard operationalization that can be used to test the factor structure of these occurrences or allow meaningful comparisons of findings across studies. Towards filling this gap, we identified 28 base experiences that include *subjective* (or psychological) experiences, more typical of haunts, and *objective* (or physical) manifestations, more common to poltergeist-like disturbances. This qualitatively-vetted list is proposed as the foundation for new measurement approaches, research designs, and analytical methods aimed to advance model-building and theory-formation.

Keywords: ghost, haunt, phenomenology, poltergeist, psychometrics

"*If you can't measure it, you can't manage it.*" [6]

Several early and prominent scientists – including Oliver Lodge, William Crookes, and Frederick W. H. Myers – were keen to apply pioneering science in the study of spontaneous cases, notably apparitions, haunts, and poltergeist-like outbreaks. Their activities with organizations like the Society for Psychical Research (SPR) and the Ghost Club sparked a legacy of instrumentation that today is most closely associated with technical hardware (e.g., Hill, 2017; Houran & Lange, 1998; Potts, 2004). The literature from this perspective shows that ghostly experiences can involve measured or inferred *physical events* such as object movements, raps and knocking, electrical disturbances, malfunctioning equipment, and anomalies of various types of recording media. That said, other important instrumentation seems to garner less widespread attention or appreciation, particularly psychometric tools and test theory (Houran, 2017; Laythe & Owen, 2012).

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6 This ubiquitous quote is ascribed to various sources, including Peter Drucker. See http://blog.marketculture.com/2009/03/20/if-you-cant-measure-it-you-cant-manage-it-peter-drucker/

Certainly, parapsychologists have long been interested in advances in questionnaire and survey design, data collection, and analytical techniques. For example, Gurney, Myers, and Podmore (1886) conducted a large-scale survey of non-pathological 'hallucinations' – the first of its kind in the mind sciences – that revealed apparitions to be relatively common experiences in the general population. Shortly after, Gurney initiated an international replication with the SPR's classic "Census of Hallucinations" (Sidgwick, Johnson, Myers, Podmore, & Sidgwick, 1894). This was the first truly international project commissioned by the International Congress of Psychology and arguably set the stage for fresh reviews of historic and spontaneous cases dealing with ghosts and kindred phenomena (e.g., Alvarado & Zingrone, 1995; Finucane, 1996; Puhle, 2001; Roll, 1977), as well as opinion polls on global and specific paranormal beliefs and experiences in contemporary society (e.g., Dagnall, Drinkwater, Parker, & Clough, 2017; Haraldsson, 1985; McClenon, 2013; Palmer, 1979; Ross & Joshi, 1992). These collective efforts have documented a variety of *subjective* or *psychological* experiences inherent to ghostly encounters, such as visual apparitions, voices or various auditory perceptions, unusual bodily sensations or sudden temperature changes, abrupt emotional disruptions, and sensed presences.

Research on ghosts and related phenomena is not sparse (although recent developments are seemingly limited, see Laythe, Houran, & Ventola, 2018), but unfortunately the literature is not always uniform with operationalizations. Ghostly episodes do not seem to be a simple phenomenon but rather a multifaceted mixture of psychological, environmental, and potentially parapsychological factors (for a review see Houran & Lange, 2001b). Comprehensive and data-driven models are lacking arguably due to this complexity as well as, in part, the absence of easily comparable and representative measurements of the fundamental features of these occurrences. We first review various methods used to assess the phenomenology of ghostly episodes and then outline the practical and theoretical merits of a more robust psychometric approach.

We are not suggesting that important developments have not been made. In fact, meaningful progress has come from in-depth treatments of surveys, historical accounts, and free-response data, which go beyond basic content or affective theme analyses (e.g., Houran, 2013; Persinger & Makarec, 1992). For instance, techniques in forensic linguistics purport to appraise the internal veracity of witness accounts (e.g., Chaski, 2013; Kang & Lee, 2014; Kohnken, 2004), whereas the use of semiotics (Machado, 2001) or the more powerful method of computerized Latent Semantic Analysis (e.g., Lange, Greyson, & Houran, 2015) have been used as types of "factor analysis of language" to model the semantics and structure of paranormal narratives. Other approaches, such as Interpretive Phenomenological Analysis (e.g., Drinkwater, Dagnall, & Bate, 2013: Simmonds-Moore, 2016) and Conversation Analysis (Murray & Wooffitt, 2010; Wooffitt, 1992), take a qualitative, phenomenological approach combining hermeneutics and idiography to understand how percipients construct meaning from their experiences and likewise how experiences affect individuals. This last approach is particularly relevant given the way that witnesses may "mold" their accounts in the face of skepticism (Ohashi, Wooffitt, Jackson, & Nixon, 2013).

Finally, we emphasize the use of leading-edge psychometrics in Modern Test Theory, including Item Response Theory (IRT), Rasch (1960/1980) and differential item functioning (response bias testing). Often misunderstood, IRT allows questionnaires to be modeled into probabilistic interval-level and bias-free measurements similar to those in the physical and biomedical sciences. More importantly,

IRT-constructed scales provide the benefit of a mathematical hierarchy fixed in *constant* measurement between items and respondents' abilities or experiences. To borrow a metaphor from Bond and Fox (2015), the measure becomes an actual ruler in which an inch-is-an-inch across scores of the measure.

Technical overviews of Modern Test Theory are beyond the present scope, but resources are readily available that explain how these statistics transcend mere issues of measurement quality of questionnaires to speak directly to model-building and theory-formation (e.g., Bond & Fox, 2015; Wright & Mok, 2000). More specifically, Lange (2017) and colleagues (Houran, 2017, pp. 191-193; Houran, Lynn, & Lange, 2017) have summarized several examples of IRT applications in parapsychology, including models of constructs or outcomes such as paranormal belief and experience, success rates in experimental psi research, phenomenological aspects of near-death experiences, and perceptions in haunts. Rasch scaling of questionnaire data from both surveys (Houran & Lange, 2001a) and field studies (Houran & Lange, 2009; Houran, Wiseman, & Thalbourne, 2002) suggests that the physical manifestations and psychological experiences comprising ghostly experiences are inherently structured as suspected by earlier investigators (e.g., Palmer, 1974; Playfair, 1980; Pratt & Palmer, 1976). We discuss the nuances and implications of this and other important psychometric issues below.

Previous Approaches to Assessing Ghostly Episodes

Psychometric studies in this domain face the immediate challenge that generic claims of "encountering a ghost" can unwittingly entail separate classes of events unfamiliar to laypeople but differentiated by parapsychologists. On one hand, a witness could simply refer to a singular experience of an apparition or other anomaly, while, on the other, accounts could allude to a more complex haunt or poltergeist episode. Such issues of operationalization and the theories that drive nomenclatures are critically important. Some researchers clearly differentiate *haunts* and *poltergeists* (e.g., Dixon, 2016; Gauld & Cornell, 1979/2017) or suggest they involve a constellation of different phenomena (Cardeña, Lynn, & Krippner 2014; Houran & Lange, 1996b). We argue that a firm distinction between the two episodes is currently problematic. That is, identifiable features of these episodes substantially overlap (Williams & Ventola, 2011), and they sometimes seem to occur in tandem within individual cases (e.g., Dixon, 2016; McHarg, 1973). In fact, contents underlying both haunt and poltergeist episodes have been Rasch (1960/1980) scaled to form a *collective hierarchy* or continuum (Houran & Lange, 2001a; Houran et al., 2002). These patterns suggest that a common underlying phenomenon or set of mechanisms might be operating across both types of episodes, consistent with others' speculations (e.g., Evans, 1987, 2001; Houran, 2000; Hufford, 1982, 2001). For these reasons and the purposes of this paper, we refer to apparitions and corresponding anomalies, haunts and poltergeists collectively as *ghostly episodes*.

Several authors have proposed that these occurrences have a structured or cumulative pattern of events. Sudre (1960) noted that ghostly phenomena do not manifest continuously over the life of the phenomenon. Although they tend to occur in the same area, the displays are episodic. Palmer (1974; Pratt & Palmer, 1976) was perhaps the first to propose the interesting notion that ghostly phenomena might progress systematically over time. Similarly, Nisbet (1979) suggested that, like some illnesses, poltergeist-like episodes have an "incubation" period before phenomena begin. Experiences may then

subsequently build upon themselves like a contagious process. "Contagious" processes in conjunction with ghostly episodes are a well-known proposal (Bauer, 1989; Houran & Lange, 1996a; Kerner, 1836; Laythe, Laythe, & Woodward, 2017; Romer, 2013). According to Playfair (1980), there are approximately 19 "symptoms" of a poltergeist outbreak, beginning with raps and ending with equipment failure of cameras, tape recorders, and so forth. Individual cases may involve only half a dozen of these symptoms, but Playfair (quoted in Wilson, 1993) asserted that, "You always get them in the same order. You don't get puddles of water before stone throwing, you don't get fires before raps...there is a predictable behavior pattern. They appear to be random to us, but they're obeying some sort of rules that they understand even if we don't (pp. 388-389)." This assertion might be overly deterministic, but Houran and Brugger (2000) similarly argued that haunts and poltergeists could form a hierarchy and that determining the probability of certain anomalies should provide clues to the nature of these phenomena or provide critical insights into specific cases. This hierarchy might also characterize séance-type phenomena. Recent work by Laythe and colleagues (2017), in a post-hoc examination of frequency distributions of internal and external perceptions within an occult-themed séance, found a repeated pattern of sensations and observations that suggested a hierarchy.

Indeed, ghostly episodes seem more structured than random. In the first of a series of studies on context effects in spontaneous cases, Lange, Houran, Harte, and Havens (1996) analyzed a large set of purportedly sincere ghost narratives published in commercial books. They developed a list (p. 757) of seven distinct types of anomalous experience commonly reported across these accounts, along with brief definitions:

1. *Visual:* Perception of a form, e.g., a moving shadow, amorphous light, or a defined apparition which is mistaken as a real person.
2. *Auditory*: Sound phenomena that cannot be accounted for, e.g., footsteps, percipient's name being called out, or knockings.
3. *Olfactory*: Anomalous or unaccountable odor, e.g., the smell of flowers or cigars.
4. *Tactile*: Physical sensations, e.g., cold, heat, or a touch on the shoulder.
5. *Sensed Presence*: Feeling of being watched or not alone.
6. *Object Movement*: Subjective certainty that an object either unaccountably disappeared, appeared from seemingly nowhere, physically moved while in sight, or an inferred movement, e.g., losing a personal item, finding an object in your residence which does not belong to you, or a door opening on its own accord.
7. *Erratic Functioning of Apparatus*: Unaccountable malfunction or irregular operation of mechanical fixtures or electrical equipment, e.g., electrical current surges, telephone rings, light bulb failures, jammed door locks, and film processing difficulties.

These types reflect the definition of apparitional experiences provided by Baker (2002), adapted from Thalbourne's (1982) *Glossary*: "A sensory experience in which there appears to be present a person or animal (deceased or living) who is in fact out of sensory range of the experient..." (p. 110). This list was subsequently used to study other types of "entity encounters," including *angelic visitations* (Lange & Houran, 1996), *deathbed visions* (Houran & Lange, 1997), and *shamanic-trance journeys* (Houran, Lange, & Crist-Houran, 1997). Consistent with earlier psychological thinking on apparitions (e.g., De Boismont,

1853; Tyrrell, 1943/1973), Houran's (2000) meta-analysis of these studies revealed: (i) a strong congruence between the content of the experiences and the nature of the contextual variables (i.e., psychological or environmental cues) available to percipients; (ii) that the number of contextual variables was related to percipients' state of arousal immediately preceding the experience; and (iii) that the number of contextual variables was also associated with the number of perceptual modalities involved in experiences.

Harte's (2000) basic replication of Lange et al. (1996) amended the above list to include the new category of *Emotional Feeling*, defined as an "unaccountable onset of emotion (e.g., becoming inexplicably depressed, irritable, or fearful)" (p. 453). This amended list was later used to code free-response narratives of research participants in a field study of Edinburgh's historic South Bridge Vaults (Houran et al., 2002). Other studies have utilized more general measures of anomalous experience. For instance, Lange and Houran (1997) studied the role of expectation and suggestion effects in a purported haunt using an experiential questionnaire with 10 subscales related to psychological and physiological perceptions, originally designed for research on mirror-gazing and the influence of magnetic fields (Green et al., 1992).

A parallel study by French, Hague, Bunton-Stasyshyn, and Davis (2009) examined the role of expectation-suggestion, electromagnetic stimulation, and infrasound for inducing ghostly experiences in a controlled, artificially-constructed "haunted chamber (room)." These researchers used a total score from a 20-item, true/false EXIT scale, adapted from a three-point Likert version by Granqvist et al. (2005), to measure anomalous experiences (e.g., "felt dizzy or odd, felt a presence, tingling sensations") associated with the manipulation of environmental variables in the room. Although many of their participants reported anomalous sensations of various kinds, the number reported was unrelated to experimental condition but correlated with scores on a controversial measure of signs or symptoms of temporal lobe stimulation or activity in the general population (cf. Cardeña & Pekala, 2014). As a result, French et al. (2009) concluded that suggestibility was the most parsimonious explanation for their findings, although there has been criticism of their infrasonic measurement (Parsons, 2012). We should further note that the EXIT scale does not have robust internal consistency, with Cronbach's alpha coefficients ranging from .68 to .71, so its usefulness for ongoing research is questionable.

Taking a different approach, Kumar and Pekala (2001) presented an 8-item Poltergeist subscale developed from existing items on their Anomalous Experiences Inventory (AEI: Kumar, Pekala, & Gallagher, 1994; cf. Gallagher, Kumar, & Pekala, 1994), adapted from the Mental Experiences Inventory (Kumar & Pekala, 1992). This subscale takes a more liberal view of these episodes – one that places ghosts within a wider context of entity encounter narratives and traditions (Evans, 2001; Houran, 2000; Hufford, 1982). The items reference the themes of "seeing a ghost, possessed by an outside force, having a scary psychic experience, objects appearing or disappearing, objects floating in the air, communicating with the dead, and seeing fairies or other folklore type entities." Kumar and Pekala (2001) found that scores on this subscale were positively related to a number of hypnosis-specific attitudes and behaviors.

A related subscale, an index of Encounter Experiences, comprises 11 "true/false" items from the AEI that encompass an even broader definition of encounter experiences (Pekala, Kumar, & Marcano, 1995, p. 323):

1. I am able to communicate with supernatural forces
2. I have experienced other planes of existence beyond the physical
3. I have had an out of body experience
4. I have tried channeling or have been a medium
5. I have communicated with the dead
6. I have seen a ghost or apparition
7. At times, I have felt possessed by an outside force
8. I can leave my body and return at will
9. I have experienced or met an extraterrestrial
10. I am able to communicate with the dead
11. I have seen elves, fairies, and other types of little people

We know of only a few studies using this index (Houran, Ashe, & Thalbourne, 2003; Houran, Kumar, Thalbourne, & Lavertue, 2002; Pekala, Kumar, & Marcano, 1995), originally designed for a study on shamanistic phenomena. However, this index consistently correlates with paranormal belief and permeability in mental boundaries, echoing patterns reported by Kumar and Pekala (2001) for the AEI Poltergeist subscale. Note that the Encounter index, like other methods reviewed here, aims to measure the number of different properties or modalities of encounter experience, as opposed to the frequency of each modality.

Consistent with the idea of a structured or cumulative phenomenology, Houran and Lange (2001a) found that the AEI Poltergeist subscale conformed to a Rasch (1960/1980) model. That is, Rasch scaling produced a linear measure of the experiences' perceptions with the frequency by which each experience was reported being modeled as the outcome of a Poisson process. The notion that ghostly experiences define a probabilistic response hierarchy does not simply mean that experiences differ with respect to their endorsement rates. Instead, Rasch scaling requires that a scale of ghostly experiences forms a (latent) quantitative dimension on which *each* respondent and *each* type of ghostly perception assume a *constant* position (Bond & Fox, 2001). These positions reflect respondents' trait-levels and the trait-level implied by the item, respectively, and together they determine the likelihood of a given response on the scale. These item and person locations (also called, item and person *measures*) are expressed in a common *Logit* (δ) metric, which creates measurable interval level positions on the scale (Wright & Masters, 1982).

The importance of this approach cannot be overstated, since fit of the Rasch model implies that items form a hierarchy that reflects the structure of the variable, thus establishing construct validity and unidimensionality (Bond & Fox, 2015) by defining the variable's semantics (see Lange, 2017; Lange, Irwin, & Houran, 2001). For instance, given the item and person locations described above, the Rasch model implies that higher response categories should have a greater probability of being selected for items with lower locations than for items with higher locations. In addition, respondents with higher trait levels should be more likely to give higher ratings than are respondents with lower trait levels. Finally, both properties should hold across *all* respondents, items, and response categories, creating a robust underlying unidimensional construct applicable across diverse populations. It can be shown (Wright & Masters, 1982) that when these requirements are fulfilled, the resulting variables have the proper-

ty where the responses of those with lower trait-levels are probabilistic subsets of those with higher trait-levels.

Simplified in terms of the present context, Rasch scaling of ghostly episodes represents a fitted interaction of the respondent's "sensitivity" levels to these anomalous experiences (i.e., a person's inherent ability or receptiveness) and the rarity of a specific type of experience (an endorsement rate of experiencing a specific feature of ghostly episodes). The underlying assumption of a unidimensional Rasch scale is an assumption often made (incorrectly) with non-Rasch purified measures. Applied to ghostly episodes, it is not a rational issue but a probabilistic one that a person with little ghostly episode experience will endorse items that are probabilistically rare. Rather, as a person has more ghostly episode experiences, the overall odds of rare ghostly episode features becomes more likely, akin to the number of trials in a binomial or Poisson trials experiment with a set probability of *x* event occurring (Rozanov, 1969). Rasch scaling allows the verification of the above model by mathematically ensuring that ghostly episodes align with the rarity of their features (cf. Bond & Fox, 2015).

Rasch scaling was also used to examine the phenomenology of ghostly experiences in Houran et al. (2002), drawing on the eight categories of experience from content analyses that we outlined earlier. However, the hierarchy of experiences associated with the South Bridge Vaults did not fully agree with the Rasch order of four other items, sharing similar themes, from the AEI that Houran and Lange (2001a) had reported previously. There are many possible reasons for this discrepancy. Differences between the two studies in terms of instruments, environments, instructional sets, country of origin, and implicit demands could be confounds. The discrepancy could also imply that hierarchies are idiosyncratic to specific physical environments or distinct types of haunt cases (cf. Gauld & Cornell, 1979).

We cannot push comparisons and contrasts between the two hierarchies too far given the caveats noted above. Still, interesting theoretical and methodological benefits might derive from this area of research. For example, different Rasch hierarchies might differentiate cases with evidential value for parapsychology from those grounded in fraud, imagination, or exposure to environmental variables. Alternatively, we might discover that certain people are differentially sensitive to specific features of ghostly episodes, seeming to violate the hierarchy. For example, Houran and Lange (2009) found that experients' levels of transliminality were associated with systematic distortions in the perceived phenomenology of their ghostly experiences. Detecting these differences becomes a simple case of comparing item placement (ranking) in contrast to the common measure.

In line with this approach, Houran (2002) introduced a 25-item *Haunt Experiences Checklist* to document perceptions uniformly across participants (n = 20) in a field study of a putative haunt. It was designed by collating: (i) the AEI Poltergeist subscale; (ii) descriptions of various anomalous experiences reported by experients during the South Bridge Vaults study; and (iii) reports of anomalous experiences from the case collection used by Lange et al. (1996).

Houran (2002) further proposed that the Checklist's items be divided into two Classes of Experience (Psychological Experiences vs. Physical Manifestations) according to the rationale in Houran et al. (2002). Psychological Experiences comprised the summed total of visual apparitions (and related visual imagery), physiological alterations, emotional responses, and sensed presences (items #1, 2, 11, 12, 13,

14, 15, 16, 17, 18, 19, 20, 21, 22, 24), whereas Physical Manifestations consisted of the summed total of temperature changes, auditory experiences, bodily injury of some kind, and olfactory experiences (items #3, 4, 5, 6, 7, 8, 9, 10, 23, 25). The coefficient alpha (measure of internal consistency) for Houran's (2002) Checklist was .83, which exceeds the traditional criterion of .70 for satisfactory reliability (Kline, 1986). Unfortunately, there were too few data to perform robust Rasch analyses.

Nevertheless, analyses of this Checklist are confounded by the fact that witnesses reported experiences involving multiple modalities or frequencies of those modalities, as do participants in other studies. Other researchers have modified witness questionnaires from this earlier work. For instance, Dixon (2016) used a 25-item anomaly checklist as part of a study-specific Paranormal Investigation Survey in his 13-month, longitudinal investigation of a ghostly episode. Comparison of these endorsements, particularly comparing numbers of apparitional experiences versus physical events (interpreted as recurrent spontaneous psychokinesis or RSPK by Dixon) led the author to conclude that his case represented a haunt-poltergeist hybrid, although this conclusion has been since tempered (Dixon, Storm, & Houran, 2018). Other studies have modified previously published questions or inventories (e.g., Parra, 2007; Parra & Argibay, 2016) or created study-specific questions to measure ghost-like experiences (e.g., Wiseman, Watt, Greening, Stevens, & O'Keeffe, 2002; Wiseman, Watt, Stevens, Greening, & O'Keeffe, 2003).

Moreover, context can muddle inferences drawn from psychometric analyses. This is what Helms (1992) termed *contextual equivalence*, similar to cultural equivalence, broadly defined as "the extent to which a cognitive ability is assessed similarly in different contexts in which people behave" (Reynolds & Suzuki, 2013, p. 105). Instructions on polls and questionnaires that ask broadly about individuals' past experiences do not capture the nuances and patterns of discrete perceptions that can occur in tandem within individual ghostly episodes and are therefore best measured closer to real-time. In other words, Rasch hierarchies might differ based on responses to questionnaires that take an inventory of one's anomalous experiences over a lifetime (e.g., Houran & Lange, 2001a; Kumar & Pekala, 2001) versus responses that reflect an individual's collective perceptions within specific episodes (e.g., Dixon, 2016; Laythe & Owen, 2012). Therefore, questionnaire instructions should be worded to be *case-specific* to gain valid insights about the phenomenology of singular episodes so that cross-study comparisons are interpretable.

Of course, these conceptual, empirical, and pragmatic issues are largely moot until an effective measure of ghostly episodes is created and subjected to a range of validity tests. That process begins with face- and content-validities. Our review therefore included a mapping exercise that built on existing literature by identifying the alignment in content among previous measurement approaches. This was the foundation for item selection in constructing a standard operationalization.

Elements Defining Narratives of Ghostly Episodes

Despite some specific differences among previous measures, we found reasonable agreement on the general *core* or *base* experiences characterizing witness reports. Table 1 lists these base experiences (with additional supporting references). This collection was subjected to an iterative process of review, discussion, and agreement among the authors, who sometimes argued for refining or distinguishing

among subtleties in anomalies based on the literature, ideology, and personal field research. Lastly, we note that this list includes anomalies that are inferred or documented via recording media, a distinction not consistently made in the literature. We recommend this final collection of 28-core experiences as the basis for a standard operationalization in this domain.

Table 1: Themes Represented in Narratives of Ghostly Episodes

	Sample Supporting References
Putative Personal Experiences	
Non-descript anomalous image, like fog, shadow, cloud, or streak of light	Daniels (2002), Drinkwater, Dagnall, & Bate (2013), Gurney, Myers, Pease, & Dawson (1883)
"Overt" ghost or apparition – a translucent image with human form	Emmons (1982), Gauld & Cornell (1979/2017), Turner (1970)
"Covert" ghost or apparition – anomalous presence that looked like a living person	Emmons, (1982), Daniels (2002), Gurney et al. (1883), Morton (1892)
Pleasant odor	Daniels (2002), Haraldsson (2009)
Unpleasant odor	Betty (1984), Haraldsson (2009)
Recognizable sounds, e.g., voices or music	Daniels (2002), Green & McCreery (1975)
Onset of positive emotion	Drinkwater, Dagnall, Grogan, & Riley (2017), Osis & Haraldsson (1977)
Onset of negative emotion	Betty (1984), Drinkwater et al. (2017), Hufford (1982)
Bodily sensations, e.g., dizziness, tingling, electrical shock, or nausea	Houran, Kumar et al. (2002), Wiseman et al. (2003), Young (2015)
Strange taste in mouth	Green & McCreery (1975), Wiseman et al. (2002).
Guided, controlled, or possessed by an outside force	Hess (1988), McClenon (1994, 2002)
Mystical beings, such as angels or demons	Daniels (2002), Dingwall (1947), McHarg (1973)

Folklore-type beings, such as elves, fairies, or other types of "little people"	Evans (1987); Jacome (1999), Puhle (2001)
Communication with the dead or other outside force	Braude (2014), Colvin (2008), Gurney et al. (1883), Hallowell & Ritson (2008)
Sensed presence or feeling of being watched	Betty (1984), Daniels (2002), Haraldsson (1994), Roll & Persinger (2001), Wiseman et al. (2002)
Déjà vu-type thoughts or feelings	Ember & Ember (1988)
Putative Physical Events	
Area of cold	Betty (1984), Roll & Persinger (2001), Turner (1970), Williams, Ventola, & Wilson (2008)
Area of heat	Koven (2007), Offutt (2007)
Object movements or levitations	Betty (1984), Gurney et al. (1883), Hess (1988), MacKenzie (1982), Owen (1972), Roll (1977)
Electrical or mechanical appliances or equipment functioning improperly or not at all	Betty (1984), Daniels (2002), Persinger & Cameron (1986), Roll & Nichols (2000), McCue (2002)
Pictures from cameras/ mobile device with unusual images, distortions or effects	Daniels (2002), Lange & Houran (1997), Maher & Hansen (1995)
Plumbing equipment or systems functioning improperly or not at all	Betty (1984), Bugaj (1996)
Breaking of objects, e.g., glass, mirrors or housewares	Hess (1988), Roll (1977), Puhle (2001)
"Mechanical" or non-descript noises, e.g., rapping, knocks, rattling, apparent footsteps, or sound of opening/closing doors or drawers	Betty (1984), Ellis (1978), Gurney et al. (1883) McCue (2002), Playfair (1980), Roll (1991)

Strange breeze or a rush of wind or air	Gauld & Cornell (1979), Maher (2000), Morton (1892), Tyrell (1973)
Anomalous fires	Hess (1988), Playfair (1980), Solfvin & Roll (1976)
Non-threatening physical touches, like a tap or light pressure on the body	Green & McCreery (1975), Maher (2000)
Threatening physical touches, e.g., cut, bite, scratch, burn, shove or strong pressure on the body	Amorim (1990), Hallowell & Ritson (2008), Hess (1988), Hufford (1982), Mulacz (1999)

To promote model-building and theory-formation, the base experiences are grouped according to their presumed origin. Specifically, events are conceptualized as either *Subjective* (*S*, psychological) or *Objective* (*O*, physical) phenomena, consistent with previous work (Belz & Fach, 2015; Dixon, 2016; Dixon et al., 2018; Houran, 2002; Houran et al., 2002; Hufford, 2001; Laythe & Owen, 2013; Persinger & Cameron, 1986). Manifestations categorized *S* are experienced by a singular observer via their senses, or could be explained via artifacts of imagination, cognition, and personality. A disturbance classified as *O* would be objectively experienced by a group of people, recorded on a device such as a camera/audio recorder, or measured with equipment such as a thermometer.

Additional research must validate this proposed *S/O* scheme, because distinguishing the nature of base experiences is neither always straightforward nor unambiguous. For example, some haunt or poltergeist cases involve phenomena such as bites, cuts, scratches, or welts (e.g., Amorim, 1990; Mulacz, 1999). These "external" anomalies are objective and measurable, yet potentially psychosomatic in nature (e.g., Houran, Kumar, et al., 2002). On the other hand, psychological experiences — including abrupt onsets of emotions and "sensed presences"— can allegedly derive from environmental (i.e., objectively physical) agencies; for example, stimulation from electromagnetic fields (Persinger & Koren, 2001) or infrasound (Tandy, 2000; Tandy & Lawrence, 1998). Further, seemingly indisputable physical events like object movements, electrical failures, and photographic anomalies are subject to orthodox causes if not extensively vetted but are commonly interpreted as "paranormal" based on demand characteristics, expectation, or suggestion effects, or other contextual variables (e.g., Dagnall, Drinkwater, Denovan, & Parker, 2015; Houran, 1997, Houran & Brugger, 2000; Houran & Lange, 1996a; Irwin, 2015).

Some items in Table 1 could be refined further to tease out the best-fitting *S/O* categories, or better emphasize the "aberrant salience" (Irwin, 2014; Irwin, Schofield, & Baker, 2014) of specific anomalies. For example, auditory phenomena might be better understood as *S* vs. *O* events by asking about corroboration from instrumentation, e.g., "I heard on an audio recorder mysterious sounds that could be recognized or identified, such as ghostly voices or music (with or without singing)" and "I heard on an audio recorder mysterious 'mechanical' or non-descript noises, such as tapping, knocking, rattling, bang-

ing, crashing, footsteps or the sound of opening/closing doors or drawers" (see Laythe & Owen, 2013, for examples of *S/O* instrumentation-based vetting procedures). Likewise, there are likely differences between the endorsements of statements such as "I saw objects moving on their own across a surface or falling" versus "I saw objects flying or floating in midair" (see Gauld & Cornell, 1979/2017, for various phenomenological distinctions). Nonetheless, answering questions about *S/O* categories first requires reliable models of the various events themselves. Only then can we reliably begin to examine their contextual and potentially parapsychological facets.

Discussion

Modeling the phenomenology of perceptions or reports in this domain has only just begun with any rigor per Lange's (2017) "quality of measurement" perspective, but improvements in this area are critical to theory evolution. Undeniably, our understanding of other anomalous experiences has benefited greatly from detailed quantitative analyses of their features – most especially *near-death experiences* (NDEs). In particular, Lange, Geyson, and Houran's (2004) Modern Test Theory studies verified that Greyson's (1983, 1985, 1990) scale captured an "NDE core experience" that is: (i) comprised of a probabilistic hierarchy of cognitive, affective, transcendental, and paranormal themes, and (ii) invariant across experients' gender, current age, age at time of NDE, years elapsed since the NDE (latency), and intensity of the NDE. Moreover, these same authors showed that scores on the NDE Scale could be predicted from the specific elements in first-hand narratives (Lange et al., 2015; cf. Houran, Lange, & Greyson, 2017). Altogether, this empirical, quantitative description of NDEs substantiated insights only previously assumed from spontaneous cases alone (e.g., Moody, 1975; Ring, 1980).

Similar progress with ghostly episodes remains elusive, though many case studies, surveys, and field investigations have attempted to define and measure base experiences in various ways. Consequently, consistent quantitative modeling arguably has been stifled. However, a standard operationalization combined with opportunities for "big data" on these anomalies via collaborations with self-styled ghost-hunting groups or large-scale online (open-source) surveys could facilitate unprecedented advances (Houran, 2017). Speaking to future research, a well-validated measure of ghostly episodes will ultimately allow researchers to connect other significant components of these experiences in ways previously not possible. For instance, what appears to be a modest benefit of probabilistic interval-level measurement is, in fact, a vast untapped resource for validation, selection, and analysis of cases. In particular, a probabilistic model allows an informed hypothesis towards the most likely features of other studies whereby nominal variables have been used to assess these episodes (e.g., believers vs. non-believers). Assuming a reliable probabilistic structure to ghostly episodes exists, as evidence thus far suggests, we now have a probabilistic breakdown of the most plausible phenomena occurring within any measurement of "yes, a ghostly episode occurred." In other words, simple probability applications (Rice, 1995; Rozanov, 1969) can produce generalizations of additional details in specific cases when data specificity is lacking.

Likewise, simple "yes/no" questions of environmental conditions, general locations, topography, geology, and other non-psychological variables, *because they are often collected as nominal data,* can be used to construct a form of "spooktistics." Applications of using a probabilistically-standardized set of

anomalies could easily lead researchers to areas, conditions, or populations that show abnormally high or low areas or conditions of activity. Such an application might permit a reliable empirical assessment of environmental features and their effect on ghostly episodes (for an applied example of binomial modeling see Laythe et al., 2017).

As stated previously, two potential measurement and theoretical differences revolve around the issue of the time-span in which anomalous experiences are collected and the theoretical distinction of *S/O* classifications of specific features to the experiences. Both issues, without standardized measurement, create significant confounds and inhibit model-building, particularly in the association of psychological or environmental variables.

Regarding the former, it should be apparent that ghostly episodes measured collectively over a respondents' lifetime (e.g., Houran & Lange, 2001a; Houran, Kumar et al., 2002) are not equated to data collected from a single occurrence (e.g., Wiseman et al., 2002, 2003). The former will likely yield greater endorsement of features compared to the latter. However, as no consistent method has been applied to determine if lifetime inventories of experiences substantively differ in content from single occurrences, a myriad of confounds exist in any study performing inferential statistics on these reports. Maybe a tedious venture, but research should empirically identify differences between these two perspectives, as predictions from studies using one operationalization are neither readily nor reliably applicable to studies with a different approach. Conversely, with a Rasch-purified measure, we may find that an underlying hierarchy of experience frames both, or even other, conditions. The essential point is that this confound of time-span in ghostly episodes cannot be fully addressed without a standardized measurement.

Regarding *S/O* distinctions in witness reports, we assert that first is needed a comprehensive set of features that can be measured in a psychometrically-sound manner before empirical distinctions or confounds can be properly addressed. We think the distinction is valuable for separating psychological from physical phenomena, but these classifications cannot remain arbitrary. Once a standardized measure is achieved, field research and comprehensive studies on the psychological correlates of ghostly episodes (e.g., Laythe et al., 2018) might provide empirical clues about which features of these anomalous experiences are predominantly psychological in nature (but possibly psi mediated, e.g., Rock & Storm, 2015) versus those embedded in external stimuli and possibly containing parapsychological predictors.

Although our focus is identifying the base elements or experiences that should constitute a psychometric assessment of ghostly episodes, statistically modeling these occurrences in a comprehensive way will likely require big data and the use of certain technologies. The features and characteristics of ghostly episodes might lend themselves to psychometric assessment, but the eternal debate over the nature or core constituent components of ghostly phenomena will not be resolved with surveys alone. Some issues might only be addressed by fieldwork, such as the vetting (or *S/O* categorization) of specific events by reliable and consistent means (e.g., Laythe & Owen, 2013), as well as measuring potentially relevant environmental fluctuations such as electromagnetic fields, infrasound, or infrared or ultraviolet light (e.g., Braithwaite, 2004, 2006, 2008; Braithwaite & Townsend, 2006; Joines, Baumann, & Kruth, 2012). The more robust, comprehensive, and simple the psychometric measure, the easier it will be to involve laypeople who actively investigate purported haunts or "poltergeist" cases. A standardized

measure, in conjunction with the development of applications for mobile devices, could lead to a critical mass of connected data and evidence collected in a simple and constant method that is designed in a way to prevent errors in data collection. The empirical answers possible from such a big data design would be myriad and profound.

The practical goal is the development of a multi-purpose, "top-down purified" Rasch scale that systematically quantifies the phenomenology and intensity of specific ghostly episodes, while simultaneously controlling for potential response biases related to witnesses' age, gender, and ideology (cf. Lange, Irwin & Houran, 2000). Hopefully, we have made the case for a standardized operationalization based on our review of previous methods, proposed incorporation of previous research in the proposed set of questionnaire items, and discussion of the numerous research benefits of such an operationalization. This tool would also be applicable to surveys, big data field studies, and investigations that codify free-response data or spontaneous case material for quantitative analysis. Moreover, researchers would have a standardized method of conceptualizing and evaluating ghostly episode accounts with a measure robust enough to use with sophisticated and iterative statistical methods, including power analysis, meta-analysis, path analysis (structural equation modeling), confirmatory factor analysis, and nonlinear dynamics. This is the next generation approach for building conceptual and empirical frameworks in this domain. After all, if researchers cannot robustly measure the base experiences in question, it seems unlikely parapsychology will ever be able to manage or adequately explain the underlying causes, correlates, and consequences of these anomalous phenomena.

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Quantifier la Phénoménologie des Épisodes Fantomatiques : Part I – Le Besoin d'une Opérationnalisation Standard

Résumé: Nous passons en revue les conceptualisations et les mesures des vécus basiques (ou fondamentaux) communément attribués aux hantises et poltergeists (c'est-à-dire « épisodes fantômatiques »). Les analyses de cas, les sondages, les expérimentations controllées, et les études de terrain ont tenté de jauger les expériences anomales dans ce domaine, avec des méthodes qui ne s'appuient néanmoins pas sur les recherches précédentes. Bien que la plupart des approches sont d'accord, jusqu'à un certain point, sur les vécus de base ou les événements que les témoins rapportent, la littérature ne possède d'opérationnalisation standard qui peut être employée pour tester la structure factorielle de ces manifestations ou pour permettre des comparaisons significatives des données entre chaque étude. Afin de compenser ce manque, nous avons identifié 28 vécus de base qui incluent des vécus *subjectifs* (ou psychologiques), plus typiques des hantises, et des manifestations *objectives* (ou physiques), plus communes dans les perturbations de type poltergeist. Cette liste qualitativement fondée est proposée comme socle pour de nouvelles approches de mesure, des protocoles de recherche, et des méthodes analytiques, conçus pour faire progresser la construction de modèles et la formation de théories.

Zur Quantifizierung der Phänomenologie geisterhafter Episoden: Teil I – die Notwendigkeit einer Standardoperationalisierung

Zusammenfassung: Wir nehmen eine Sichtung der Begriffsbildungen und Messungen basaler (oder Kern-)Erfahrungen vor, die häufig mit Spukerscheinungen und Poltergeistphänomenen in Verbindung gebracht werden (daher "geisterhafte Episoden"). Fallanalysen, Umfragen, kontrollierte Experimente und Feldstudien haben versucht, anomale Erfahrungen in diesem Bereich zu erfassen, allerdings mit Methoden, die nicht kumulativ aufeinander aufbauen. Obwohl die meisten Ansätze in gewissem Maße in Bezug auf von Zeugen berichtete Basiserfahrungen oder Ereignisse übereinstimmen, fehlt der Literatur eine Standardoperationalisierung, mit der die Faktorenstruktur dieser Ereignisse getestet oder aussagekräftige Vergleiche der Ergebnisse über Studien hinweg ermöglicht werden können. Um diese Lücke zu schließen, haben wir 28 Basiserfahrungen identifiziert, die *subjektive* (oder psychologische) Erfahrungen, die eher typisch für Spukerscheinungen sind, und *objektive* (oder physikalische) Manifestationen beinhalten, die häufiger bei poltergeistähnlichen Vorgängen auftreten. Diese qualitativ hochwertige Liste wird als Grundlage für neue Messansätze, Forschungsdesigns und Analysemethoden zur Förderung von Modell- und Theoriebildung vorgeschlagen.

Hacia una Cuantificación de la Fenomenología de los Episodios Fantasmales: Parte I - La Necesidad de una Operacionalización Estándar

Resumen: Revisamos las conceptualizaciones y mediciones de las experiencias básicas (o núcleo) comúnmente atribuidas a los fantasmas y poltergeists (i.e., "episodios fantasmales"). Los análisis de casos, las encuestas, los experimentos controlados, y los estudios de campo han intentado calibrar las experiencias anómalas en este dominio, aunque con métodos no basados cumulativamente en investigaciones anteriores. Aunque la mayoría de los enfoques están de acuerdo, hasta cierto punto, en las experiencias o eventos básicos reportados por los testigos, la literatura carece de una operacionalización estándar que pueda usarse para evaluar la estructura factorial de estas ocurrencias o permitir comparaciones significativas de hallazgos entre los estudios. Para subsanar este vacío, identificamos 28 experiencias básicas que incluyen experiencias subjetivas (o psicológicas), más típicas de casas hechizadas, y manifestaciones objetivas (o físicas), más comunes a las perturbaciones de tipo poltergeist. Proponemos esta lista verificada cualitativamente como la base para nuevos enfoques de medición, diseños de investigación, y métodos analíticos destinados a avanzar la construcción de modelos y la formación de teorías.

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Shadow Walking: Will a Ghost Walk Tour Affect Belief in Ghosts?[7]

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Abstract: There is a strong relation between personal experience and belief in ghosts. The research reported here investigated whether other people's experiences conveyed in a ghost walk tour could also influence belief. We surveyed participants before and after a ghost tour to evaluate changes in belief as a result of the tour. For participants who started out lower on ghost belief, the tour did increase their belief. The tour had no effect on non-ghost related paranormal beliefs. The data were evaluated against a model suggesting that the variables influencing the updating of beliefs are different from the variables related to the formation of belief. The model provided a good account for the data and suggests directions for future research.
Keywords: ghost belief, paranormal experience, others' experience

Clarke (1995) evaluated the frequency of various paranormal beliefs and the reasons given for those beliefs. Within the subset of ghost beliefs, personal experience was one reason given, but other people's experiences and media exposure were also provided as reasons for belief. Much attention has been paid to how personal experiences are related to belief. For example, Lange and Houran (1998) concluded that "poltergeists and kindred phenomena are delusional experiences that involve the affective and cognitive dynamics of percipients' interpretation of ambiguous stimuli" (p. 642). However, one of the motivations for their Study II was to have a more homogenous sample of experients to avoid participants responding "in terms of culturally transmitted information or second-hand accounts" (p. 641). Our purpose was to actually evaluate the effect of other people's experiences on belief in ghosts, in this case the role of attending a ghost walk tour on updating ghost belief.

Other people's experiences can take many forms (e.g., parents' beliefs, Braswell, Rosengren, & Berenbaum, 2012; or consumption of popular media, Auton, Pope, & Seeger, 2003; Sparks, Hansen, & Shah, 1994; Sparks, Pellechia, & Irvine, 1998). The popularity of beliefs also seems to factor into people's acceptance of them. For example, Ridolfo, Baxter, and Lucas (2010) found higher agreement with a report on ESP if participants had been told that it was popular.

Ghost tours are a popular activity and involve the transmission of other people's experiences (in

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support of this assertion, the Nashville Life website listed eight ghost tours in the Nashville area alone in October 2015; Murfreesboro, Tennessee, a medium-sized Nashville suburb, hosted two competing tours on its town square). All of these tours share local history and purportedly true ghost stories. The tour experience was investigated here, and the plan for this study was simple: Ask people about ghost belief before going on a tour, and then measure belief again after the tour. Can other people's experiences, acquired from a tour, increase belief in ghosts?

Again, personal experiences are relatively common (e.g., Haraldsson, 2009). It seems reasonable to expect experience to be related to belief, and a number of studies have documented an experience-belief link (Clarke, 1995; Irwin, 1985; Lawrence & Peters, 2004; Laythe & Owen, 2012; Pechey & Halligan, 2012; Wiseman, Watt, Stevens, Greening, & O'Keeffe 2003). Significant attention has been paid to the direction of the experience-belief relationship. Clarke's (1995) data, based on self-reports of ghost encounters, showed that people who believe in ghosts attribute their beliefs to experience. Hufford (2001) presented an "experiential theory" to account for supernatural belief. Lange and Houran (1998) suggested that an ambiguous experience, mediated by fear and moderated by gender and age, can lead to belief in a paranormal explanation. Once the belief has formed, subsequent experiences will be filtered through it, and this will create a feedback loop. If one conceptualizes experience as an ambiguous event in need of explanation, then there is evidence that this sort of experience will precede belief (e.g., Laythe & Owen, 2012; McNally & Clancy, 2005; Pechey & Halligan, 2012).

Garety, Kuipers, Fowler, Freeman, and Bebbington (2001) proposed a two-stage model for symptoms of psychosis, and Freeman, Garety, Kuipers, Fowler, and Bebbington (2002) demonstrated how the model could operate for persecutory delusions (note that we are choosing this model based on its structure and not necessarily to equate ghost belief with delusions). The basic idea is that a person with the right predisposition, in the presence of a triggering event can develop a delusion (Garety et al., 2001). Then, different processes (affected in large part by the existence of the delusion) take over to maintain and update that delusion. This model is very similar to Lange and Houran (1998), but makes a more explicit assumption about belief formation and belief maintenance being two separate steps. A variety of findings in the realm of paranormal belief can be accommodated within this model. For example, Sharps, Matthews, and Asten (2006) found that a set of variables was associated with belief in paranormal phenomena, whereas Sharps et al. (2010) found that these variables were not associated with the maintenance of these paranormal beliefs.

The study reported here is most closely associated with the maintenance and updating stage of belief rather than the formation of belief stage. It is unlikely that someone coming to a ghost tour would be completely naïve as to the existence of ghosts; they are likely to be rather high on ghost belief. Instead, the question is: what variables will influence the interpretation of a ghost tour in updating belief?

Research has demonstrated that prior belief is an important variable in determining how purportedly paranormal events will be interpreted. Some of these events involved personal experience. For example, Wiseman, Greening, and Smith (2003) exposed participants to a séance that included a suggestion that a table moved. Believers were more likely to recall that the table had, in fact, moved. Dagnall, Drinkwater, Denovan, and Parker (2015) found that after a video tour of a hospital that might

be haunted, believers were more likely to expect it to be haunted. This interpretation of the video could easily lead to a paranormal interpretation of ambiguous events in the actual hospital.

Laboratory demonstrations have also been shown to be interpreted based on a belief filter. Wilson and French (2008) had participants watch a psychic reading and found that believers interpreted it as genuinely psychic, even when no misinformation about the reading was presented. Wiseman and Morris (1995) presented video demonstrations of extra-sensory perception (ESP) and psychokinesis (PK), and found that believers were more likely to interpret them as genuinely paranormal.

Belief can also prevent demonstrations of non-paranormal events from affecting that belief. For example, Hergovich (2004) presented pseudo-psychic demonstrations as magic tricks, and found that believers were relatively unaffected by this information. Jones and Russell (1980) found that a demonstration of ESP did not have to "work" for high believers to accept it as successful. This failure to update belief in the face of disconfirming evidence is similar to the Bias Against Disconfirming Evidence (BADE) that is frequently found in people who experience delusions (e.g., Moritz & Woodward, 2006).

The research reported here had several goals. Primarily, how will other people's experience fit into this model? Will prior belief affect the interpretation of other people's experiences in the way that it affects personal experience? The study also allows an opportunity to evaluate the two-stage model described above. Would variables that are related to prior ghost belief also be related to the updating of belief that might happen as a result of the ghost tour?

The researchers evaluated the effect of a "ghost walk" experience. The Shadow Chasers of Middle Tennessee ghost investigation team host a *Shadow Walk* tour every October on the downtown square in Murfreesboro, Tennessee. The tour includes historical information about various locations, reports from eyewitnesses of ghost activities in those locations, and the results of the team's investigations at each location. With the cooperation of the Shadow Chasers, the researchers surveyed *Shadow Walk* patrons before and after their tour to evaluate what effect the tour might have on belief. We also included questions about past ghost experiences to evaluate tour patrons' pre-existing experience-belief relation.

This population offers a unique opportunity to evaluate the relation between experience and belief. Tour patrons voluntarily expose themselves to a ghost experience, indicating some level of interest. The tour is the type of "real world" exposure to other people's ghost experiences that permeate popular media (Sparks, Nelson, & Campbell, 1997). In addition, this tour goes beyond the standard story-telling approach to also present evidence collected by the team. Describing evidence necessarily involves discussing how evidence is collected in a ghost investigation, and might lend an aura of scientific investigation to the tour information (Brewer, 2013, discussed the role of the "trappings of science" on increasing belief).

As part of evaluating whether variables affecting belief formation are also relevant for belief updating, we included two measures of personality. Smith, Johnson, and Hathaway (2009) found that sensation seeking was associated with paranormal belief. We expected that participants higher on sensation seeking would be more likely to expose themselves to experiences that could trigger ghost belief. Therefore, this variable was expected to influence the belief formation stage of the model. Private body

consciousness (Miller, Murphy, & Buss, 1981) measures participants' awareness of their bodily states. This sensitivity to bodily states could help participants to have "ghost" experiences in the first place, affecting the belief formation stage, or this sensitivity could help participants to re-experience the evidence reported on the tour, therefore influencing the updating stage of belief maintenance. Both of these measures can be administered with only a few survey items, making them appropriate for the research setting.

One additional feature of the research (motivated primarily for pragmatic reasons) was the fact that half of the tours were led by members of the Shadow Chasers team, and half were led by researchers. Researcher participation in leading tours was a necessary precondition for access to the tour patrons. The researchers participated in ghost investigations as part of their training and became eligible for team membership before the tours started. As will be described fully below, the researchers took advantage of this situation to incorporate an additional manipulation. Tours led by the researchers made use of technology that was not used by the Shadow Chasers guides and also included information about ghost hunting research methods prior to each tour (to maximize the "trappings of science" aspect discussed by Brewer, 2013).

Method

Participants

Five hundred and ninety-one people attended *Shadow Walk* tours over three weekends during October 2012. Patrons who arrived more than five minutes before a tour was scheduled to start were asked to participate in the research. Two hundred and four people completed pre-test surveys, 102 went on tours led by the two researchers and 102 went on tours led by Shadow Chasers team members. Most people came to the tour with someone; the number in their party ranged from 1-12, the mode was 2 ($N_{reporting}$ = 189). For the pre-test, there were 133 female and 69 male participants (two did not report gender). Of the 151 pre-test participants reporting age, the average was 36.4 (*SD* = 12.78, range18-77).

Twenty-one participants had been on the *Shadow Walk* tour before (M_{tours} = 1.8, $N_{reporting}$ = 11, scores ranged from 1-5, *SD* = 1.33). Seventy participants had been on another ghost tour (M_{tours} = 2.4, $N_{reporting}$ = 48, scores ranged from 1-12, *SD* = 2.32). Sixteen participants had been on a ghost investigation (*M* = 2.6, $N_{reporting}$ = 9, scores ranged from 1-5, *SD* = 1.33; three investigators with more than 20 investigations each were not included in these statistics).

One hundred and twenty-seven of the pre-test participants also completed a post-test at the end of the tour. Of these, 69 were on tours led by researchers and 58 were led by Shadow Chasers. Seventy-five women and 50 men completed post-tests (two did not report). Of the 93 post-test participants who reported their age, the average was 35.6 (*SD* = 13.05, ages ranged from 18-70).

Researchers

The researchers were both male. One was a professor of experimental psychology and one was an experimental psychology graduate student in his late 20s working in the same research lab. Neither of them believes in ghosts, a fact that was known to the Shadow Chasers team. Leading the tour did not require revealing personal beliefs about ghosts, and the researchers received training and practiced the tour with the entire team to ensure that the evidence was presented in a consistent manner.

Materials

The tour had 16 stops. Each stop had a brief history section (including a description of any notable deaths that might relate to ghosts). Eyewitness reports of unusual activity were also described at each stop. Twelve stops had been investigated by the Shadow Chasers team. The evidence from those stops was described.

There were eight tour guides, six Shadow Chasers team members and two researchers. Each guide was provided with a binder containing all of the information to be shared on the tour. To train the guides, the Shadow Chasers team (including the researchers) took the tour with an experienced guide and thoroughly discussed each stop. Each guide was then encouraged to study the binder and choose the content that they found to be the most compelling. Guides were allowed to customize the tour (e.g., focus more on investigations in which they participated). At a subsequent team meeting the guides went on the tour again, taking turns leading at each stop.

Shadow Chasers guides used the binder to present the tour. Their tour was primarily story-based; any pictures they chose to show were black and white photocopies in the binder. The researchers presented the tour in a *Keynote* slide show on iPads. The researchers' show began by presenting tools of the trade, a discussion of evidence and how to interpret it, examples of electronic voice phenomena (EVPs), and sample pictures. The researchers' show was more focused on pictures (original photographs of evidence, interior shots of the locations, and photos provided by tour participants were included). The researchers also played EVPs at one stop (including a voice saying "get out now"). The content of the researchers' tour was also drawn from the binder; some omissions were made to incorporate the additional visual evidence.

The pre-test consisted of personality measures, a belief scale, a ghost experiences measure, and demographic information. There were three "chunks" to the pre-test. The first chunk presented the two personality scales. The first of these was the 4-item *Brief Sensation Seeking Scale* (BSSS; Stephenson, Hoyle, Palmgreen, & Slater, 2003). The BSSS showed internal consistency, convergent validity with established measures of sensation seeking, and predictive validity (Stephenson et al., 2003). It was designed for use in large-scale survey projects such as the one presented here.

The second personality measure was the *Private Body Consciousness* scale (PBC; Miller et al., 1981). This measure presented five items assessing participants' awareness of their internal states (e.g., *I am sensitive to internal bodily tensions*). The scale has good reliability and validity (Miller et al., 1981). To simplify the task for participants, they responded to both measures with a five-point scale ranging from

strongly disagree (1) to *strongly agree* (5). These were the anchors used to validate the BSSS. The original PBC scale used the anchors *extremely uncharacteristic* and *extremely characteristic*.

The second chunk of the pre-test measured belief. There were two parts to the belief measure. The first part measured belief in ghosts, extraordinary life forms, and precognition. The restricted subset of belief items was driven by the need to keep the overall survey short enough to be completed at the tour. Houran, Wiseman, and Thalbourne (2002) had participants complete some measures after their tour, but this was not practicable here. Ghost belief was assessed with the question "*I believe in the existence of ghosts*" (Wiseman, Watt, Greening, Stevens, & O'Keeffe, 2002), and two items from different subscales of the *Paranormal Belief Scale* (PBS; Tobacyk & Milford, 1983): "*The soul continues to exist though the body may die,*" (Traditional Religious Belief subscale) and "*It is possible to communicate with the dead*" (Spiritualism subscale). The ghost belief measure also included a question added by the researchers "*It is possible for places to be haunted.*" Laythe and Owen, 2012, noted that haunt experiences are frequently omitted from paranormal belief measures.

For the 4-item ghost belief scale, Cronbach's alpha was .83. The items from the Extraordinary Life Forms and Precognition subscales were presented as in the original PBS (Cronbach's alphas were .88 and .72 respectively). All items were anchored with *strongly disagree* (1) and *strongly agree* (5). The final score for each scale was the participants' average response to items on that scale, resulting in a possible range for each scale of 1 – 5. The 10 belief questions were randomized into two different orders to allow counterbalancing of the scales between the pre- and post-tests.

The difficulty in interpreting specific subscales of the paranormal belief scale has been noted repeatedly. For instance, Lange, Irwin, and Houran (2000) pointed out that the *Revised Paranormal Belief Scale* has many scaling issues and, ultimately, only two factors. Our use of the precognition and extraordinary life form questions included items that evaluated beliefs that should not change as a result of a ghost tour, even if they are not entirely unique belief factors.

The second part of the belief measure asked participants if they had experienced a ghost encounter and, if they had, to report how many encounters they had experienced. Participants who had experienced a ghost encounter were also asked to report (thinking of all of their encounters combined) which aspects of a ghost encounter they had experienced: "*unusual emotional feeling*," "*sense of presence*," "*unusual sound*," "*unusual temperature (e.g., cold)*," "*unusual dizzy feeling*," "*unusual smell*," "*unusual sight*," "*unusual taste*," and "*sense of being touched*." The first eight were taken from Wiseman et al. (2002) and the last item was added by the researchers after consultation with the Shadow Chasers team (Haraldsson, 2009, also found that being touched was a commonly reported aspect of a ghost encounter). The response format was different from Wiseman et al. (2002) and used fewer items than Houran (2002) in an effort to facilitate participant responding.

The third chunk of the pre-test contained demographic items. Participants were asked why they came on the tour, their gender, age, how many people were in their party on the tour, whether they had been on this tour before, whether they had been on another tour before, and whether they had been on a ghost investigation. For the final three items, participants were asked to report how many of each if they answered "yes" to an item. The original plan was to collect post-test measures from participants

after a three-month delay, so participants were also asked to provide an email address if they were willing to be contacted for this later survey. Due to an abysmally low response rate, n = 3, we were unable to collect sufficient data to complete this part of the project.

The chunks were counterbalanced across different versions of the survey form. Two versions of the personality measures chunk presented either the SSS or PBC first. These were paired with either the first or second randomization of the 10 belief items so that we could also counterbalance belief item sets between the pre- and post-tests. Then, the belief chunk could appear either before or after the personality chunk. Demographic items always appeared last. This produced eight versions of the survey that were randomly assigned to participants. An additional "large print" version of the first counterbalance was made for participants who requested it.

The post-test form presented the belief questions again, counterbalanced so they were in a different random order from the pre-test form. Participants were also asked if anything unusual happened on the tour and, if so, to list any of the aspects of a ghost encounter they experienced, to describe the experience, and to rate whether they thought it was a ghost with the anchors *definitely yes* and *definitely no*. Participants were also given a second chance to provide contact information for the three-month follow-up survey.

Procedure

All procedures were reviewed and approved by the Middle Tennessee State University Institutional Review Board (IRB) and all researchers and assistants received IRB training prior to their participation in the data collection. Over six nights there were 39 tours (20 were led by members of the Shadow Chasers team, 19 by researchers). The mean number of people on each tour was 18.3 (N_{tours} = 35, 4 - 30, SD = 6.7). The average temperature was 14.4°C (7.2 – 24.4°C).

The researchers approached tour-goers as they waited for their tour to start and asked them to complete a survey. Everyone approached was offered the opportunity to submit a ticket to enter a draw for a gift card at the end of the tour. For people completing the survey, their participant number and counterbalance were on the ticket so their data could be matched with a post-test. Tour-goers did not have to complete either survey to participate in the draw. Participants completed their surveys individually in the tour waiting area. For post-tests, a table was set up at the last tour stop for tour-goers to turn in their tickets. Tour-goers were also asked to complete a post-test form.

Results

Pre-Test Results

Descriptive statistics are presented in Table 1. Eighty-seven (43%) of the participants reported a prior ghost encounter. Descriptive statistics for the number of ghosts encountered and the number of properties of a ghost encounter are also reported in Table 1. The frequencies for each property of a ghost encounter are reported in Table 2.

Table 1
Descriptive Statistics for the Dependent Variables

	Pre-Test				Post-Test			
Variable	Mean	*SD*	Range	*N*	Mean	*SD*	Range	*N*
Ghost belief	3.81	0.92	1-5	195	3.92	0.87	1-5	122
Extraordinary life forms	2.80	1.03	1-5	193	2.87	1.00	1-5	122
Precognition	3.53	0.94	1-5	195	3.46	1.00	1-5	118
Sensation seeking	14.70	3.60	4-20	196				
Private body consciousness	18.91	3.27	7-25	188				
Number of ghosts[a]	4.04	5.52	1-30	56				
Number of properties[b]	4.01	2.34	1-9	87				

Note. Ghost belief, extraordinary life forms, precognition, sensation seeking, and private body consciousness were measured with a scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (5); only participants completing all items on a measure are included.
[a]The number of ghosts reported by the group of people who reported they had encountered a ghost (one participant with over 100 ghost encounters was removed).[b]The number of properties of a ghost experience (ranging from 0 to 9) endorsed by the participants who reported seeing a ghost.

Participants' demographic variables (age, gender, and prior ghost tour experience) were not related to any of the belief measures, sensation seeking, private body consciousness, likelihood of a ghost encounter, number of ghosts seen, or number of properties of a ghost experience. The demographic items were also not related to one another. Therefore, they will be excluded from all subsequent pre-test analyses.

Encountering a ghost was related to belief. For participants who had encountered a ghost, mean belief was 4.38 (*SD* = 0.64), whereas for participants who had not encountered a ghost, mean belief was 3.41 (*SD* = 0.87). This difference was significant, $t(193) = -8.49$, $p < .001$, $d = 1.26$.

Correlations between the pre-test measures are presented in Table 3. All three belief scales were significantly correlated with one another, replicating the relation between the extraordinary life forms and precognition scales in the original Tobacyk and Milford (1983) study. Sensation seeking and private body consciousness were both related to ghost belief. Private body consciousness was also related to precognition belief.

Table 2
Properties of a Ghost Encounter with Rasch Scaling Data (N = 87)

Property	Frequency	Difficulty	(SE)
Sense of presence	72	-2.68	(0.31)
Unusual sight	50	-1.05	0.26
Unusual emotional feeling	47	-0.85	0.26
Unusual sound	44	-0.65	0.26
Sense of being touched	40	-0.37	0.27
Unusual temperature (e.g., cold)	38	-0.23	0.27
Unusual smell	28	0.58	0.31
Unusual dizzy feeling	20	1.49	0.37
Unusual taste	10	3.77	0.66

Note. Property refers to the components of a ghost experience that participants could check; Frequency is the number of times a property was checked; "Difficulty" is the item's score from the Rasch scaling procedure; SE is the standard error of the difficulty measure; Infit and Outfit are statistics to evaluate the model; they should be between 0.5 and 1.5 (Meyer, 2014).

To assess the relation between the intensity of an experience and belief, we originally followed Laythe and Owen (2012) and divided the haunt experience into lesser and greater properties. This analysis uncovered some interesting potential effects of intensity and belief. Because this analysis was post-hoc and somewhat arbitrary, and at the suggestion of the reviewers, we undertook a Rasch scaling of the haunt experience properties (see Houran et al., 2002, for a description of this procedure applied to the items from Wiseman et al., 2002). This scale provides a linear ordering of the properties and an overall score that indicates each participants' place in the ordering (higher scores are associated with higher intensity; Meyer, 2014). Scaling was conducted using the jMetrick Rasch models module with the default parameter settings (https://itemanalysis.com/). The Rasch scaling data are included in Table 2. The nine properties were broken into lower, moderate, and higher intensity subsets of three items each based on their position in the Rasch scale. Scores for each subset of items were computed for each participant and used for the mild, moderate, and strong intensity measures.

Table 3
Correlations between Measures on the Pre-Test

Variable	1	2	3	4	5
1. Ghost belief					
2. Extraordinary life forms	.35**				
3. Precognition	.63**	.32**			
4. Sensation seeking	.25**	.11	.15		
5. Private body consciousness	.31**	.11	.33**	.25**	

N = 163, **$p < .01$

The cross tabulation between belief and experience is presented in Table 4. For this analysis, we used a median split to create lower belief (average belief less than 4) and higher belief groups (average belief greater than or equal to 4). Experience was coded as "yes" or "no" based on the ghost encounter question. Two cells of the table are relatively easy to explain. Participants lower on belief without an experience and participants higher on belief with an experience can be seen as making a rational decision about belief based on evidence (or the lack thereof). A number of researchers have found that some people who have an experience are still lower believers, and a number of higher believers have never had an experience (e.g., Lawrence & Peters, 2004). In this study, 15 participants reporting lower belief (15% of the lower believers) reported having a ghost encounter, and 32 participants reporting higher belief (33% of higher believers) did not report a ghost encounter. We will address these "off-diagonal" groups more thoroughly in the discussion.

The correlations in Table 5 show some evidence of a belief-experience intensity relation. There was no overall correlation between belief and number of ghosts, but there was a relation between the number of properties of an experience and belief. Within the intensity measures, belief was not related to encounters of mild intensity, but it was to moderate and strong encounters. Belief was also related to the overall intensity measure.

Table 4
Ghost Belief as a Function of Ghost Experience

	No ghost encounter	Ghost encounter
Lower belief	82	15
Higher belief	32	66

Note. $X^2(1, N = 195) = 54.04$, $p < .01$. Participants who failed to complete all ghost belief items were excluded from the analysis.

One possible reason for a low correlation between belief and the number of ghost encounters is that belief could be a step-function. People who have not encountered a ghost would be expected to have lower ghost belief. People who have encountered a ghost would be expected to have higher ghost belief. If this is true, then within the group of people reporting a ghost encounter, the correlation between the number of ghosts and belief will necessarily be low. The data in Figure 1 support this interpretation. People who reported that they had not seen a ghost were more likely to report lower belief. Once people reported that they had seen a ghost, the percentage who were higher believers increased dramatically and was relatively unaffected by the number of ghosts.

Table 5
Correlations between Ghost Belief, Number of Ghosts, Properties of the Ghost Encounter, and Encounter Intensity

Variable	1	2	3	4	5	6	7
1. Ghost belief							
2. Number of ghost encounters	.25						
3. Number of properties	.33*	.45**					
4. Mild intensity	.13	.31*	.65**				
5. Moderate intensity	.29*	.42**	.78**	.15			
6. Strong intensity	.33*	.31*	.88**	.42**	.60**		
7. Overall intensity	.35*	.44**	.99**	.63**	.76**	.89**	

$N = 52$, $^{*}p < .05$, $^{**}p < .01$

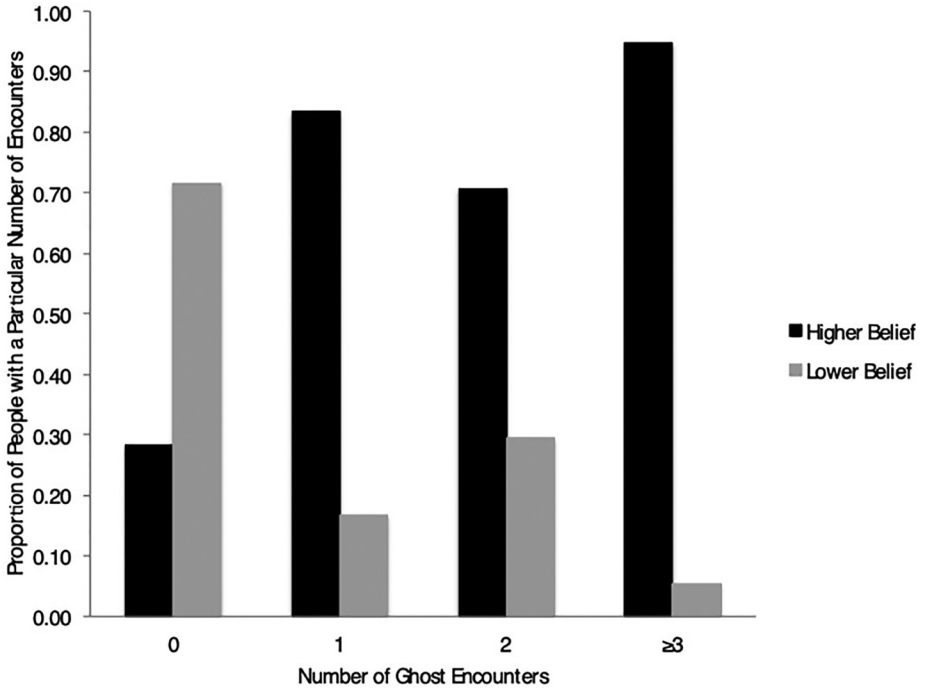

Figure 1. Proportion of ghost believers in each group who are higher or lower on belief

Effect of the Tour

For all of the data presented below, there was no effect of guide type (shadow chaser vs. researcher). This will be evaluated more fully in the next section. For all analyses, participants were split into higher and lower believers (prior ghost belief) based on a median split of the average of the ghost belief items on the pre-test. The data were analyzed with two-way, mixed ANOVAs with prior ghost belief as the between participants factor and time (pre- or post-test) as the within participants factor. The dependent variable was either ghost belief, extraordinary life form belief, or precognition belief. For all analyses, alpha was set at .05.

For ghost belief, there was a significant main effect for prior ghost belief, $F(1, 117) = 163.08$, $MSE = 0.65$, $p < .001$, $\eta^2_p = .58$. The mean for higher believers was 4.48 ($SD = 0.57$), and the mean for lower believers was 3.14 ($SD = 0.57$). This difference supports the effectiveness of the median split based on belief. The main effect of time was not significant, $F(1, 117) = 3.00$, $MSE = 0.08$, $p = .09$, $\eta^2_p = .02$. The mean for the pre-test was 3.78 ($SD = 0.58$) and the mean for the post-test was 3.84 ($SD = 0.63$).

For the ghost belief analysis, the effect of interest was the interaction, and it was significant, $F(1, 117) = 12.60$, $MSE = 0.08$, $p = .001$, $\eta^2_p = .10$. The means are illustrated in Figure 2a. For higher believers, the tour had no effect, $t(65) = 1.56$, $p = .12$, $d = 0.15$. For lower believers, the tour increased belief, $t(52) = -3.11$, $p = .003$, $d = 0.26$. To sum up, learning about other people's experiences did influence lower believers to increase their belief. The higher believers did not change (this is possibly due to a ceiling effect in their belief).

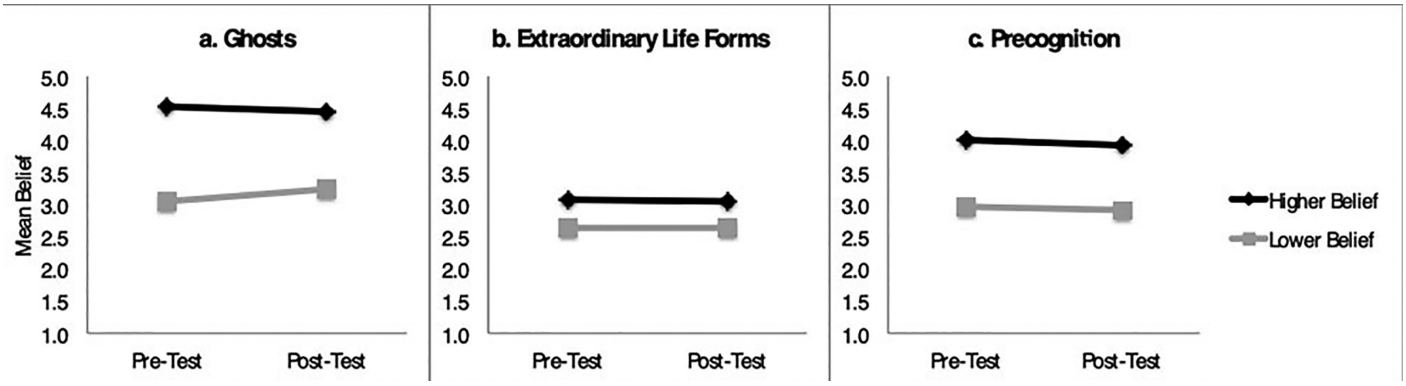

Figure 2. Change in belief as a function of prior belief in ghosts. Higher and Lower believers were determined by a median split on the average for the ghost belief items (< 4.0 = lower, *N* = 97; ≥ 4.0 = higher, *N* = 98). Change in belief is presented for ghost belief (a), extraordinary life form belief (b), and precognition belief (c).

Note that the participants with lower belief were still relatively high on belief, around 3 on a 5-point scale. This may reflect the fact that tour goers were, on average, higher on ghost belief than the general population. A full evaluation of this possibility is beyond the scope of this report. However, in the fall 2012 semester, after the tours concluded, we did collect the same survey data from 117 students from the Middle Tennessee State University psychology department research pool as a control sample (average age = 19.25, 18-33; 81 female, 36 male). We selected all participants from the tour who completed a pre-test (*N* = 195) and compared them to the control sample using a factorial ANOVA with sample (tour or control) and belief magnitude (median split higher or lower) as the independent variables and ghost belief as the dependent variable. In this analysis, there was no main effect of sample on belief, $F(1, 308) = 2.91$, $MSE = 0.34$, $p = .09$, $\eta^2_p = .01$.The mean for the tour sample was 3.81 (*SD* = 0.92) and the mean for the control sample was 3.63 (*SD* = 0.91). The interaction between sample and belief magnitude was also not significant, $F(1, 308) = 0.001$, $MSE = 0.34$, $p = .98$. A *t* test comparing the mean belief for lower believers from the tour sample (3.10, *SD* = 0.73) to lower believers from the control sample (2.99, *SD* = 0.72) was not significant, $t(159) = 0.98$, $p = .33$, $d = .15$. In other words, to the extent that the data allow a comparison, the lower-belief tour goers did not differ from lower-belief control participants from the same time period.

For extraordinary life form belief, there was also a main effect of prior ghost belief, $F(1, 110) = 5.29$, $MSE = 1.94$, $p = .02$, $\eta^2_p = .05$. The mean for higher ghost believers was 3.07 (*SD* = 0.98) and the mean for lower believers was 2.64 (*SD* = 0.98). This shows again that the three beliefs measured here were related. Higher believers on one subscale were also higher believers on the others. There was no main effect of time and no interaction, *F*s < 1.0. In other words, the tour had no effect on belief in extraordinary life forms. The means are illustrated in Figure 2b.

Finally, for precognition belief, the main effect for prior ghost belief was significant, $F(1, 105) = 43.98$, $MSE = 1.27$, $p < .001$, $\eta^2_p = .30$. The mean for higher ghost believers was 3.96 (*SD* = 0.80) and the mean for lower ghost believers was 2.94 (*SD* = 0.80). Again, belief on one paranormal belief subscale is

related to belief on others. The main effect for time was not significant, $F(1, 105) = 1.57$, $MSE = 0.13$, $p = .21$, $\eta^2_p = .02$. The interaction between prior ghost belief and time was not significant, $F < 1.0$. Again, the tour had no effect on a belief that was not targeted by the information shared on the tour. These means are illustrated in Figure 2c.

Evaluation of the Model

The study was not originally intended to evaluate a model similar to the one proposed by Garety et al. (2001). However, the data lend themselves to this analysis, and this evaluation might be instructive for the development of future research. In short, the model proposes that one set of variables will be related to the formation of belief (indexed here by prior belief), and a different set of variables will be related to the updating of that belief. For purposes of evaluating the model, we had 10 variables available: Demographic items (gender, age, and prior tour experience), personality (sensation seeking and private body consciousness), experience (whether or not participants had encountered a ghost), prior ghost belief (obviously not a variable used to predict prior belief), and properties of the tour (guide type—researcher vs. shadow chaser, temperature, and number of people on the tour). These variables were entered into two stepwise regressions, the first using prior ghost belief as the dependent variable, and the second using change in ghost belief as the dependent variable. The results are presented in Table 6.

Inspection of Table 6 reveals that prior ghost belief was influenced by whether or not participants had encountered a ghost (again suggesting an important role for experience in belief). Prior belief was also influenced by a personality measure (private body consciousness) and a demographic variable (age). Change in belief was not affected by personality or demographic variables. Instead, only prior ghost belief affected belief change.

It is important to note that none of the tour variables affected change in belief. On the one hand, this is not surprising. The tour was relatively constrained by the Shadow Chasers team to provide a somewhat consistent experience for tour patrons. However, given the role of social support in belief (e.g., Auton et al., 2003), it seems like the number of people on a tour should have had some effect. Similarly, it seems that guide type should have mattered given that researchers were using iPads to present a summary of tools of the trade and also included more evidence (Brewer, 2013). This point will be addressed more fully in the discussion.

Discussion

The main research question was whether learning about other people's experiences on a ghost tour could change belief in ghosts. The answer was that it can. Lower believers significantly increased their belief in ghosts after the tour. The effect of the tour was specific to ghost belief; belief in extraordinary life forms and precognition did not change.

Table 6
Stepwise Regression Analyses Evaluating the Contribution of the Independent Variables to Prior Ghost Belief and Change in Ghost Belief

	Model 1	Model 2	Model 3	
Variable	*B*	*B*	*B*	95% CI
Prior ghost belief (*N* = 127)				
Constant	3.37**	1.62**	1.11*	[0.15, 2.07]
Ghost encounter	1.01**	0.94**	0.91**	[0.62, 1.20]
PBC		0.10**	0.10**	[0.06, 0.15]
Age			0.01*	[0.00, 0.02]
R^2	.25	.35	.37	
F	42.36**	33.10**	23.97**	
ΔR^2		.09	.02	
ΔF		18.09**	4.09*	

	Model 1	
Variable	B	95% CI
Ghost Belief Change (*N* = 75)		
Constant	0.54**	[0.19, 0.89]
Prior ghost belief	-0.12**	[-0.21, -0.04]
R^2	.10	
F	7.87**	

Note. Ghost encounter was coded no-ghost-encounter = 0, ghost-encounter = 1. These analyses exclude participants who did not complete all items on the measures.
*$p < .05$, **$p < .01$

A couple of aspects of this result merit further consideration. First, the higher believers were at ceiling on the measure used, so there is no way to determine if a more sensitive measure might have shown an increase in this group. If experience and belief form a feedback loop as suggested in the model (e.g., Garety et al., 2001; see also Lange & Houran, 1998), then even higher believers might still be able to increase their belief with additional experience. Second, our lower believers might represent a special subgroup of people lower on belief: those open to evidence that can change their belief. Their choice to come on a ghost walk tour would support this idea that they are more open to updating belief. More skeptical non-believers might not be swayed by the types of evidence presented on the tour. This also raises the possibility that participant expectations might play a role. In this case, it is likely that all participants expected to at least hear compelling ghost evidence because of the way the tour was promoted. These expectations may have played a role in influencing belief, but the design of the study does not allow us to evaluate the role of expectations on belief change.

A unique feature of this study was its relatively high external validity. Many studies have investigated haunt experiences in natural environments (Houran, 2002; Houran et al., 2002; Terhune, Ventola, & Houran, 2007; Wiseman et al., 2002; Wiseman et al., 2003). However, research investigating belief change is less likely to have been conducted in a natural environment (e.g., Wiseman & Morris, 1995). Whereas we did attempt a manipulation of the type of information contained in the tour, half of the participants received the "standard" tour that was unaffected by the researchers' presence.

We did replicate a number of prior findings. There was a strong relation between experience and prior belief, as is common in this type of research (e.g., Pechey & Halligan, 2012). We also replicated the common finding that some participants are higher believers without a personal ghost experience, and some with an experience remain lower on belief (e.g., Clarke, 1995; Lawrence & Peters, 2004; Pechey & Halligan, 2012). These two groups appear to contradict the notion that beliefs are a response to an experience, and thus require additional consideration.

Participants lower on belief who reported a ghost encounter might provide support for Lange and Houran's (2001) cusp model that predicts a possible "lag" in the formation of belief after experience. It is also possible that these participants are reporting a "local" experience that would normally be taken as evidence for an encounter, but some additional beliefs override the event's ability to affect ghost belief (e.g., believing that ghosts are not physically possible, so the unexplained experience may be explainable even if they do not know what the actual physical cause was). Existing models focus more on how paranormal beliefs form (e.g., Garety et al., 2001), but this group of participants might allow a more careful evaluation of how beliefs *do not* form. For example, in Lange and Houran's (1998) model perhaps these participants are higher on tolerance for ambiguity, younger, and male, reducing their fear response to ambiguous stimuli and therefore reducing the likelihood of an experience creating belief. Alternatively, a belief that ghosts are not real could operate as the "filter" in the maintenance and updating stage (Garety et al., 2001), leading to the interpretation of experiences as non-paranormal. Our data do not allow a full evaluation of these possibilities, but they warrant investigation in future studies.

Participants who believe without having an experience provide a conceptual challenge to our expectation (following Garety et al., 2001) that a precipitant event is necessary to initiate belief. However, we only measured one kind of experience in this study—personal experience. Irwin (1985) proposed

that an experience with one paranormal phenomenon (e.g., a psychic experience) might open the door to a general belief in the paranormal that is not tied to direct personal experience. So, our participants could have had an experience of another paranormal phenomenon, leading to ghost belief. The design of the current study does not allow us to evaluate this claim with respect to our participants' prior belief. A thorough evaluation of all types of experience within the same participants would provide evidence on this point, and we are currently collecting those data.

Within the area of the personality measures, we replicated the relation between sensation seeking and belief (Smith et al., 2009). We included private body consciousness as a measure because of its relationship to the properties of a ghost experience that are frequently reported (e.g., an unusual sensation). We expected that people more in tune with slight changes in their bodily state might be more likely to have experiences that could be interpreted as ghosts. The correlation between private body consciousness and ghost belief supports this expectation.

We also uncovered a relation between the intensity of the experience and belief within people who have had an experience, similar to Laythe and Owen (2012). It is important to note that the ordering produced by our Rasch scaling procedure was different from the ordering in Houran et al. (2002) even though both procedures were based on essentially the same items (both derived from Wiseman et al., 2002). Houran et al. (2002) suggested that contrasts in hierarchies could be diagnostic. In this case, the data might suggest that experiences reported in real time (as in Houran et al., 2002) might lead to a different hierarchy from retrospective experiences likes those reported here. Taking one property as an example, a temperature change was a more intense experience in our hierarchy, possibly because the typical haunt environment presents temperature changes (e.g., Houran, 2002), making them common, but memory for them would only be available if they were more closely connected to an encounter. Determining if different hierarchies for haunt experiences reflect perceptual or memory processes would be a topic for future research.

The data also speak to a potential model of the formation and maintenance of paranormal beliefs similar to one proposed by Garety et al. (2001). The first stage proposes that a predisposed person (e.g., Smith et al.'s, 2009, "encounter-prone personality"), in the presence of the right ambiguous experience, will become a believer in a paranormal phenomenon. A great deal of information is available that suggests what makes a person predisposed. For example, Smith et al. (2009) found support for openness to experience and sensation seeking. Our data suggest private body consciousness. Hergovich, Schott, and Arendasy (2008) suggested schizotypy. Lange and Houran (2001) present a more thorough review of internal and external contextual variables that influence the perception of a haunt experience.

This research raises questions about the type of experience that can trigger belief. Does it have to be a personal experience, or can someone else's experience also lead to belief? Are the factors that make one predisposed similar for personal experiences as opposed to other people's experiences? There is some reason to expect that the two types of experience might be affected differently given that Sharps et al. (2006) found that different variables affect what makes one predisposed for different paranormal beliefs.

According to the model, once a belief has formed, different variables are responsible for maintain-

ing and updating that belief. Sharps et al. (2010) found this for the variables in Sharps et al. (2006). In our data, private body consciousness and age were related to prior ghost belief, but were not factors in change in belief. In fact, our data were that prior ghost belief was the only factor that was related to change in belief. This is similar to Wiseman et al.'s (2003) finding that their participants high on belief had more experiences and were more likely to attribute them to ghosts. Note that the overall variance accounted for by prior belief was relatively small, suggesting an avenue for future research to identify other variables involved in the updating of paranormal beliefs.

Our results raise questions about the way in which experience is filtered through belief. It seems relatively obvious that for a personal experience that requires interpretation by the person having it, belief would be an important variable. For someone else's experience, belief might also be important, but other variables, such as the credibility of the witness, might be more important. On that note, it would seem that our guide manipulation (shadow chaser vs. researcher) might have carried more weight. A number of factors may have contributed to a smaller effect. First, the shadow chasers had more credibility as ghost investigators. One of the researchers had been on two investigations prior to leading tours, the other had only been on one. That lack of experience may have overwhelmed a difference in presentation format. Also, the fact that people had come to a ghost tour billing itself a "real investigators presenting real evidence" may have provided an overall credibility boost that overwhelmed presentation format.

Another possibility is that there is no effect of guide type or tour variables because they do not matter. Terhune et al. (2007) reported a similar methodological approach to the one proposed here. Their measurement of contextual variables associated with the formation of belief provides a more comprehensive list of contextual variables than we measured for the tours. Similar to our data, they did not find much of a role for environmental contextual variables.

There is a lot of evidence that for the maintenance and updating stage, properties of the experience are less relevant (e.g., Irwin, 1985; Wiseman et al., 2003). In our case, none of the properties of the tour mattered, consistent with this finding. Rather, cognitive styles (like BADE, Moritz & Woodward, 2006) are more important as experiences are filtered through belief. Most of this work has been with believers, and has shown that they are more likely to interpret events as paranormal. In our case, the lower believers were the ones who changed. Is it the case, as Jones and Russell (1980) proposed, that "it would be relatively easy for a skeptic to become a believer" (p. 311) because they are open to all information, whereas believers are relatively closed and can only filter events through their existing belief? Perhaps hard-core skeptics are also filtering experiences based on their schemas, and only those with a moderate level of belief are susceptible to change? Such speculations are beyond the data of the present research, but our data do suggest that other people's experiences need to be incorporated in the model, both as an experience that can trigger belief, and as a factor in the maintenance and updating of belief.

In conclusion, we found that a ghost walk tour, a relatively common, real-world method for learning about ghosts, can increase belief in ghosts in people initially lower in belief. The variables affecting the updating of belief were different from those related to prior ghost belief, supporting a possible model for the formation and updating of paranormal beliefs.

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Marche dans l'Ombre: Est-ce qu'un Circuit Touristique dans un Lieu Réputé Hanté Va Affecter la Croyance aux Fantômes ?

Résumé : Il y a une relation forte entre l'expérience personnelle et la croyance aux fantômes. La recherche relatée ici étudie si les vécus des personnes participant à un circuit touristique dans un lieu réputé hanté pouvait également influencer leur croyance. Nous avons sondé des participants avant et après un circuit hanté pour évaluer les changements de croyance résultants du circuit. Pour les participants qui débutaient avec une faible croyance aux fantômes, le circuit a augmenté leurs croyances. Le circuit n'a eu aucun effet sur les croyances paranormales non-relatives aux fantômes. Les données furent évaluées contre un modèle suggérant que les variables influençant l'actualisation des croyances étaient différentes des variables relatives à la formation de croyances. Le modèle produit une bonne adéquation avec les données et suggère des directions pour de futures recherches.

Wandern im Schatten: Wird eine Geistertour den Glauben an Geister beeinflussen?

Zusammenfassung: Persönliche Erfahrungen und der Glaube an Geister hängen eng zusammen. Die hier vorgestellte Forschung untersuchte, ob die Erfahrungen anderer Menschen, die auf einer Geistertour vermittelt wurden, diesbezügliche Überzeugungen beeinflussen können. Wir befragten die Teilnehmer vor und nach einer Geistertour, um festzustellen, ob sich deren Einstellung im Anschluss an diese verändert hat. Für Teilnehmer, deren Glaube an Geister gering war, hat die Tour ihren Glauben erhöht. Die Tour hatte keinen Einfluss auf paranormale Überzeugungen, bei denen der Geisterglaube keine Rolle spielt. Die Daten wurden im Hinblick auf ein Modell ausgewertet, das aussagt, dass sich die Variablen, die die Aktualisierung von Überzeugungen beeinflussen, von den Variablen unterscheiden, die mit der Herausbildung von Überzeugungen zusammenhängen. Mit dem Modell lassen sich die Daten gut beschreiben, und es gibt Anregungen für weitere Forschung.

Caminar en la Sombra: ¿Afecta la Creencia en Fantasmas una Visita Guiada sobre Fantasmas?

Resumen: Existe una fuerte relación entre la experiencia personal y la creencia en los fantasmas. La investigación reportada aquí investigó si las experiencias de otras personas mencionadas en una visita guiada sobre fantasmas también podrían influir las creencias. Encuestamos a los participantes antes y después de una visita guiada sobre fantasmas para evaluar los cambios en las creencias como resultado

de la visita. Para los participantes que comenzaron con una creencia más baja en fantasmas, el recorrido aumentó su creencia. La visita no tuvo efecto en las creencias paranormales no relacionadas con fantasmas. Los datos se evaluaron según un modelo que sugiere que las variables que influyen en la actualización de las creencias son diferentes de las variables relacionadas con la formación de la creencia. El modelo proporciona una buena solución de los datos y sugiere direcciones para futuras investigaciones.

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Julian Ochorowicz and His Contribution to Psychical Research[8]

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Abstract: The purpose of this paper is to present the contribution of Julian Ochorowicz to the field of psychical research. From early youth Ochorowicz was interested in psychology, particularly in magnetism, hypnotism and mental suggestion, and his experience in these areas influenced his theoretical approach to the subject. His passionate belief that the essence of true science had to be to establish facts before forming conclusions led him to investigate a number of mediums, including Eusapia Palladino and Stanisława Tomczyk.
Keywords: hypnotism, hypnosis, animal magnetism, mediumship, suggestion

The Man and his Times

Julian Leopold Ochorowicz (1850-1917) was a passionate enthusiast of science, inventor, researcher, therapist, philosopher, and writer. He made important contributions in all of these areas, but the very breadth of his interests was perhaps a limitation on what he achieved in each of them. Although known in the West mainly for his publications in French, much if not most of his multifaceted work was carried out in Poland (or, rather, the part of Poland which had been annexed by Russia), where he was born and where he grew up. Having started out by studying the humanities, he graduated in natural sciences from Warsaw University (1872), obtained his doctorate at the University of Leipzig (1874), and his next degree, that of *privat dozent* in the areas of psychology and philosophy of nature, at Lviv (1875). His early works included a dissertation on positivist philosophy, and he became well known as one of the leaders of the positivist movement in Poland, his writings resonating greatly with the younger generation (Bobrowska-Nowak, 1971; Krajewski, 1978; Stachowski, in Ochorowicz, 1996).

Much of the discussion of positivist philosophy in Poland of that time concentrated on its social aspect, and Ochorowicz was very much a social reformer and public activist throughout his life. However, it was the positivist stance on science and empiricism that had the greatest influence on him, becoming the guiding principle in all his research. He regarded science as having no limits and as being the highest value in itself; empiricism, establishing the facts and laws of nature, was the only way forward, without mysticism or idealism of any kind. One of the first popularizers of Darwin's theory, he was always de-

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termined to go wherever the facts as he saw them might lead. It was this that led him to champion the cause of psychical research, regardless of the cost to his chances of an academic career. He was also an enthusiastic experimenter in new technologies, and access to the physics laboratory when lecturing at Lviv enabled him to test for himself such claims as the possibility of sending speech over a distance. His lively interest in scientific developments generally, and examining ideas that he had originally judged impossible, led him to the conclusion that "Impossible is only 2 x 2 = 5," while the "laws of nature" had to be constantly re-examined in light of new facts (Ochorowicz 1913/2018a, pp. 107-109)

Psychology and Other Interests

His main interest, and main object of study, was psychology as an empirical science, with particular emphasis on what is now described as altered states of consciousness and how they could be induced. The prospects for pursuing such interests in Poland were limited, but France offered a much more welcoming environment.

It is easy to forget that during the 1870s and 1880s, when Ochorowicz was starting out, even in France the subject of psychology was little known, often regarded as a hobby for philosophers and doctors (Ochorowicz, 1916, p. 4), met with hostility in serious scientific circles, and the exploration of human psyche was in its early stages. Psychology was taught as an aspect of philosophy, dealing with concepts and general views. While still a student in Warsaw, Ochorowicz challenged that approach in a prize-winning essay *Jak należy badać duszę? Czyli o metodzie badań psychologicznych* [How to investigate the soul? On the method of psychological research], self-published in 1869 (Ochorowicz, 1869). In it, he reviewed the existing methods in psychology and their value to science, proposed a classification of methodology appropriate to the subject, and provided a detailed analysis of possible empirical approaches to external and internal observation, as well as the social aspect of human behavior.

He might have won the first prize, but was only given a silver medal, having upset some of the judges with his criticisms, and this failure to benefit from his achievements dogged him throughout his career in Poland. He attracted controversy, not only because of his uncompromising confidence in his judgment but above all because of his passionate interest in hypnotism and magnetism. He began exploring these subjects while still at school, sometimes by experimenting with hypnosis on other schoolboys (Ochorowicz, 1876), and wrote papers about them (Ochorowicz, 1890); however, the general opinion in Poland tended to regard hypnotic experiments as charlatanry. This affected his chances of establishing an academic career, to the point that even the grant he was entitled to when he went to Paris to study was unexpectedly withdrawn. Because of this Ochorowicz turned to his earlier experiments and, working with a friend from his student days, produced, among other things, commercially successful improved versions of telephone and microphone.

In Paris he was among people with similar interests and was befriended by, among others, Théodule Ribot, Charles Richet, and Jean-Martin Charcot. Having worked with Charcot and August and Jules Voisin during 1880-882, experimenting with hypnosis on "hysterical" patients at the Salpêtrière Hospital, Ochorowicz came to the conclusion that the hypnotic state was neither pathological (the view of the Salpêtrière school), nor just due to suggestion (the view of the Nancy school of Auguste Liébeault

and Hypolyte Bernheim), but represented an anomalous state of consciousness. His interpretation of it was that people sensitive to hypnosis had a tendency to monoideism – a narrowing of the field of awareness.

This period of experimentation was followed by the publication of one of his most important works, *De la Suggestion Mentale,* with an introduction by Charles Richet, in 1887. It provided extensive coverage of experiments with somnambulistic subjects by Ochorowicz, Pierre Janet, and others, as well as the main ideas and theories relating to hypnotism, mental suggestion and magnetism, extending to thought-transference, clairvoyance, and table-turning. In the preface to the book, Richet praised it for "the resolute, unflagging determination to weigh all objections, to put away all causes of bad faith, whether conscious or unconscious, to take note of the difficulties of the problem, sometimes magnifying them, and not to be content until every possible cause of illusion has been removed" (Richet, 1887/1891, p.5) While not absolute evidential, Richet regarded the experimental evidence presented by Ochorowicz as clearly demonstrating correlations between the thoughts of individuals that could not be regarded as due to chance. He was less impressed by the theories, which he did not regard as of great importance. And he went on to say, "And yet I do not think that this book, strong as it is in proofs, will convince all, or even many persons. I know too well ... how difficult it is *to believe what we have seen* when it does not accord with the general tenor of our thoughts, with the commonplaces that underlie all our knowledge" (Richet, 1887/1891, p. 6)

Much of Ochorowicz's work that followed bears out Richet's prediction as to the inability to convince many of the truth of his findings. His efforts to make psychology a proper science bore fruit, both in the increasing number of platforms for sharing ideas both in France and Poland, and in the recognition of psychology in Poland as an essential part of medical studies (Bobrowska-Nowak, 1971; Ochorowicz, 1996). However, the particular aspects of psychology that were his main interests throughout his life, and the theories to which they led, did not resonate with the academic milieu. He qualified in medicine and established a successful practice as a therapist first in Paris and then in Warsaw, but his ideas on hypnotism, the subconscious, and later on mediumship, which he presented in various papers, were largely ignored.

Ochorowicz's ideas on psychology, mediumship, and psychical research, are inextricably bound with his research into hypnotism and mesmerism/magnetism (Zielinski, 1968). In its early stages, hypnotism involved varying usage of terms denoting the magnetic state and the state of hypnosis (such as "magnetic sleep," "somnambulism," "hypnotic sleep"), as well as overlapping techniques of inducing an altered state by monotonous sensory stimulation, verbal suggestion, and mesmeric passes (Gauld, 1995 pp. xvi, 430). Both in his earlier and later writings, Ochorowicz insisted that there was a clear difference between hypnotism and mesmerism/magnetism: hypnotism was a state in which sensitive subjects were open to suggestion regardless of the person making it, while magnetism involved the influence of one organism on another, the individuality of the magnetist being of prime importance (Ochorowicz, 1917, pp. 209-210). It was also vital that a "rapport" should exist between the magnetist and the subject, established over a period of sessions and requiring "sustained concentration of thought" on the part of the magnetist (Ochorowicz, 1891, p. 285).

Ochorowicz's quite dogmatic claims illustrate the problem affecting much of the research of that time. To quote Gauld again: "The mesmerists are not quite so easily dismissed or assimilated to certain stereotypes as has commonly been supposed. Their most conspicuous failing was one that they shared with a very large proportion of the hypnotists who followed in their foootsteps in the second half of the nineteenth century – an almost complete failure to appreciate the powerful workings of "experimenter effect" and "doctrinal compliance" upon mesmerized or hypnotized subjects, and to grasp the methods of controlled experimentation which are necessary to offset these dangers" (Gauld, 1995, pp. 266-7). These failings are clearly apparent in the evidence that Ochorowicz provides of the kinds, degrees and proofs of influence on hypnotized/ mesmerized patients in his *Mental Suggestion*, often involving clairvoyance and what was then described as thought transference.

Yet , while assured of the veracity of his experimental results, Ochorowicz was not unaware of the problem: "We believe ourselves to be candid observers, while we are unconsciously suggesting the phenomenon that is to be verified. Thus it is that the somnambulic subjects of the 'fluidist' magnetizer see the fluid emanating from his finger-tips, while the somnambules of the hypnotizer see nothing, and those of the spiritist discover spirits everywhere, the same being invisible for the somnambules of the materialist." In this way the unconscious played tricks on both the subject and the experimenter (Ochorowicz 1891, pp.36, 39).

Theoretical Contributions to Psychical Research

Even in his earliest writings, Ochorowicz hypothesized that the subconscious was greater than the conscious (Ochorowicz, 1876). Gradually he came to the conclusion that the subconscious played a crucial role in creating and maintaining one's sense of identity, and his studies of the development of "multiple personalities" led him to see this aspect of the subconscious as closely involved in mediumistic phenomena. His work with mediums played a large part in forming his views. In his later publications he proposed that awareness was a stream of impressions, while the subconscious had a constant, immutable element in the features of a person's character, will and strivings; a wider, more knowledgeable psyche, not accessible normally but manifesting in dreams and in somnambulism (Ochorowicz, 1916, pp. 328-336).

Ochorowicz became interested in mediumship after reading Allan Kardec's *Le Livre des Esprits* and *Le Livre des Mediums* while on holiday in the summer of 1869 (Ochorowicz, 1876, pp.51-52). In the 1850s the table-tipping craze also spread to Poland and Ochorowicz arranged a table-tipping session. He was amazed to find that it worked, often because of unconscious muscle movements, and was driven to explore further. From the beginning, he included mediumistic phenomena in his research program, rejecting spiritualism but interpreting them as a momentary transfer of nervous-muscular energy beyond the organism and into the environment under the influence of the imagination when the medium was in a monoideistic state. To describe this phenomenon he used the term "ideoplasty", and first presented it to the Biological Society in Paris in 1884 (Ochorowicz, 1916, pp. 195-205). The term had been used by Durand de Gros, a French physiologist researching the influence of thought on human organism,

in the sense of the "art of suggesting" (Ochorowicz, 1916, p. 274), but Ochorowicz used it to refer to physiological realization of a given impression, which could be brought about by suggestion as well as autosuggestion; the nature of ideoplasty was revealed most fully by hypnotism. What made ideoplasty possible was the "law of reversibility," a special form of the general law of nature. In simple terms, "If the effect A can be produced by the cause B, then, inversely, the effect B can be produced by the cause A." Thus mechanical work produces heat and heat can produce mechanical work; and, giving an example of something then only recently discovered, "the mechanical action of speech ... may reproduce speech in Edison's phonograph" (Ochorowicz 1891, p. 333). The law of reversibility was part of the attempt to arrive at a "theory of everything," with all the laws of nature reducible to a few. The main ontological concept, that of force or energy, was not unique to Ochorowicz, but he may have been unique in his determination to capture its essence by extending concepts from material, natural sciences far beyond their usual scope . This universal energy could not be destroyed, only transformed, and thought was a manifestation of that one force, the "motion of the ether" (Ochorowicz, 1891, pp. 332-336; Stachelski, 2013).

The person was thus a kind of energy machine, in which transformation of energy keeps taking place; there is the purely organic transformation in cells and tissues, but there is also the transformation of organic, or physical, energy, into the spiritual one. For Ochorowicz, this was the most important aspect of investigating mediumship; it meant taking the first steps in a new science which would bring revolutionary developments to psychology in general and throw light on the question of self and personality. The concept of ideoplasty was to alter the concept of reality, acting as a bridge between psychology and physiology by demonstrating physiological realization of the imagination. As an example, he quotes witnessing the formation of "artificial stigmata," when the letter V, imagined by a hypnotized subject as being scratched on his forearm, appears as if scratched on the flesh with a pin (Ochorowicz 1916, p. 201; 1913/2018a, p. 139).

Ochorowicz's ideas evolved over time, and since ether as the medium filling the atmosphere was part of the then current scientific model, he incorporated it into his hypotheses: "According to today's concepts, the various states of ether may only be in the form of changes in density—but the changes in its density may also explain everything: the motion of heavy bodies, changes in weight, light effects, and the formation of etheric haze that develops into appropriate bodily forms with an unstable existence" (Ochorowicz 1913/2018a, p. 142). He thus postulated an etheric body that could at times separate from the tactile body. As an example of the etheric shape supporting the form of the body he quoted people feeling pain in an amputated limb (Ochorowicz, 1913/2018a, p. 159).

In his early writings Ochorowicz expressed the opinion that the question of immortality was beyond being solvable in the then current state of science. In his later writings he changed his mind about the possibility of experimental research into life after death, but thought it would be very difficult to provide scientific evidence in view of how much happened in the unconscious. Mediums sometimes created new personalities, while human personalities were collections of various contradictions, with the mediums' "collections" connected more loosely and insufficiently integrated, and participants in séances making their own unconscious contributions (Ochorowicz, 1916, pp.193-6).

A practical invention for which Ochorowicz became well-known, and on which he relied to a great extent, was the hypnoscope, an instrument designed to reveal people's susceptibility to hypnosis when they placed a finger inside a cylindrical magnet, which was supposed to produce sensations indicative of their hypnotizability. Ochorowicz claimed to have successfully tested it on hundreds of individuals; however, when the *Journal of the Society for Psychical Research* reprinted his article on it from *The English Mechanic* it added what seems like a fair editorial comment that the generalizations were "somewhat hasty", and insufficient effort had been made "to preclude the effect of the imagination, due to expectant attention" (Ochorowicz, 1885, p. 282). A well-grounded criticism also came from Frank Podmore's review of *De la Suggestion Mentale* in the *Journal of the Society for Psychical Research*. Podmore complained that Ochorowicz's "parental partiality for that rather dubious little toy, the hypnoscope" prevented him from experimenting with the wider field of people who did not respond to the device and led him to make sweeping generalizations. (Podmore, 1886-1887, p. 566) The hypnoscope, after a flurry of interest, passed into history.

Experiments in Mediumship

Although aspects of Ochorowicz's work on what might be described as "depth psychology" were gradually becoming accepted in Poland as part of mainstream scholarship, his experiments in physical mediumship exploded in controversy and brought him increasing isolation in the academic circles and in the popular press in his homeland. Yet that very controversy confirms the veracity of Ochorowicz's account of his experiments with Eusapia Palladino, which took place in Warsaw from November 1893 to December 1894 (Ochorowicz, 1913/2018a, 1913/2018b). These experiments produced a stream of detailed accounts in the press, from a variety of witnesses who were numerous, articulate, vocal, and often neutral in their beliefs. As a consequence, we have detailed contemporary corroboration, analysis, and discussion of what happened in the sittings (Stachelski, 2013, pp. 81-233).

Ochorowicz first met Palladino in Rome in May 1893, and his account of the experiments there goes some way towards explaining why Palladino (probably like many of his successfully treated patients) responded so willingly to the attention of the figure of friendly authority he projected; these accounts, as well as the ones relating to the Warsaw sittings, also give us a unique insight into Ochorowicz's personality as an experimenter. We get detailed observations on the Palladino phenomena, the controls and the ingenious devices used, discussions of the question of conscious and unconscious fraud , and ideas for creating the best séance conditions. Although written at the time of the experiments, Ochorowicz did not publish these accounts until 1913 because of the general hostility at the time, even to the fact that the experiments took place at all (Ochorowicz 1913/2018a, 1913/2018b). The popular press focused mainly on making jokes about Palladino, assuming her to be a greedy fraud who managed to fool naïve academics (Olkusz, 2012). Even though in 1894 a committee formed by persons who attended the sittings came to the conclusion that hallucination or conjuring could not explain the phenomena, which needed a proper scientific investigation, the hostile opinion-shapers prevailed whether they attended the sittings or not. The decisive voice came from Napoleon Cybulski, an eminent physiologist, who did not attend any of the sittings, but was hostile to Ochorowicz and the idea of hypnotism, and dismissed mediumship research as unscientific and a waste of time (Stachelski, 2013, pp. 125-140).

The other notable medium investigated by Ochorowicz was Stanisława (Stasia) Tomczyk. The Tomczyk phenomena are more complex than those produced by Palladino, and so is the relationship between the medium and the experimenter. Stasia Tomczyk was a young woman whose mediumistic powers became apparent after she suffered the shock of being imprisoned in 1905. She came to live at Ochorowicz's house in 1909 (by that time he had moved from Warsaw to Wisła, a resort in the south of Poland), as his patient and his medium. There were spontaneous phenomena of the poltergeist type and various experiments involving the movement of objects, but the new and spectacular phenomena produced by Tomczyk included levitation of small objects without touching them, and visual imprints of mediumistic energy on photographic plates. On October 30, 1909, Tomczyk gave a public demonstration of her ability to levitate objects to a specially formed commission at a research institute in Warsaw; earlier in the same month Ochorowicz presented a paper on his discovery of two kinds of mediumistic rays produced by Tomczyk (rigid rays and Xx rays) at the First Congress of Polish Neurologists, Psychiatrists and Psychologists Institute. Both events inevitably produced a great deal of controversy, with the predictable dismissal of the reported phenomena as tricks played by conjuring mediums on naïve researchers. Yet the public demonstration of levitation given by Tomczyk was judged to preclude fraud (as were the experiments carried out with her in Paris by Flournoy earlier that year). Another commission, of experts in photography, examined the negatives presented by Ochorowicz that showed levitations of objects, and came to the conclusion that they were originals not subjected to any manipulation (Ochorowicz 1913, Stachelski, 2013, pp. 209-219).

Both the phenomena regarded as genuine, and the many attempts at cheating produced during the Tomczyk séances, were supposed to be the work of a "fluidic personification" called "Little Stasia." According to Tomczyk, this was a much smaller double of herself (Ochorowicz 1909, p. 3), capable of various feats, which included becoming a thin and elongated vapor (Ochorowicz 1909, p. 47). "Little Stasia" was playful and mischievous, had a pronounced personality of her own, was consulted on the nature of the phenomena, and is altogether a much more puzzling phenomenon than Palladino's "control," John King, judged to be the creation of Palladino's unconscious, also influenced by the sitters (Ochorowicz 1913/2018a, b). The difficulty of deciding what was illusion and what was reality in the experiments with Tomczyk can be exemplified by Ochorowicz's discussion of the presence or otherwise of a thread between the medium's hands when lifting objects. The thread seemed to become thinner and vanish as the hands were pulled apart. Ochorowicz interpreted this as the presence of a mediumistic thread, i.e., the idea of a thread producing the phantom thread from the ether, and argued that real mediumistic phenomena could imitate the fake mediumistic ones (Ochorowicz 1909, pp. 68-70).

From 1909 until 1912, *Annales des Sciences Psychiques* regularly carried detailed reports of Ochorowicz's experiments with Tomczyk, descriptions of the two kinds of rays he claimed to have discovered, and photographs of the "fluidic" phenomena produced. The issue for 1912 carried the article *Les mains fluidiques et la photographie de la pensée*, which included photographs of fluidic hands in various degrees of materializations and in various degrees of deformation, and examples of thoughtography in the form of photographs of a full moon (Ochorowicz, 1912) . Some of the criticisms of these reports pointed to Ochorowicz being the only witness to the experiments and the medium, or her invisible "double," too much in control of them, judging them to be fatal flaws (Rosenbusch, in Schrenck-Notzing, 1926). Evidence from other witnesses was quoted in defense of Ochorowicz (Oes-

terreich, in Schrenck-Notzing, 1926), but the issues surrounding these accounts, as well as their possible implications, still await a comprehensive examination by contemporary researchers.

Summing Up

The mainstream view on the assumption that mediumistic phenomena are impossible often implies that Ochorowicz's principle of pursuing facts led him into the blind alley of being duped by fraud (Stachowski, Introduction, in Ochorowicz, 1916/1996, p. 22). To anyone familiar with Palladino's story who reads closely Ochorowicz's account of his dealings with her in his *Mediumistic Phenomena*, as well as other reports of the Warsaw sittings, that charge does not look well founded. His discussion of conscious and unconscious fraud, in an article critical of the SPR investigation of Palladino in 1895, is largely based on his own close observation of her mediumship, but also on investigating other mediums both in Poland and abroad, and his very considerable experience of patients presenting a variety of dissociative states. The article continued to be influential for many years, and still deserves attention (Alvarado, 2010; Ochorowicz, 1896).

Ochorowicz was very much a "hands on," practical investigator, pursuing every manifestation as far as possible, inventing devices for excluding fraud, and examining every possible and impossible explanation to its logical conclusion in his search for the truth. However, in his pursuit of facts he tended not to allow for the possibility of different interpretations, and in particular was not aware of the "experimenter effect" his powerful personality might produce. In his impatience for answers he would construct theoretical explanations prematurely and without detail, something he acknowledged himself in his later writings when reflecting on the reception of his theory of ideoplasty (Ochorowicz, 1916, pp. 383-385) . Working with the model of the world current at that time, he tried to go beyond it, yet in some respects perhaps he was not so much wrong as ahead of his time, as in his exploration and application of the idea that energy could not be destroyed, only transformed. But perhaps his most important contributions were as an innovative experimenter and a "science activist," who had the courage to keep pushing at the boundaries of current worldviews, always asking, "What is impossible?"

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Julian Ochorowicz et sa contribution à la recherche psychique

Résumé: L'objectif de cet article est de présenter la contribution de Julian Ochorowicz au champ de la recherche psychique. Depuis son plus jeune âge, Ochorowicz était intéressé par la psychologie, en particulier par le magnétisme, l'hypnotisme et la suggestion mentale, et son expérience dans ces domaines ont influencé son approche théorique de ce sujet. Sa croyance passionnée selon laquelle l'essence de la vraie science était d'établir des faits avant de formuler des conclusions l'a poussé à étudier de nombreux médiums, dont Eusapia Palladino et Stanislawa Tomczyk.

Julian Ochorowicz und sein Beitrag zur parapsychologischen Forschung

Zusammenfassung: Absicht dieses Artikels ist es, den Beitrag von Julian Ochorowicz auf dem Gebiet der parapsychologischen Forschung zu würdigen. Schon in seiner Jugend interessierte sich Ochorowicz für die Psychologie, insbesondere für Magnetismus, Hypnose und Mentalsuggestion, und seine Erfahrung in diesen Bereichen beeinflussten seinen theoretischen Zugang zum Thema. Seine leidenschaftliche Überzeugung, dass das Wesen der wahren Wissenschaft darin bestehen müsse, Fakten zu ermitteln, bevor man Schlussfolgerungen ziehe, bewog ihn dazu, eine Reihe von Medien zu untersuchen, darunter Eusapia Palladino und Stanisława Tomczyk.

Julian Ochorowicz y su Contribución a la Investigación Psíquica

Resumen: El propósito de este artículo es presentar la contribución de Julian Ochorowicz al campo de la investigación psíquica. Desde la juventud, Ochorowicz se interesó por la psicología, particularmente el magnetismo, el hipnotismo, y la sugestión mental, y su experiencia en estas áreas influyó en su enfoque teórico del tema. Su apasionada creencia de que la esencia de la verdadera ciencia tenía que ser establecer los hechos antes de formar conclusiones lo llevó a investigar a varios mediums, entre ellos Eusapia Palladino y Stanisława Tomczyk.

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Failure to Replicate an Electrical PK Experiment

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Abstract: The objective of this article is to describe an attempt to replicate the phenomenon of alleged bodily magnetism as described in a book by the leading figure of Czechoslovak parapsychology Břetislav Kafka (1891-1967). In his book, in addition to experiments focused on hypnotic phenomena in therapeutic practice, he describes one experiment that is the focal point of this paper. It describes the alleged phenomenon of bodily magnetism, which causes the illumination of a light bulb without connection to electrical power. The bulb is held in one hand as the fingers of the other hand are waved over the bulb. According to Kafka's claims, this act of illumination should be possible for every second or third person. The author of this article has repeated this experiment with students from an Experimental Psychology seminar at the University of Ostrava, with negative results. Following modification of the conditions to match Kafka's historical circumstances, the author was ultimately able to successfully repeat this experiment with illumination other than bodily magnetism.

Keywords: bioelectric fields, psychokinesis, bodily magnetism, light bulb

Bodily magnetism, sometimes also referred to as human magnetism, was defined by Břetislav Kafka (1891-1967) (1948) as a human ability best controlled by human magnets, that is, individuals who have a trained ability to control human magnetism. He asserts that these people can control this energy using the force of their own will through magnetic passes and can pass it to persons who then describe various sensations according to his account. He describes tingling in parts of the body, goose bumps, and in extreme cases vomiting and tremor of the entire body. In the very title and description of his paper we see an apparent reference to the terminology of Franz Anton Mesmer, who performed treatments using magnets and explained his therapeutic methods using the term animal magnetism. Thus far this consists of the already well known phenomenon of suggestibility, if not falling into a hypnotic state, in which it is possible, even indirectly, to suggest certain behaviors and experiences on the basis of Mesmerism. We can therefore work with the concept of human magnetism as something that is only an imperfect description and explanation of the origin of atypical responses of the human organism to psychic stimuli. When bodily responses to psychic stimuli are described, they consist of responses objectively difficulty to examine.

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The author thanks light expert Stanislav Slabyhoudek from Bulbmuseum for identification of the bulb used at the experiment. www.bulbmuseum.cz, Kralupy nad Vltavou, Czech Republic. He also thanks Ing. Pavel Dostál, Ph.D. for his technical assistance and guidance in using the laboratory equipment.

Nonetheless Kafka (1948) also described experiments in his book, first published in 1925, which we could classify rather as physical, and whose replication is well within the realm of possibility, or at least it would appear so. This consists of one specific passage from his book, in which on p. 96 he describes the following experiment:

> In the air magnetism manifests in light, by which oxygen and water vapor contained in the air are combined and thereby become visible to the naked eye. That magnetism glows and shines is well known to us, and anyone can be certain of this. We take an uninterrupted weak 3W-5W or 10W bulb and enter a completely dark room. In our left hand we take the metal base and with rapid, intermittent touches we lightly graze the glass surface with the fingers and palm of the right. After several passes the bulb and its filament begin to glow with a white-blue light. This magnetic light is composed of radioactive components released from the breakdown of atoms of the protoplasm (molecule) of the cells, which the bulb receives and through whose accumulation begins to light. This illumination can be achieved by any person, some more than others, depending on whether or not one is magnetic. With sufficient effects of magnetism we are able to practice illumination of bulbs of 25-50-100 and higher wattage. If the bulb's filament is disrupted, only its surface will glow. (p. 96)

This categorical and irrevocable claim directly invites validation. If the researcher establishes that the phenomenon occurs regularly in 33%-50% of attempts, we must consider the phenomenon as more or less common. And yet in reality it is not common for us to have seen the illumination of a bulb in everyday life, aside from magic performances and film tricks. It would be a truly excellent demonstration of psychokinesis, as its probability of occurrence would be several orders of magnitude higher than we are used to examining in the field of parapsychology.

The idea of illuminating a 10W bulb, which a large proportion of the population should be capable of illuminating, appears at first glimpse physically preposterous. And yet an individual is capable through one's own mechanical activity of producing a certain amount of electricity using a dynamo, alternator, or via piezoelectric phenomena. Its production is dependent on well-known mechanisms and tools adapted to this purpose. It consists merely of the transformation of mechanical energy to electricity and, in the case of its consumption in a light bulb, of transforming the electric current into great heat, and therefore the light emitting from it. And yet for a minimum of 33% of the population to commonly illuminate a 10W light bulb solely through intermittent touch without any assistive device appears to be a patently nonsensical idea.

On the other hand, it is necessary to consider that Břetislav Kafka - the author of this claim - is considered by many to be the founder of parapsychology in Czechoslovakia. He was a notable and sought-after healer known for his moral conviction. He offered treatments entirely free of charge, and at the cost of his own health, due to his Christian faith. An estimated 15,000 persons consulted him. His renown as a healer was so considerable that even during a time when the Communist Party rise to power proved heavily unfavorable for parapsychologists, he still managed to obtain informal support for the publication of his book in 1949. This would have been impossible for any other author focused on parapsychology at that time. He became a legend during his lifetime, and is known to some of his

successors as the last Czech shaman. I can therefore from this description of his moral profile conclude that conscious deception or conscious manipulation of his results would not correspond to his character. For this reason, while I remain skeptical of his data, I would consider this rather an error, erroneous interpretation, or a disturbance of the senses, if not perhaps the result of unintentional autosuggestion. He was a passionate and devoted healer, but from the perspective of formal experimental psychology he was merely a diligent and devoted dilettante. Although in the context of his activity he used the term "Experimental psychology," it does not fully correspond to the stringency of parameters that experimental psychology would include in today's standards. It is rather based on the recording of his own experiments, not supported by statistical significance.

Theoretical Background of the Experiment

The actual experiment consisting of illuminating a light bulb using mental force is little known, if we do not consider obsolete magic shows operating on the principle of replacing a 230V light bulb with an apparently identical one but with a voltage of 24V and a hidden source of electricity. The attempt to illuminate a more modern LED light can be seen in a video on the internet as the alleged expression of the mental energy of a small child, but the conditions of the video clip are not at all controlled, the bulb is white and the base is opaque – it may with greater probability conceal either a switch or a battery, which nowadays would be ample for delivery of energy.

The only truly reliable reference to the illumination of a light bulb using bioelectric fields can be found in connection with an experiment by the world-famous medium Alla Vinogradova. She illuminated a neon lamp at a distance without contact (Benson, 1972, p.18): "For most people to make a neon lamp glow (the lamp not being electrically connected to anything) they must rub it fairly vigorously with their hands. By this means, one can make even an ordinary electric bulb glow faintly, sufficient to be visible in a dark room." It would seem that the original claim by Kafka more than a half-century later found support here, at least in certain individual facts – friction against an ordinary light bulb and its visible glow. This is another good reason for an attempt to replicate this experiment.

Method

Participants

The sample consisted of university volunteers (N = 23; 5 men, M_{age} = 21.8, SD = 0.75; 18 women, M_{age} = 22.7, SD= 3.59) who participated in practical instructional elective seminars in Experimental Psychology.

Materials

10W – NARVA 240V 10W E14 CLEAR. This bulb contains a vacuum - information obtained from the manufacturer on its customer line.

15W – PHILIPS Standard 15W E27 220-240V P45 CL 1CT/50X10F. The composition of the inner bulb refill cannot be confirmed, because on the basis of customer support: "the manufacturer does not provide this information to the public".

25W – POLAM, type designation: P220-230V25WI76. Manufactured in 1976 in Poland. Based on an expert's statement, this bulb almost certainly contains a vacuum.

Procedure

The students were instructed to rub their hands in the exact manner described by Kafka on a succession of three light bulbs (10W, 15W, 25W) in a dark room. The students worked in pairs – one person was the participant, the other was in the role of the experimenter. They then switched places and after an attempt lasting 5 minutes signed an experiment protocol, inquiring about the degree of belief in the psi hypothesis. The average value of belief in psi varied between rates 2.0 - 2.29, so it was close to "moderate non-belief".

Originally the purpose of the experiment, which was included among other common ones (the effect of stereoscopy, tapping, pursuit test, galvanic skin response, etc.), was for students to gain a rigorous perspective on performing an experiment, and for them to understand the basic premise of the study: "What is not verified cannot be ruled out in advance only because it looks unfeasible or nonsensical." Students were informed about the purposes of data collection and its use for scientific purposes. The communication style of individual experimenters (classmates) was usually friendly and the exercise was supervised by the author, who is an assistant professor.

Results

None of the students managed to illuminate the bulb. With general probability compared to the claim of Kafka of a minimum of 33% success, that is one successful attempt out of three, it should have resulted in 23 positive results – that is, the lighting of the bulb – out of a total 69 attempts. With a statistical comparison using the PAST program (Hammer, Harper, & Ryan, 2001) the expected results and the actual results validated using Chi square indicate that a statistically significant difference exists between the expected results and the measured results. In the case of 69 attempts it is Chi sq(1) = 27.6; $N = 69$; Cramer's $V = 0.44721$; $p<0.001$. Thus, the findings of the sample of Kafka were not replicated with the sample of the experimental psychology seminar.

Analysis of Unsuccessful Attempts and Subsequent Recombinations of Attempts

On the basis of the above results I began looking for the possibility that the mistake was somewhere else. For this reason I returned the study to the reality of the period. It was necessary to consider that, as an artist, B. Kafka might not have seen the difference in the structure of the device used and

could have considered any light with a bulb and standard Edison screw an incandescent light bulb, even a neon lamp, which was not always fitted with a bayonet screw.

And yet there are technically significant differences between the two types of lights: Neon lamps were and are most commonly full of the Penning mixture, which contains 99.9% neon and 0.1% argon (Kruithof & Penning, 1937, in Septhon, Turner, & Leake, 1984). Their inner component contains two electrodes which do not come into contact and after applying sufficient voltage the gas in the vicinity of the electrode gives off light. Without other additive substances, this mixture creates an orange-red light.

Typical bulbs nowadays up to circa 25W do not tend to be filled with any mixture; in other words, they are vacuum bulbs. They therefore do not contain any gas that could display luminescence. Incandescent light bulbs of higher wattage are typically filled with a mixture of 93% argon and 7% nitrogen. (Universal Industrial Gases, 2016). They thereby consist of a filling of different noble gases than a neon lamp. A light bulb also typically contains a spiral filament that joins both electrodes inside the bulb, which becomes heated and glows under the passage of the current following connection to an electricity source.

Because neither the students nor the author managed to obtain the slightest visible display of light, the author purchased larger neon lamps for the following experiment, with me as participant. My attitude about psi in this case is “strong non-belief”.

I attempted to rub the neon lamp exactly as per the original description in a dark room. After a moment it was possible to evoke faint pink-orange flashes of the cloud of gas in the neon lamp, up to a size of approximately 1 cm in diameter through a rapid pass of the bulb with the hand. Stronger flashes of light could be evoked by applying a comb, with which the author had previously combed his hair, and light sparking occurred with a cracking auditory component. I subsequently referred to this unexpected positive outcome at a conference and several members of the specialist audience were also able to evoke light due to friction on the bulb in the presence of witnesses. And yet despite the previous attempts I myself was unable to repeat them in front of the audience – an explanation of this failure is described in the discussion.

Discussion

I can state that with the use of a neon lamp, which has a completely different technical concept and different chemical filling than the light bulb referred to by Kafka, we can actually and rather simply evoke flashes of light through friction on a neon lamp, but not using an incandescent light bulb. The evoking of light through friction on neon lamps and incandescent light bulbs was also previously discussed by Benson (1972, p.18), who classified it as something that the majority of people can achieve. We can therefore confirm the given result of the experiment – that is, that it is realistic to evoke light radiation visible to the naked eye through mere friction on a neon bulb. This regardless of the frequency of such incidents. Even so, certain questions remain. Why did Kafka think he could light up a bulb?

It is very likely that even common incandescent light bulbs in the 30s were full of a different mixture than the currently used argon and nitrogen. Various mixtures of neon, krypton, or xenon could

easily be used. The situation regarding the manufacture of the bulbs at the beginning of the 20th century was very unregulated and only minimal standard existed. If incandescent light bulbs too were filled with an alternative mixture, they would quite probably have given off light.

B. Kafka describes the illumination of the spiral filament of the bulb as well. On the face of it this would of course indicate an incandescent light bulb, as a neon lamp typically does not have a spiral the way an incandescent bulb does. Nonetheless for a lay person a light bulb could have been switched with a neon lamp, as certain types of neon lamps were produced from the 30s with a spiral filament that was not connected with both electrodes, which may not have been apparent at first glance. And if the neon lamp glowed it would not have been clear to a non-expert that the spiral was connected only to one electrode.

Why did B. Kafka describe a different color of light than that which was discovered during the replication of the experiment? Since we cannot examine the equipment used by Kafka during his experiment, we can unfortunately only speculate why he described a blue-white light. Indeed, neon lamps most often used for indication purposes a glow with a pink-orange light. If mercury fumes are added to the neon in a clear or opal glass tube it would have been possible in the thirties to achieve light of blue color (Lněníčková, 2006). Another option is the use of other gas, e.g. xenon, which has a blue light when inserted into an electrical field (Xenon, 2017), which corresponds to a color temperature of 6500 Kelvin (Kuhlo & Eggert, 2010).

In the original text we find somewhat inadequate the explanation that: “magnetic light acts on the radioactive components resulting from breakdown of the atoms of protoplasms” (that is, the parts of live cells) (Kafka, 1948). Such a claim may be explained by the lay knowledge of the time and the inconsistent scientific and linguistic terminology at the beginning of the last century. In Czech, the English concept of “Radiation” may be automatically and incorrectly interpreted as a derivative of the chemical radioactive element “Radium” and logically placed on the same level as the term “Radioactivity”.

And yet radioactivity is ionizing radiation with at least two orders of frequency higher than visible blue light to which Kafka refers. Luminescence may be evoked in a bulb filled with the right mixture (e.g., the Penning mixture) in three different ways: radioactive radiation, increased temperature in hundreds of degrees Celsius, or exposure to a powerful electrical field. Of course in this case a person could be exposed to radioactivity from a secondary source of radioactivity, but this situation is apparently rare.

There is, however, another explanation, in which the continuum of the visible spectrum from blue light further continues into other types of UV radiation, types, UVA, UVB, and finally hard radiation of type UVC. It is UVC radiation at wavelengths at a range of 180-280nm. And radiation at wavelengths lower than 240nm begins to become ionizing. For example, it results in the exchange of oxygen (O2) for ozone (O3) (Navy Environmental Health Center, 1992).

Information about the fact that even the human body can produce UV radiation during meditation in the range of 400nm-200nm has been described in the research of Joines, Baumann, and Kruth (2012). They state that it would be possible to determine only the quantity of photons produced in the measured

range of 200nm – 400nm, but it would not be possible to identify the exact wavelength of the radiation produced by the test participants with the device used (PMT - cooled photomultiplier tube).

If such ionizing radiation could occur in a person at sufficient strength at a wavelength lower than 240nm, the test subject might hypothetically illuminate a light bulb filled with a suitable mixture. Radiation with wavelengths smaller than 200nm for all practical purposes do not propagate and appear only in a vacuum (Ultraviolet Radiation Guide, 1992). Hypothetical ionization radiation would have to be within a very narrow range of 200nm-240nm.

Because we can rule out the influence of the thermal effect that leads to luminescence, just as with radioactive radiation in the classical sense and because we do not have enough evidence thus far about UVC radiation with ionizing effects produced by humans, the most probable influence on the production of light in the gas of a neon bulb can be attributed to electrical fields – static electricity, which was certainly produced during the experiment.

As regards the second part of the claim by Kafka, that light comes from the breakdown of the atomic parts of live cells, this information can be considered inaccurate due to the described breakdown of atoms that occurs only in radioactively unstable elements. In reality, however, the description of the phenomenon during the degradation of cells is distinctly similar to the results of modern research. The research conducted by Joines, Baumann, and Kruth (2012) yielded the information that the destruction of cells by bacteria using oxygen, bases, or oxidants produce a spectrum of radiation over 580nm. This is visible light of an approximately yellow color. The authors also carried out the destruction of red blood cells using several drops of water, which resulted in the tearing of the membrane of the cells and the subsequent emission of ultraviolet light in the visible spectrum. This a surprising result, but even more compelling is the fact that this light phenomenon of dying cells was probably described by Kafka at least 69 years ago!

As a result we can speculate about the fact that if the destruction of cells occurs in exceptional situations in the human body on the basis of psychological or physiological stimuli (for example, exposure to powerful stress), a person could in some way "glow." If sensitive persons with an ability to better perceive a spectrum approaching ultraviolet light existed, it might explain the claims of seeing so-called auras.

If we return to the original experiment with a light bulb, which is meant to be illuminated using bodily magnetism, with today's knowledge and the result of the experiment with the neon bulb we would no longer need to discuss bodily energy as if it were some specific mental power. Now we know that certain gases are lightly ionizable and that a neon bulb produces light on the basis of sufficiently high voltage – in our case, static electricity. This can be produced mechanically at a certain quantity using friction of the hand against the glass, which for certain light sources can lead to ionization. Proper movement (it is necessary to rub the bulb quickly) in the proper environment (low humidity) on the proper experimental equipment (under today's conditions, apparently nothing more than a neon lamp) may elicit flashes of light fairly reliably.

This opinion with reference to the experiments of B. Kafka is also shared by Patrovský (2012). He reached the conclusion, independent of the findings of the author of this article, that this does not con-

sist of radiation produced through magnetism, but static electricity produced by friction. At the same time he adds that the light bulb must be filled with noble gas (he specifically mentions krypton). With today's light bulbs, according to his claim, this experiment cannot be performed. In sum, we can state that the original photoelectric psychokinesis claims of Kafka (1948) are in reality merely common physical phenomena under atypical circumstances.

Conclusion

Despite the negative findings of the experiment, a psychological aspect was discovered that influences the creation of static energy and therefore also the ability to illuminate a neon lamp. Stress. As indicated above, the author was unable to publicly demonstrate illumination (despite having achieved it with 100 percent success in private). The reason was the physiological reaction when responding to stress and increased sweating of the hand.

With a certain degree of benevolence we can therefore accept even this attempt, which is based on physical conditions, as a psychological phenomenon. Its evaluation could hypothetically be possible through measuring physiological manifestations of stress and anxiety. It may be that people more mentally stable and self-assured would have a greater chance of performing this experiment in a manner conforming to the claims of Kafka.

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Echec de Réplication d'une Expérience de PK Électrique

Résumé : L'objectif de cet article est de décrire une tentative pour reproduire le soi-disant phénomène de magnétisme corporel tel que décrit par la figure majeure de la parapsychologie tchécoslovaque Břetislav Kafka (1891-1967). Dans son livre, en plus d'expérimentations focalisées sur les phénomènes hypnotiques dans la pratique thérapeutique, il décrit une expérimentation qui est au centre de cet article. Le soi-disant phénomène de magnétisme corporel est décrit comme étant pouvant causer l'allumage d'une ampoule sans connexion à un pouvoir électrique. L'ampoule est tenue dans une main tandis que les doigts de l'autre main font des passes par-dessus. Selon les revendications de Kafka, l'action d'allumage serait possible pour toute personne en seconde ou troisième position par rapport à celui qui actionne son magnétisme corporel. L'auteur de cet article a répété cette expérimentation avec des étudiants d'un séminaire de psychologie expérimentale à l'université d'Ostrava, avec des résultats négatifs. Suite à modification des conditions pour coller à la réalité historique, l'auteur fut finalement capable de répéter avec succès cette expérimentation avec un allumage qui n'était pas dû au magnétisme corporel.

Ein gescheiterter Replikationsversuch eines elektrischen PK-Experiments

Zusammenfassung: Gegenstand dieses Artikels ist die Beschreibung eines Replikationsversuchs hinsichtlich eines Phänomens, das vermeintlich mit dem Körpermagnetismus zusammenhängt, so wie es in einem Buch von Břetislav Kafka (1891-1967), einem führenden Vertreter der tschechoslowakischen Parapsychologie, beschrieben wird. In Ergänzung zu Experimenten, die sich auf hypnotische Phänomene in der therapeutischen Praxis konzentrieren, beschreibt er in seinem Buch ein Experiment, das im Mittelpunkt dieses Artikels steht. Es beschreibt das vermeintliche Phänomen des Körpermagnetismus, der das Aufleuchten einer Glühbirne ohne elektrische Verbindung bewirken soll. Die Glühbirne wird in einer Hand gehalten, während sich die Finger der anderen Hand über die Birne bewegen. Nach Kafkas Angaben soll sich dieses Aufleuchten bei jeder zweiten oder dritten Person einstellen. Der Autor dieses Artikels hat dieses Experiment mit Studenten in einem Seminar für Experimentelle Psychologie an der Universität Ostrava mit negativen Ergebnissen wiederholt. Nachdem die Bedingungen an die historische Realität angepasst worden waren, gelang es dem Autor schließlich, das Experiment mit der Glühbirne erfolgreich zu wiederholen, allerdings ohne Körpermagnetismus.

No Replicación de un Experimento Eléctrico de PK

Resumen: El objetivo de este artículo es describir un intento para replicar el fenómeno del supuesto magnetismo corporal descrito en un libro de la figura principal de la parapsicología checoslovaca, Břetislav Kafka (1891-1967). En su libro, además de los experimentos centrados en los fenómenos hipnóticos en la práctica terapéutica, Kafka describe un experimento que es el punto focal de este documento. Describe el supuesto fenómeno del magnetismo corporal, que provoca la iluminación de una bombilla sin conexión a una fuente de electricidad. La bombilla se sostiene en una mano mientras los dedos de la otra mano se agitan sobre la bombilla. Según las afirmaciones de Kafka, este acto de iluminación debería ser posible para cada segunda o tercera persona. El autor de este artículo repitió este experimento con estudiantes en un seminario de psicología experimental en la Universidad de Ostrava, sin ningún resultado. Después de modificar las condiciones para que fueran semejantes a los tiempos de Kafka, el autor pudo replicar el experimento de la iluminación pero sin magnetismo corporal.

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Hankering for the Past[10]

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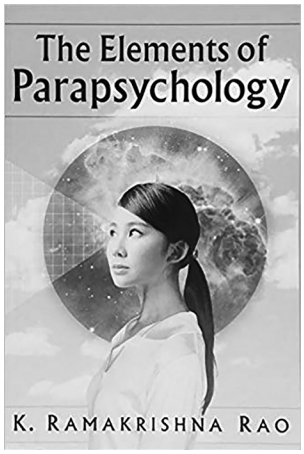
A Review of
The Elements of Parapsychology,
by K. Ramakrishna Rao.

Jefferson, NC: McFarland, 2017. Pp. 346. ISBN: 978-4766-7122-2. $35.00.



K. Ramakrishna Rao has been an influential figure in parapsychology for over 50 years (notably as Director of The Foundation for Research on the Nature of Man, subsequently the Rhine Research Centre, as President of the Parapsychological Association, and as Editor of this *Journal* for 18 years). He is well placed to write a book intended "to bring awareness of the importance of scientific study of psychic phenomena" (p. 3). His professional life encompasses the enormous transitions that have taken place in the scientific study of psi from the era of Rhinean card guessing to modern day approaches that focus on altered states of consciousness and unconscious processes as a means to more accurately model real-world experiences. Unfortunately, his latest book gives the impression that this transition never took place, being deeply entrenched in nostalgia for those earlier times.

Rao writes authoritatively and very engagingly. He is strongest when offering an opinion about how best to understand psi phenomena and the implications such understandings have for our notions of consciousness. But he is much less strong when he gives an account of that research, rarely straying from studies that are 40 or more years old. He justifies this by saying "we limit ourselves ... to the original studies and their early confirmation without referring to the more recent research unless it warrants its mention in the light of new developments" (p. 145) but this is not a successful strategy. The naive reader would be forgiven for thinking that card guessing and dice rolling were still *de rigueur* in parapsychological research, and they would have very little appreciation for important lines of contemporary research. To illustrate, of 754 references listed at the end of the book, 275 (36%) are from the 1960s or earlier. Although that number might reflect coverage of an extended period that runs into the 19th century, the

10 Address correspondence to: Chris A. Roe, Ph. D., The University of Northampton, Park Campus, Northampton NN2 7AL, UK, chris.roe@northampton.ac.uk

decade of the 1970s has 198 references (26% of the total). For the 1980s this figure is 93 (12%), for the 1990s it is 79 (10%); moving to the current century, the numbers are just 70 (9%) for the 2000s and 39 (5%) for the 2010s. Correlating frequency against time period gives a perfect association by Spearman's rho. In explanation, Rao notes (pp. 283-284) that he has not attended a PA convention since 1993 and allowed his PA membership to lapse in 1995, so that his is an "outsider's look" at the field, albeit one — he claims — that is still "very much familiar with what is going on" (p. 284). The data suggest otherwise.

The book comprises 9 chapters, starting with "Background and Beginnings". Here he describes "the psychologist's predicament," the dilemma of wishing to work within a materialist paradigm in order to demonstrate phenomena that might fundamentally be nonmaterial in nature. In this he follows Rhine in defining parapsychology as the study of phenomena that quintessentially include a nonphysical component, "Inasmuch as psi phenomena are unconstrained by time/space variables and are known to be unrelated to our sensory and motor functions, they suggest the existence of a nonphysical mind which can exchange energy and interact with a physical body" (p. 32). Nevertheless, he still commits to the scientific method as the most appropriate way to study such phenomena: "the rules that govern the investigation of parapsychological phenomena are necessarily the same as those that govern other natural sciences" (p. 36). He acknowledges the potential for paradox in these two assertions, which lead to "vexatious questions ... [that] have no easy answers" (p. 37).

Chapter 2, "Concepts and Methods", traces the history of parapsychology and provides a whistle-stop tour through the various approaches to data collection, before wrestling with the issue of whether such practices count as "science". Chapter 3 is entitled "Accumulating Evidence" and is concerned with why psi claims remain controversial despite over a century of mounting evidence. Rao considers the standard objections and rightly eschews calls for a "conclusive experiment" on philosophical grounds, but nevertheless regards Schmidt's REG experiments as coming close to this requirement. I was disappointed that a chapter on "Accumulating Evidence" did not consider reviews of a number of key paradigms in parapsychology (such as those covered in Broderick and Goertzel, 2015 or Cardeña, Palmer and Marcusson-Clavertz, 2015), nor introduce the concept of meta-analysis. In chapter 4, "Problems of Replication and Application', Rao distinguishes between replication on demand and statistical replication and illustrates the latter with examples from REG and ganzfeld work. These descriptions highlight another concern I have in that I am not sure for whom the book is intended. Rao assumes too much prior knowledge of the general reader such that these very brief accounts will be unfathomable (the ganzfeld as a method is not described until a later chapter), while at the same time there is not enough here that is original to appeal to the informed reader.

Chapter 5 concerns process oriented work and looks to relate psi experiences to other variables, though the first section actually shows what psi is *not* related to (distance, time, target system complexity). Unsurprisingly, these suggest to Rao that the operation of psi is aperceptual. Jim Carpenter's First Sight Theory is mentioned in this respect, but disappointingly not elaborated upon. Although some positive associations are identified (e.g., with extraversion, cortical alpha), no attempt is made to interpret or synthesize them in a way that would cast light on mechanism or function. Some subsections (animal psi, global consciousness project) did not seem consistent with the chapter theme.

Chapter 6 is devoted to the problem of psi missing. Rao refers to the elusiveness of psi as "legendary" (p. 170) and points to the non-replicability of results, despite having spent time earlier arguing for the comparability of statistical replication in parapsychology with other social sciences (a view with which I concur—see Roe, 2016a). He devotes quite a lot of space to psi missing and to differential effects but this hotchpotch of study outcomes only shows that differential performance occurs rather than suggesting any systematicity to such effects (beyond perhaps reflecting participant preferences). Nevertheless this remains a promising avenue for further research.

Chapter 7 deals with the experimenter effect, which Rao dichotomizes (p. 196) into genuine psi effects and artifactual problems of experimenter incompetence or unreliability. Although he acknowledges the extensive work that documents psychosocial experimenter effects in the tradition of Robert Rosenthal, he doesn't consider this as a serious alternative (for a contrary view, see Roe, 2016b). Whatever their cause, experimenter effects confound scientific progress because they hinder replication, obscure subtle IV-DV relationships in the data, and provide ammunition to skeptics who wish to dismiss the evidence, so that "without a proper understanding of the experimenter, psi research is unlikely to advance much further than merely accumulating more data favoring the existence of cognitive anomalies" (p 196). Again the effect is illustrated through a number of card guessing studies from the 1930s with only a short postscript that refers to more recent work. Understandably he relates the experimenter effect to nonintentional psi, and this is explored briefly. Rao offers a very useful flowchart (p. 218) to capture the different forms of experimenter effect that might be found in parapsychology.

In chapter 8, "Explanatory Quagmire," Rao focuses on the issue of how best to make sense of the findings of parapsychology. He takes the indifference of psi to physical parameters as indicative of its nature as irreducible to constructs found in Newtonian physics. He refers to von Lucadou's model of pragmatic information as an alternative conceptualization, but this treatment is so brief as to be unintelligible to the interested lay person. A number of other theories are considered and rejected before he turns to a nondual approach in which our perceived separateness is seen as illusory, and psi is a function of our true collective nature. Surprisingly, the global consciousness project is cited as an example of this collective mind; but here the cause of collective coherence is typically an objective event (such as 9/11 or a royal wedding) with the EGG data reflecting the extended effects of that mundane coherence rather than suggesting a paranormal cause of it. A better example might have been Sheldrake's studies of morphic resonance, but these go unmentioned. In concluding the chapter, Rao returns to his commitment to the scientific method and the need for empirically testable predictions from theory. How this might be possible for the more mystical models of psi remains to be seen.

The final chapter, "The Unsettled State: Postscript to Sixty Years in Parapsychology," explores the connections between Western psychical research and classical Indian thought. This autobiographical segment divides Rao's career into three stages, representing preparation, active participation and advancement, and finally reminiscence and review. The style is warm and personal and works well to contextualize Rao's thinking about historical, empirical and theoretical issues in parapsychology. His account of the effects of the Levy scandal and his appointment as Director of the FRNM were particularly valuable, especially his bemoaning the privileging of statistical significance and scientific respectability over personal meaning and relevance that continued under his watch.

To sum up, there are certainly some positives to this book: Rao writes elegantly and knowledgeably about the material that he includes and makes a persuasive case for the validity of the evidence for psi. However, the significant negative that prevents me from recommending it is the heavy skew in Rao's coverage of material that privileges work from half a decade ago over more recent advances. This gives the impression that the book is a historical treatment of a moribund subject; Rao appears to have come to bury parapsychology rather than praise it.

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Abracadabra Psi?

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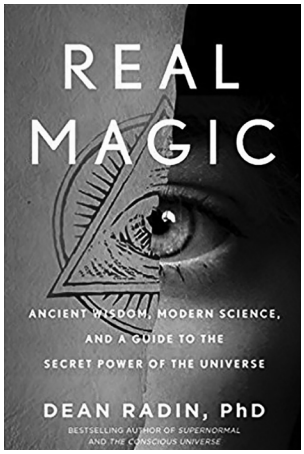
A Review of
Real Magic: Ancient Wisdom, Modern Science, and a Guide to the Secret Power of the Universe,
by Dean Radin.

New York: Harmony Books, 2018, Pp. xi + 259. ISBN 978-1-5247-5882-0



You have managed to get a ticket to attend an unconventionally advertised "The Rite of Saturn" and arrive to Caxton Hall wearing black and keeping silent as requested. The convener, "P," and his acolytes perform a ritual *very* loosely based on the Greek Eleusinian mysteries, in which while sitting on cushions you are offered a drink spiked with psychoactive substances. You are then taken into a dimly lit room where a group of robed, masked enthroned beings recite overwrought poetry and make invocations to the Gods, before one of them plays the violin (Brown, 1978). Aleister Crowley, "P", "The Great Beast," the most influential 20th Century practitioner of magic (or magick, as he spelled it following Old English usage) is just beginning his (in)famous career as a magician, seeking to bend the fabric of the universe to his will.

Decades later, as mentioned in *Real Magic*, Dean Radin and collaborators conduct carefully designed experiments to attest whether individuals' conscious intention can affect the microscopic behavior of quantum systems using double-slit and other optical systems. Statistical analyses reveal that the results differ significantly from randomness, although the purported effect of the intention is very small (pp. 101-102).

At first blush, there would seem to be nothing in common between these two events, other perhaps than the fact that Radin was also a violin player in his youth. Yet, first impressions can be misleading. The prototypical "bad boy" Crowley wanted to have "scientific," operational descriptions of magical ministrations as precise as possible: "'I concentrated my mind upon a white radiant triangle in whose

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center was a shining eye, for 22 minutes and 10 seconds, my attention wandering 45 times' is a scientific and valuable statement. 'I prayed fervently to the Lord for the space of many days' means anything or nothing" (1901, p. 123). And, according to Radin's new book, *Real Magic*, parapsychology (psi) and magic share the essential truth of a "secret power of the universe," as the subtitle contends. Crowley defined magic as "a question of discovering and employing hitherto unknown forces in nature," 1929, p. 16).

Radin has an impressive track record of creative and successful experimentation in psi, so what he writes on the topic definitely deserves careful consideration. He states that "I've been studying magic from a scientific perspective for about forty years" (p. 11), and describes magic as involving "mental influence of the physical world, perception of events distant in space or time, and interaction with nonphysical entities" (p. 1). Defining magic this way makes it fit perfectly with the main themes of parapsychological research: psychokinesis (anomalous influence and force), ESP (or anomalous cognition), and research on survival, but it ignores the vast differences within the vast domain of magic, even if we circumscribe it to the Western tradition.

If one follows Radin's definition of magic, of course it makes sense to consider psi research as referring to it, and there are some commonalities, between magical practice and the little we know of psi phenomena. For both, the development of focus of attention, fantasy, and sustained practice are recommended (Baptista, Derakhshani, & Tressoldi, 2015; Cavendish, 1967), and rituals may help focus attention, increase belief, and intensify emotions not only in magic but also in psi research (e.g., Nelson, 2008), and other human activities (Cardeña & Cousins, 2010).

Nonetheless, the similarities only go so far. To point but to one important difference, laboratory evidence has provided evidence that a person's intention can affect the physiology of someone else at a distance (Schmidt, 2015), but this effect is typically very small and inconsistent, and in no way provides a basis for what Wilson (1973, p. 345) justifiedly described as the "futile and rather silly business" of the "psychic battles" in which the esoterists Boullan and Guaita engaged at the end of the 19th century, nor to the magician Lévi's (1896) proclamation that through magic the practitioner can become omnipotent. Unqualifiedly equating parapsychology and magic also plays into the hands of those who dismiss parapsychology as pseudoscientific (e.g., Alcock, 2005).

For most of *Real Magic*, there is no discussion of the extent to which the evidence from psi research both does and does not support what is assumed in magical or New Age practices and beliefs. An important instance occurs on page 71, in which Radin lists various books that posit that asking the universe for something and believing in it vehemently will make it manifest, without much discussion. With respect to this proposition, not only is there the fact that all of us have had strong wishes to, for instance, save someone from suffering or dying, and have seen the futility of our wishes, but there is also the issue that it is morally bankrupt because it implies that the millions of victims of horrible diseases, genocides, and more quotidian cruelties just did not ask or believe strongly enough to avoid their excruciating fates (Cardeña, 2011). It is not until pages 212-213 that Radin discusses why personal dreams do not "come true, every time," because of "reality inertia, lack of talent, and the unconscious," but isn't this cosmically short-changing (to use a language similar to that of the book's subtitle) the presence of

suffering and cruelty in life, no matter what we wish? Or that someone's "dream" may be precisely to crush someone else's "dream" (or life)?

Radin excels, as expected, in reviewing the literature on the supportive evidence for psi phenomena and their connection to intentionality, to which he has made many important contributions. This, and his discussion of the effect of consciousness (or, more accurately, mentality, since some psi effects are nonconscious; e.g., Stanford, 2015) on reality are the strongest aspects of the book, but Radin's grasp of other disciplines is tenuous. In one case, he writes on p. 170, while discussing the 17th century ostensible levitator St. Joseph of Copertino, that "The Catholic Church was the principal authority among European nations," as if there had not been Protestant countries and communities at that time. Or, when discussing anthropology, he cites Kroeber's 1923 work belittling the belief in magic (in Radin, p. 28) and then jumps all the way to a 1982 paper by Winkelman discussing psi phenomena and anthropology, failing to mention many discussions in anthropology in the interim that were at least respectful of magic and even mentioned psi phenomena (e.g., Evans-Pritchard, 1937; Marwick, 1982; for a review see Luke, 2010). And mostly dismissing Europe in the Middle Ages as akin to a "post-apocalyptic zombie movie" (p. 46) may make some readers smile, but will make others with a knowledge of history wince. It may be argued that these problems are tangential to the main theme in *Real Magic* and that this is a book written for a general audience, which I can grant, but they also diminish the overall trustworthiness of the book.

Real Magic includes a chapter on the history of magic and references a few recent, and typically dry, academic works (e.g., Davies, 2012), but the interested reader will get a much more comprehensive and entertaining account of the history, variety, and rationale for magic in an extraordinary and copiously illustrated encyclopedia, which had already discussed some parallels between psi phenomena and magic (Cavendish, 1970a, b). The central tenet of Real Magic certainly deserves a hearing, but a more nuanced approach and consideration of both similarities and differences between psi and magic would have strengthened it considerably. Yes, the proposal of universal interconnectedness in some interpretations of magic (e.g., the Emerald Tablet), quantum mechanics (e.g., D'Espagnat, 2006), and parapsychology are worth considering, but other aspects of magic such as the belief that a magician can amass great power (beyond that explainable by ordinary psychological dynamics) through the use of secret lore have little to no basis on reality. Which, coming back to the beginning of this review, helps explain why the powerful "P," Aleister Crowley, ended up destitute and dependent on drugs and donors (Wilson, 1973). Caveat, magician's apprentice!

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Taking a Conservative Approach to the Paranormal

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A Review of
Parapsychology: A Beginner's Guide,
by Caroline Watt.

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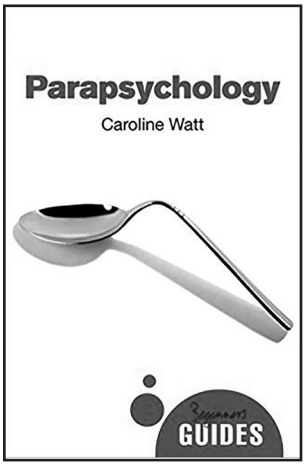

Parapsychology, by Caroline Watt of the Koestler Parapsychology Unit (KPU) in Edinburgh, is, as the title indicates, a beginner's guide to the vast field of parapsychology. Watt's account of this fringe science, so widely unaccepted by the mainstream, should convince even the most hard-line skeptic that psi phenomena deserve more than the casual dismissal its pundits have come to expect. Eminently readable, Watt describes the humble origins, the evidence, and the intriguing phenomena itself, to a readership that will largely be new to the field. Having said that, this reviewer came across a considerable amount of new material, and for that reason alone, Watt's latest contribution to parapsychology should be well-received by seasoned experts in the field.

Watt starts *Parapsychology* with a brief account of the North American Fox sisters of the mid-1800s, whose reputation as mediums is still tarnished to this day due to the controversial claims made about (and by) the sisters and their alleged deceptions. A number of other historical events are described, followed by some background on J. B. Rhine and his work on card-guessing and dice-throwing. This material is par for the course in introductory books on parapsychology, but Watt's treatment is refreshing. To be noted is Watt's unique approach that does not entirely follow a rigid chronology of parapsychological developments, but instead is divided into main themes and topics.

One learns, as one moves through the chapters on macro-PK, psychic reading, mediumship, metal bending, psychic detection, materialization, and so on, featuring psychic claimants like Ted Serios, Uri Geller, Nina Kulagina, Sai Baba, and others, that Watt takes a myth-busting approach to the phenomena that is thorough-going and thought-provoking. It is fair to say that the revealed shenanigans of some

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psychic claimants will surely try the patience of serious truth-seekers. However, Watt's approach, including her selectivity and particular focus on cases by which she illustrates the various topics, often takes attention away from more intriguing facts and findings associated with those cases—Rupert Sheldrake's work with psychic pets, and even Nostradamus's prophecies are prime examples. I find myself in agreement with Mörck (2007): "Emphasis in the book is on normal causes for psychic experiences" (p. 96). Thus, Watt seems to imply, for example, that Geller's effects (e.g., spoon-bending, watch-starting) have largely been exposed as fraudulent because the likes of The Amazing Randi, David Marks, and Richard Kammann *showed how it was done*! But mimicry does not prove actuality. Although evidence may point to the likelihood that Geller is a trickster and a showman, as Randi and his ilk would have the world believe, Geller's is a peculiar case and other claims are made that he is also one *who happens to have some genuine psychic ability*, if investigators like Andrija Puharich, Harold Puthoff, Guy Lyon Playfair, and others are to be believed. Equally, Hasted (1981), author of *The Metal-Benders*, is not so dismissive of psychokinetic metal bending for good reason; many findings are still unexplained. These and other omissions may give newcomers to parapsychology the wrong take-home message. Similarly, although Watt's presentation of mediumship cases like Indridi Indridason (p. 59) are intriguing, the related topics of possession and xenoglossy receive little or no evaluation, and there are even more compelling and relevant cases not covered in *Parapsychology* (e.g., Iris Farczády—see Barrington, Mulacz, & Rivas, 2005) that are, as yet, beyond explanation in normal terms. Without a fuller treatment of cases like this that includes discussions about their overwhelming complexity, and to what degree science is baffled by them, those readers new to the field cannot arrive at an informed opinion as to just how challenging the psi hypothesis really is.

Watt's coverage of remote viewing (RV) is well-rounded, but the claim of "subjective validation" (p. 51) leaves a lot unexplained. And one wonders why major players, Harold Puthoff, Russell Targ, and Stephan Schwartz, do not rate a mention for their pioneering work. The chapters on out-of-body experiences (OBEs) and near-death experiences (NDEs) are illuminating. Watt's presentation of the current mainstream theories that normal (e.g., neuro-psychological) factors explain OBEs and NDEs undermines the parapsychological claims that these rare phenomena indicate survival.

Watt raises issues that many may not have expected. The coverage of questionable research practices (QRPs) came as a welcome surprise. QRPs have only been of relatively recent interest to parapsychologists to the degree that formal testing of hypothetical scenarios is now underway. It remains to be seen how far-reaching QRP investigation will be, and what it will uncover. Another issue Watt mentions is the option for researchers to pre-register their planned psi studies at various institutions including the KPU, which will be the way of the future, and none too soon.

I regard Section 3 as the best part of the book, and newcomers wishing to find out what really goes on in parapsychological laboratories can go straight there without missing a beat. For parapsychology books these days, sections or chapters on meta-analyses are mandatory—even in a beginner's guide—and *Parapsychology* measures up. I note that Watt refers to a "considerable debate" over interpretations of the findings in the various ganzfeld meta-analyses (p. 154). Ganzfeld was a hot topic up until about 2002, but the intensity of the debate has eased up somewhat; only after a lengthy decade-long hiatus was the debate resurrected (in *Psychological Bulletin* as it happens) by Jeffrey Rouder and his colleagues

(Rouder, Morey, & Province, 2013) in the form of a critique over how Storm, Tressoldi, and Di Risio (2010) prepared and analyzed their data. Unfortunately, Watt does not mention that the same issue of *Psychological Bulletin* that featured Rouder et al. also presented a study by Storm, Tressoldi, and Utts (2013), showing that Rouder et al. had erred in their analysis, to the degree that the ganzfeld effects were still significant in a corrected re-analysis.[13] The debate appears to have tapered off from 2013 to 2016 (the publication year of Watt's *Parapsychology*), although a few researchers in that time have unearthed some useful findings, and raised some new issues that contribute to the debate (e.g., Baptista, Derakhshani, & Tressoldi, 2015; Williams, 2014).

Generally speaking, criticisms can be made concerning omissions in all chapters, although one does realize that authors have to make harsh decisions when space is limited. Nevertheless, and as I already hinted, newcomers could sometimes be misled by Watt's conservative evaluations which get a little discouraging at times, even though Watt does say there is "sufficient evidence to justify further work..." (p. 2). It may be necessary to apply a noncommittal approach to all types of psi phenomena—not just those types that are dimly formed or poorly understood (or empirically illusive and/or difficult to investigate)—but many parapsychologists who are convinced of a handful of heavily-investigated (even time-honored) psi faculties, and are confident in the methodologies that tested them, would argue that we have moved beyond the proof stage (i.e., the need for further evidence), and should be investigating the underlying processes, or even working on applications. Watt barely touches on these issues, earlier claiming there is "not enough [evidence] to conclude that paranormal abilities exist" (p. 2). As a result, the closing chapter hails parapsychology for its rigorous approach, and its contribution to scientific methodology, with nothing more optimistic than that the "ramifications would be immense" if "parapsychologists can convince the scientific community of the reality of paranormal phenomena" (p. 185). For that and other reasons, *Parapsychology* is an exposé that is both *pragmatic* and *austere* in its purview. But gains can be expected if Watt's message gets through: for one thing, *would-be* parapsychologists may have to rein in their expectations (at least temporarily) about how they want the world to be. And it does not stop there: many who are *not so new* to the game may find themselves revising a few of their long-held conceptions about psi, as did this reviewer. In all truth, psi is shaping up to be over-rated with far too much claimed on its behalf. Having said that, there may come a day when we will have a distilled psi that is unassailable.

Parapsychology is rounded out with a section "How to test for ESP and PK" in the Appendix for first-time experimenters. The sections that follow—"Further reading," along with a Glossary (albeit scanty; there's no entry on Remote Viewing!) and a just-adequate Index—are, of course, quite appropriate; indeed, one would expect it of such a book.

In closing, Watt's *Parapsychology*, humbly presented as a beginner's guide, should not be underestimated. It deserves to find its way into the hands of not only new-comers, but also specialists and long-time researchers of the paranormal because the book is rich in content, and satisfactorily representative of the field; not to forget well-structured, thereby making the desired content easy to find. More importantly, the subject matter itself is expressed in a conservative, matter-of-fact, "the-buck-stops-here'" manner that gets straight to the point. Most parapsychological material, especially the dense theories

13 One notes the same omission in the treatment of the ganzfeld meta-analysis by Wikipedia. They give the last word to Rouder et al. (2013) and fail to mention the Storm et al. (2013) study (see https://en.wikipedia.org/wiki/Parapsychology).

and models presented in technical journals (as well as the ground-breaking ideas, and often convoluted and/or inconclusive findings), would leave the majority of novices reeling. Watt's *Parapsychology* helpfully clears up all this kind of clutter and more, and in a cautionary way—it bridges the gap between the often-times indecipherable and the more mundane aspects of a field so often undermined and misunderstood. Indeed, it is a book for those willing to learn.

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Historians of Science Explore Psychical Research

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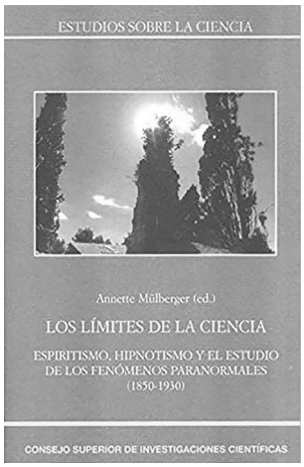
A Review of
Los Límites de la Ciencia: Espiritismo, Hipnotismo y el Estudio de los Fenómenos Paranormales (1850-1930)
[The Limits of Science: Spiritism, Hypnotism, and the Study of Paranormal Phenomena],
edited by Annette Mülberger.

Madrid, Spain: Consejo Superior de Investigaciones Científicas, 2016. Pp. 346. (Hardcover) ISBN 978-84-00-10053-7



In recent years there has been a resurgence of interest in the history of psychical research. Some of this work has not only documented the interaction of psychical research with other fields, but has done much to argue that attention to psychic phenomena assisted the development of the concept of the unconscious mind. Examples include Adam Crabtree's *From Mesmer to Freud* (1993) *and* Régine Plas's *Naissance d'une Science Humaine* (2000). The recent historiography on the topic, some of which touches on aspects other than the unconscious, includes papers published in 2012 in an issue of *History of the Human Sciences* entitled "Relations Between Psychical Research and Academic Psychology in Europe, the USA and Japan" (Young, 2012), in a special section of papers published in *Studies in History and Philosophy of the Biological and Biomedical Sciences* in 2014 entitled "Psychical Research in the History of Science and Medicine" (Sommers, 2014), and in various contributions to the "Classic Text" section of *History of Psychiatry* (e.g., Alvarado & Biondi, 2017). Furthermore, others have explored aspects of the rejection of psychical research by psychologists (e.g., Sommers, 2012), work that reminds us of the negative views of scientists about psychical research, as well as of the strategies that assist some groups in shaping both the content and identity of scientific fields via various forms of rejection, something generally known as boundary work.

In addition, some of this new work has expanded our scope beyond the usual Anglo-American

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contexts. We are seeing more historical research about developments in such varied countries as Italy (Alvarado & Biondi, 2017), France (Plas, 2000), Japan (Takasuna, 2012) and Germany (Wolfram, 2009).

The collection of articles reviewed here, published in Madrid, follows the above mentioned trends to some extent. That the topic of this specialized work was considered important in Spain is suggested by the fact that its publisher is a prominent institution in Spain, the Consejo Superior de Investigaciones Científicas (Superior Council of Scientific Research; referred to in English as the National Research Council). This is the largest Spanish government institution dedicated to the development and promotion of scientific and technological developments.

Los Límites de la Ciencia: Espiritismo, Hipnotismo y el Estudio de los Fenómenos Paranormales (1850–1930) [The Limits of Science: Spiritism, Hypnotism, and the Study of Paranormal Phenomena (1850–1930)] is edited by Annette Mülberger, a historian of psychology at the Universitat Autònoma de Barcelona, who, in addition to psychical research, has conducted work on the history of mental testing in Spain. She states that the purpose of this work, published in Spanish, and with much information about developments in Spain, is to obtain a "greater knowledge and a better understanding of the intentions and beliefs defended in a different time period as 'scientific' and 'rational' by some groups of people" (p. 17). The point here is not to approve nor condemn psychic studies and beliefs, but to attempt to understand their historical context, and the motivations of the individuals involved.

Summarizing her approach, and that of those mentioned in the first paragraph of this review, Mülberger states that new perspectives in the history of science have allowed for more flexible views about what is scientific, and what is valid knowledge. The work discussed, she states, shows various conceptual frameworks and relationship to social and political issues.

After an introduction by the editor, the book is divided in three sections. The first one, "From Spiritism to Parapsychology," has three chapters written by Mülberger about the beginnings of Spiritism, its arrival to Spain, and research into psychic phenomena. The chapters present a good introduction to the topic, including the obligatory references to the Fox Sisters, and other mediums such as D.D. Home, not to mention the contributions of individuals such as Allan Kardec. Interestingly, much attention is given to Kardec, who was very influential in Spain. Like other writers in different contexts, Mülberger sees Spiritism as providing empirical facts that take the place of faith about spiritual truths, what she refers to as the "democratization of the epistemological power conferred to each communication with the beyond " (p. 53). In addition, she writes that Kardec "liberated Christians from the yoke of hell, enlarging at the same time the vital experience of people beyond the limits of organic life on planet Earth (pp. 52–53).

In the chapter about Spain we are introduced to several figures that are little known in the English speaking world. This includes philosopher Manuel Sanz y Benito, Viscount Antonio de Torres Solanot y Casas, and writer Amalia Domingo Soler, who did much to popularize, defend and organize Spiritism in Spain. An interesting example was Domingo Soler's *El Espiritismo Refutando los Errores del Catolicismo Romano* (1880), mainly a defense from religious attacks. This writer stated that the phenomena produced by spirits followed natural laws, and that many critiques showed ignorance about the topic. She emphasized that the acceptance of the manifestations of spirits did not imply that the movement

considered everything described as marvelous, or tried to confirm it, nor "that it is the defender of all dreamers, of all utopias, of all systematic eccentricities, of all the romances and miraculous legends. It is necessary to know it little to consider it so" (Domingo Soler, 1880, p. 12).

The third chapter about research includes table turning, William Crookes, some of the early work of members of the Society for Psychical Research, the ideas of Frederic W.H. Myers and Pierre Janet about mediumship, studies of medium Eusapia Palladino, work conducted in France by Charles Richet and others, and Albert von Schrenck-Notzing's materialization research. The chapter is a good summary of a great amount of research and theory. I assume that the reason that some things are not mentioned is to keep the chapter short. For example, in the section about Myers and Janet, how Janet was influenced by Myers was not mentioned. In his book *L'Automatisme Psychologique,* Janet (1889) discussed dissociation and argued that this mental process was important in mediumship. He cited Myers repeatedly to support his points with cases and specific manifestation drawn from Myers's articles (Janet, 1889, pp. 78, 122, 393, 394, 402, 405). Janet actually wrote that Myers was "the author who has contributed the most to develop the scientific study of spiritistic phenomena" (Janet, 1889, p. 403).

This episode is important because it not only illustrates the influence of psychical research on psychology, but also presents an example of selective influence. In this case Janet, as was the case as well with Alfred Binet (1892), admitted the value of some of Myers's observations (summarized here, Myers, 1903), but not his beliefs in telepathy or the supernormal in general. So while some of Myers's observations regarding the subliminal self were accepted to support the existence of unconscious processes, they were stripped of the full context of Myers's ideas in which supernormal meant "a faculty or phenomenon which goes beyond the level of ordinary experience, in the direction of evolution, or as pertaining to a transcendental world" (Myers, 1903, Vol. 1, p. xxii).

The second section of the book is "The Practice of Mediumship, Hypnosis, and Clairvoyance in Spain." Its first chapter, " 'To Chase Away Spirits:' The Scientific Study of *Mediumship,*" is by Andrea Graus. She argues that during the late Nineteenth-Century various scientists appropriated mediumship by separating it from spirit agency. Mediums were considered the "producing agent" of phenomena, something that led to a new view of the medium as an experimental subject (although it should be kept in mind that living agency was discussed as well before the period emphasized by Graus; see Alvarado, Nahm, & Sommer, 2012). This interest involved the "hope of finding extraordinary latent faculties in man" (p. 138), and the hope that mediumship would serve as a lesson for science in general, and for psychology in particular. Graus briefly mentions the interest in this perspective in Spain among such physicians as Víctor Melcior i Farré, Manuel Otero Acevedo (who eventually accepted the possibility of discarnate agency), and astronomer Josep Comas i Solà.

As I have argued before (Alvarado, 2014), discussions of the powers of the living medium were frequent in international psychical research circles. The writings of Théodore Flournoy, Charles Richet, Enrico Morselli, Frank Podmore, and Traugott Konstantin Oesterreich, among many others, are evidence of this. But there were others who defended discarnate agency (e.g., Oliver J. Lodge), and who changed their position from living to discarnate agency (e.g., Richard Hodgson). All of this work, as Graus said about Spain, indicated to most of the international community of psychical researchers that mediumship had to be accounted for by more than fraud, dissociation and other conventional explanations.

In the next chapter the focus changes in a paper by Ángel González de Pablo about hypnosis in Spain, "Consolidate, Colonize, Exclude: Strategies of Legitimation of Medical Hypnosis." The point of the article is to discuss the boundary work to obtain "epistemic identity for a branch of science (here, hypnosis) and epistemic authority over her by the specialists (here, physicians hypnotists), that become in this way capable of impeding anyone else to intrude in their field" (p. 164). The devices of social control discussed by the author are consolidation (integration into medical practice in terms of expertise in theory, techniques, and therapeutic applications), colonization (non-medical applications of hypnosis, such as those in judicial and educational contexts), and exclusion (or the expulsion of some topics).

The strategy of expulsion, or rejection, was mainly used against what some perceived to be illegitimate applications of hypnosis, including those related to Spiritism and metapsychics. "Its purpose," writes González de Pablo, "consisted in 'cleaning up' hypnosis, that is, to purge it of any type of 'impurity' that casted a shadow over its scientific validity" (p. 183) so as to keep out what was perceived to be undesirable from medicine and from other areas of knowledge.

In fact, psychic phenomena were frequently discussed in the Nineteenth-Century literature of hypnosis, the period emphasized by the author of this chapter. Some individuals involved during this period in the use of hypnosis to produce psychic phenomena were Émile Boirac, Albert de Rochas, Paul Joire, Ambroise August Liébeault, Jules Bernard Luys, Julian Ochorowicz, and Charles Richet, not to mention the work of Pierre Janet and others regarding the telepathic induction of trance (for an overview, see Crabtree, 1993). Psychic phenomena were included in various hypnosis textbooks, including some authored by skeptical authors. An example of the latter was George Gilles de la Tourette (1889), who in *L'Hypnotisme et les États Analogues au Point de Vue Médico-Legal*, stated he did not believe in the transmission of thought because, to date, there had been no controlled demonstrations of the phenomenon. González de Pablo discusses Spanish physicians, some of who denied, while others defended, the reality of thought-transference in hypnosis. One case in point illustrating the latter was Abdón Sánchez Herrero.

The last chapter in this section, "The Practice of Metapsychics: A Marquis Investigating Clairvoyance," is authored by Mónica Balltondre. This is a study of clairvoyance experiments conducted by the Marquis of Santa Cara (Joaquín José Javier Argamasilla de La Cerda y Bayona). In his book *Un Tanteo en el Misterio,* Santa Cara (n.d.) reported clairvoyance experiments that he thought enlarged psychology by proving that knowledge could be acquired by human beings beyond their senses. He wrote that metapsychics had shown the existence of levels of thought which indicated the "antecedence of a dynamic spiritual principle as a permanent root of the Individual and an unchanging axis of the evolutionary process of the being" (Santa Cara, n.d., p. 270). Balltondre's chapter is a case study of psychic investigations drawing on the concepts of the unconscious mind, physical radiation, and spirituality. As stated by Balltondre:

> Santa Cara thought that the final nature both of beings and physical reality was a spiritual one . . . [In his view] the physics studies of his time showed that the world was spiritual. He construed that the conception of matter was becoming spiritualized thanks to the new scientific theories, which explained it by means of energy and radioactivity (pp. 223–224).

The third part of the book, "Foresight and Spiritism in Europe and Russia," expands on the previous emphasis on the Spanish context. It includes two chapters translated from French and English. The first, authored by Nicole Edelman, is "Foresight in Occidental Europe (1900–1939)," and explores psychic sensitivity in relation to various topics such as psychoanalysis, astrology, and the media. The second one, "Russian Spiritism: Science and Public Knowledge," is by Michel D. Gordin. He discusses controversy, and the participation of scientific and non-scientific voices in a commission formed in Russia to study mediumship, which involved the chemist Dmitri Ivanovich Mendeléyev.

The book ends with general reflections by Mülberger. In addition, it has two appendices, one with poetry by Amalia Domingo Soler, and another with a glossary of, mainly, psychic terms.

On occasion I felt the book needed more information about specific topics. For example, it is stated that physician Otero Acevedo was not a spiritist, but that he believed that the phenomena presented proof of survival of death (p. 140). This, I think, deserved more discussion. Similarly, a brief reference to psychic concepts of force (pp. 142, 207–208) could have received more discussion, maybe in the chapters of the first section of the book, to establish the rich conceptual tradition and long history of attempts to explain telepathy, as well as mediumship, in terms of human radiations of different sorts. Similarly, Myers's ideas of the subliminal self are mentioned throughout the book (pp. 108, 151, 205), but I feel that, considering their influence, they could have been discussed in more detail.

Overall, the essays presented here are a welcome addition to the modern historiography of the topics in question. It is particularly interesting to see how these studies have developed in Spain, and how there are so many similarities with developments from other countries in such varied things as the debates to banish the topic from science, the various theoretical emphases of psychical researchers in terms of the issue of discarnate agency, and the use of ideas from psychology (the unconscious) and physics (the ether, radiations of various sorts). One hopes that this volume, and other recent work (e.g., Wolffram, 2009), will help to bring an expansion of studies focusing on other countries and cultures, such as those in Asia and in Latin America.

It is also of interest to see the attitude of the historians writing in this anthology, who treat students of psychic phenomena without dismissal, as serious and dedicated explorers. This is evident in one of Mülberger's final comments. In her view the work of psychical researchers cannot be understood without considering

> the intense enthusiasm they felt for the scientific, psychological and moral implications implied in the fact of discovering unknown intellectual capacities, occult physical forces or subliminal mental activity. If the physical sciences and technology could accomplish great achievements . . . why was it not possible to discover a new psychic dimension or unknown mental capacities? (p. 292).

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A Fine Book on Reincarnation Studies

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A review of
I Saw a Light and Came Here: Children's Experiences of Reincarnation,
by Erlendur Haraldsson and James G. Matlock.

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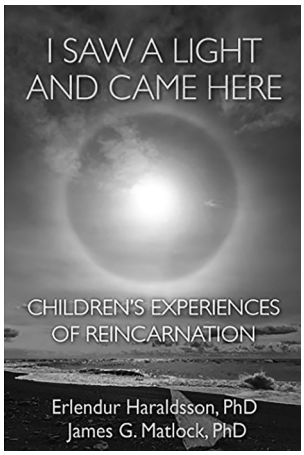

Erlendur Haraldsson and James Matlock have produced a fascinating book called *I Saw a Light and Came Here: Children's Experiences of Reincarnation*. In a wide array of chapters (19 chapters by Haraldsson, followed by 12 chapters by Matlock) they present a very readable account of their depth of understanding of the nature, significance, and intricacies of reincarnation cases around the globe based on their poignant research on the topic. Their collaboration is excellent. Haraldsson and Matlock first co-published in 1988 an article on a poltergeist case; both are very knowledgeable about all aspects of psychical research.

Haraldsson presents the depth of rebirth studies he has made in Sri Lanka, Lebanon, and his native Iceland over his lengthy career, including his ground-breaking studies of the personality characteristics of children who remember previous lives. He reminds us that he came to know Stevenson, the pioneer of careful recordings of reincarnation cases, in 1969 when Haraldsson did an internship in clinical psychology at the University of Virginia. Haraldsson was asked by Stevenson to study an Icelandic rebirth case in 1973, which led Haraldsson to conduct a national survey of reincarnation in Iceland in 1974, and again in 2006. Haraldsson was one of three people psychiatrist Ian Stevenson invited to do a replication of his reincarnation studies (Haraldsson, 1991). He reminds us that he has documented over a hundred cases since then. Matlock, a generation younger than Haraldsson, has been deeply engaged in reincarnation studies for over 35 years. He augments his interesting insights and examination of published cases with cases he has learned about through his online Facebook course about reincarnation.

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The title of the book, *I Saw a Light and Came Here,* refers to the case of Purnima, a Sri Lankan girl who told her parents that she saw a light when disembodied and came to them. Haraldsson enhances his original 1991 report of the case with the addition of photos of Purnima as a child with the birthmarks she bore from the previous person being killed in a traffic accident. Although it is a cross-gender case, Purnima did not act in a masculine manner, as Stevenson (1977) described in a Burmese case. Haraldsson comments on the personality characteristics she exhibited, something he describes further in other chapters from his later studies of these aspects of the cases.

Haraldsson compares the array of rebirth cases with Near-Death Experiences that also involve seeing a light; with death-bed visions, a topic Osis and Haraldsson (1977, 2012) studied thoroughly; with Spontaneous Contact with the Departed; Contact through Mediums; Memories Between Death and Rebirth; and adds Memories of Birth and Life in the Womb, using Ohkado's work (2015). Thus he places the rebirth narratives in the context of other sources of knowledge about life after death, showing how they reinforce each other. Matlock also comments on examples and aspects of seeing a light in his section of the book.

Haraldsson presents what he calls a "truly exceptional case that is perhaps better verified than any other I have investigated" (p. 13), originally published by Haraldsson and Abu-Izzeddin, (2002). But here the telling of the case is more engaging, like Shroder's 1999 book *Old Souls* that presented Ian Stevenson's study of cases for the general public. Haraldsson enjoys presenting not only very strong cases but, in other chapters, cases with varying degrees of strength to show their variability, including three "run of the mill" randomly selected cases from the Druze sample in Lebanon that Haraldsson (2003) used to assess the psychological characteristics of children who remember a previous life. I was not previously aware that Haraldsson had used unsolved cases in studying the psychological profile of children said to remember a previous life, although Haraldsson notes that they were cases where the child had deep emotional experiences, memories of emotions in play, and physiological reactions. He also gives examples of unsolved cases, such as three Icelandic men of long ago who had strong images of themselves in a different life in apparently another country and how they died or were killed, thus presenting multifaceted aspects of unsolvable cases as well.

Haraldsson portrays in a new way his three studies of the psychological profile of children who remember a previous life, two from Sri Lanka and one from Lebanon, in a chapter called "Brighter and More Mature?" He notes that Tucker and Nidiffer's 2014 study of 15 US rebirth cases confirms what he found in Sri Lanka, which interestingly, he points out, was not confirmed by his study in Lebanon. Haraldsson's chapter called "Scars from a Distant Past?" is not about birthmarks, but about the behavioral traits of children who recalled a past life in war torn Sri Lanka and among the Druze in war-torn Lebanon, compared to a control sample of children in these cultures who did not remember a previous life. Haraldsson found that children who died a violent death in the previous life they remembered were more likely to have Post-Traumatic Stress Disorder type-symptoms than those who had no such memories. Haraldsson also looks at how long past-life memories continue based on his studies, for although children typically forget after they are 6, his studies show when and how memories are kept alive and/or fade.

In James Matlock's portion of the book, he makes use of cases presented by Stevenson (1974, 1980, 1997), Pasricha (2008), Andrade (2010) and several cases he himself learned about through his Reincarnation Facebook course. He presents four cases from Tribal Societies, two from India, two from Brazil, and two from North America. One of those North American cases he learned about from a woman who took his online reincarnation course. Matlock presents the case with the lavish detail the mother supplied, recounting how her young high-functioning autistic boy was perceived as her late father who had repeatedly sexually abused her when she was a teenager. Yet when the boy was 30 months old he said, "I'm sorry, I'm sorry, I'm sorry," when his mother was undergoing treatment from her partner, to heal from the abuse from her father. Some may have doubts about the validity of this and the second, unsolved, case from Matlock's Facebook course, with aspects of passive xenoglossy. I think he includes them to extend our understanding of how they play into children's lives and their parents' experiences of them, rather than from Stevenson's perspective of trying to present strong cases to convince psychologists and psychiatrists who are skeptical about the existence of reincarnation.

Matlock discusses both recitative xenoglossy, responsive xenoglossy and passive xenoglossy, as well as the current evidence of solved international cases, including the motives for choosing such a rebirth. He also presents ten solved suicide cases that show that the person who took his/her own life comes back very quickly, in less than 9 months in 6 of the cases; indeed the birth was 2 days, 4 weeks, 1 or 2 months, 5 weeks, and 8 weeks after the previous person died in those 6 cases, showing that suicide bring the person back so quickly that they are bumping out the baby in utero. In three of the suicide cases the come-back had a birthmark related to the cause of death (shooting, hanging himself, and setting herself on fire); and in one case a cleft chin like the previous person who was not genetically related to the reincarnate. Matlock also reports the difference expected death (as in suicide and war time) makes compared to unexpected violent death in rebirth cases.

In "Two Cases from India" Matlock interprets the apparent 3 month period between the death of Suresh Verme and his rebirth as Toran Singh, known at Titu, (originally reported in Mills, 1989) as related to this kind of in utero bumping-out replacement. Matlock notes in Titu's case that his mother had difficulty with her pregnancy at the time Suresh was killed, suggesting that was when Suresh replaced the baby she was previously carrying, implanting the birthmarks of his fatal bullet entry and exit wounds on the fetus.

I recommend *I Saw a Light and Came Here: Children's Experiences of Reincarnation,* as it presents a comprehensive review of what rebirth cases can teach us about the impact of past lives on successive lives, from the perspective two scholars who know and largely address the methodological and conceptual critiques of such studies. My only criticism is that the copy-editing is imperfect and fails to include eight references cited.

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