

## **The Scientific Method and Psi Research**

**Patricia Downes, Ed.D.; Shelley Higgins, M.A.; Frank Hutchinson, Ed.D.; Allen Jackson, Ph.D.; Sara Petty, Ph.D.; Othel Rolle, Ph.D.; and Ranjie Singh, Ph.D.**

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### **Abstract**

Many studies have provided strong support for the existence of paranormal and psychic phenomena (“Psi”). For multiple reasons, however, Psi does not readily lend itself to scientific investigation. In contrast with the consensus-based scientific method that is grounded in repeatable observations and experiments, Psi and consciousness studies typically involve personal experiences (e.g., intuitive hunches, precognition, clairvoyance, and absent healing) that are true and meaningful only for the individual test subject. Furthermore, much scientific research is based on objective observations having their origins in, and ultimately limited by, the five senses as extended by instrumentation. Such observations and instrumentation may be inadequate to capture and characterize Psi phenomena. As if to compound these challenges, the notion of the detached observer, a key underpinning of the scientific method, can no longer be assumed at the level of subtle energies believed to be associated with Psi phenomena. For all of these reasons and others, the replication of results demanded by the scientific method is often challenging to obtain. A new framework for scientific investigation of Psi is needed, and the journey to this framework has not been without its own challenges.

As a much-needed stopgap, this paper provides guidelines for conducting Psi studies. The guidelines may prove useful both to researchers and to editors of journals on Psi, subtle energy, mind, and consciousness. The guidelines serve two main purposes: a) to identify cross-disciplinary methods for researchers to use, and b) to demonstrate results that might be considered scientifically sound in other fields of research but that might be met with overt skepticism in Psi research. As these guidelines are intended only as a starting point, reader comments are invited and encouraged. Please send comments to [editor@rosicrucian.org](mailto:editor@rosicrucian.org).

### **La méthode scientifique et la recherche de « Phénomènes Psi », par :**

**Patricia Downes, Ed.D.; Shelley Higgins, M.A.; Frank Hutchinson, Ed.D.; Allen Jackson, Ph.D.; Sarah Petty, Ph.D.; Othel Rolle, Ph.D.; et Ranjie Singh, Ph.D.**

### **Résumé**

De nombreuses études ont fourni un appui solide en vue de l’existence de phénomènes paranormaux et psychiques (les « Phénomènes Psi »). Pour de multiples raisons, cependant, les «Psi » ne se prêtent pas facilement à la recherche scientifique. Contrairement à la méthode scientifique, fondée sur le consensus et qui se base sur des observations et des expériences répliquables, les études portant sur les Phénomènes Psi et la conscience consistent généralement en des expériences personnelles (p. ex., des intuitions, des pressentiments, la clairvoyance et la

guérison à distance), véridiques et significatives uniquement pour la personne objet d'un test individuel. En outre, beaucoup de recherches scientifiques sont basées sur des observations objectives ayant leurs origines dans - et en fin de compte limitées par - les cinq sens assistés par de l'instrumentation. De telles observations et ces instruments peuvent être insuffisants pour capturer et caractériser les « Phénomènes Psi ». De plus, pour compliquer ces défis, la notion de l'observateur détaché émotionnellement, fondement essentiel de la méthode scientifique, n'est plus valable quand on manie les énergies subtiles habituellement associées aux « Phénomènes Psi ». Pour toutes ces raisons, la réplication des résultats que requiert la méthode scientifique est souvent difficile à obtenir. Un nouveau cadre pour la recherche scientifique des « Phénomènes Psi » s'avère donc nécessaire, et le voyage à la recherche de celui-ci ne nous a pas épargné ses propres défis.

Telle une indispensable « solution de dépannage », la recherche que nous vous proposons fournit des lignes directrices pour la réalisation d'études Psi. Celles-ci peuvent s'avérer utiles pour les chercheurs et les éditeurs de revues concernant les « Phénomènes Psi », l'énergie subtile, le mental et la conscience. Elles visent deux objectifs principaux : a) identifier les méthodes interdisciplinaires pouvant être utilisées par les chercheurs, et b) fournir la preuve de résultats qui pourraient être considérés scientifiquement valables dans d'autres domaines de la recherche mais pouvant être accueillis avec le plus grand scepticisme dans la recherche « Psi ». Du moment que ces lignes directrices servent uniquement comme point de départ, tous commentaires de la part des lecteurs sont requis et encouragés. Envoyez-les à : [editor@rosicrucian.org](mailto:editor@rosicrucian.org).

## **El Método Científico y la Investigación Psi**

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### **Resumen**

Muchos estudios han proporcionado un fuerte apoyo a la existencia de fenómenos paranormales y psíquica ("PSI"). Sin embargo; varias razones, Psi no se presta fácilmente a la investigación científica. En contraste con el método científico basado en el consenso que se basa en observaciones repetibles y experimentos, la ISP y la conciencia estudios suelen incluir experiencias personales (por ejemplo, corazonadas intuitivas, precognición, clarividencia y curación a distancia) que son verdaderos y significativos sólo para la prueba individual del tema. Por otra parte, tanto la investigación científica se basa en observaciones objetivas que tienen su origen en, y en última instancia limitada por, los cinco sentidos que se prorrogó mediante la instrumentación. Estas observaciones e instrumentación pueden ser inadecuados para capturar y caracterizar fenómenos psi. Como para agravar estos desafíos, la noción del observador individual desconectado, un puntal clave del método científico, ya no puede ser asumido a nivel de las energías sutiles que se cree están asociados con los fenómenos psicológicos. Por todas estas razones y otras, la replicación de los resultados exigidos por el método científico es a menudo un reto de obtener. Se necesita un nuevo marco para la investigación científica de la PSI, y el viaje a este marco no ha estado exento de sus propios desafíos.

Como medida de emergencia muy necesaria, el presente documento contiene las directrices para la realización de estudios Psi. Las directrices pueden resultar útiles para investigadores y editores de revistas en Psi, la energía sutil, la mente y la conciencia. Las directrices tienen dos objetivos principales: a) identificar métodos interdisciplinarios de investigadores a utilizar, y b) para demostrar los resultados que de otra manera podrían ser consideradas científicamente válidos en otros campos de la investigación, sino que también puede ser recibida con escepticismo manifiesto en la investigación Psi. A medida que estas directrices están destinadas únicamente como punto de partida, los comentarios de los lectores son bienvenidos. Por favor, envíe sus comentarios a [editor@rosicrucian.org](mailto:editor@rosicrucian.org).

## **O Método Científico e a Pesquisa Psi**

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### **Resumo**

Muitos estudos têm proporcionado uma grande sustentação para a existência de fenômenos paranormais e psíquicos (“Psi”). No entanto, por várias razões, Psi não se oferece facilmente à investigação científica. Ao contrário do método científico baseado no consenso, que é fundamentado em observações e experimentos repetíveis, estudos da consciência e Psi geralmente envolvem experiências pessoais (como pressentimentos intuitivos, precognição, clarividência e cura à distância), que são verdadeiras e significativas apenas para o sujeito do teste individual. Além disso, muitas pesquisas científicas se baseiam em observações objetivas que têm suas origens nos cinco sentidos, como estendidos pela instrumentação, e são em última análise limitadas por eles. Tais observações e instrumentação podem ser inadequadas para capturar e caracterizar os fenômenos Psi. Como se para combinar esses desafios, a noção de observador imparcial, um suporte-chave do método científico, não pode mais ser considerada no nível de energias sutis que acreditava-se estarem associadas aos fenômenos Psi. Por todas essas e outras razões, é muitas vezes desafiador conseguir a reprodução dos resultados exigidos pelo método científico. É necessária uma nova abordagem para a investigação científica do Psi, e o caminho para essa abordagem não tem sido trilhado sem os seus próprios desafios.

Como uma parada muito necessária, este artigo proporciona orientações para a condução dos estudos de Psi. Essas orientações podem se provar úteis tanto para pesquisadores quanto para editores de periódicos sobre Psi, energias sutis, mente e consciência. As orientações servem para dois propósitos principais: a) identificar métodos interdisciplinares para uso dos pesquisadores, e b) demonstrar os resultados que, de outra forma, podem ser considerados cientificamente consistentes com outras áreas de pesquisa, mas que podem encontrar um ceticismo evidente na pesquisa Psi. Uma vez que essas orientações têm apenas a intenção de servir como ponto de partida, os comentários dos leitores são bem-vindos e estimulados. Por favor, enviem seus comentários para [editor@rosicrucian.org](mailto:editor@rosicrucian.org).

## **Die wissenschaftliche Verfahrensweise und die Psi Forschung**

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## **Zusammenfassung**

Bereits viele Studien haben die Existenz der paranormalen und psychischen Phänomenen („Psi“) hervorgehoben. Jedoch scheinen wissenschaftliche Untersuchungen für „Psi“ nicht geeignet zu sein, hierzu gibt es viele Gründe. Die Grundlagen der konsensbasierten wissenschaftlichen Methode sind die wiederholte Beobachtungen und die Experimenten. Im Gegensatz dazu dokumentieren Psy- und Bewusstseinsstudien kennzeichnend die persönlichen Erfahrungen der Testpersonen (z.B. Intuitionen, Präkognition, Hellsehen und Fernheilung); diese sind nur für den einzelnen Proband wahr und bedeutungsvoll. Darüber hinaus beruhen viele wissenschaftlichen Studien auf objektiven Beobachtungen, die letztendlich auf die begrenzten fünf Sinnen und ihre Erweiterung mittels Geräte und Instrumente zurückgreifen. Solche Beobachtungen und Hilfsmittel dürften für die Erfassung und für die Beschreibung der Psi Phänomene unzureichend sein. Der Begriff des getrennten Beobachters ist eine Hauptvoraussetzung der wissenschaftlichen Methode, dennoch kann er nicht länger auf der Ebene der subtilen Energien, die man gerne mit den Psi Phänomenen assoziiert, übernommen werden und bildet daher eine zusätzliche Herausforderung. Diese und auch viele anderen Gründe erschweren es, ein Ergebnisbild zu erstellen, das der wissenschaftlichen Vorgehensweise genügen soll. Daher brauchen wissenschaftliche Psi Untersuchungen neue Strukturen, dies ist aber mit großen Herausforderungen verbunden.

Diese Abhandlung bietet einen vorläufigen dringend gebrauchten Leitfaden zur Durchführung der Psi Studien. Dieser Leitfaden könnte sowohl für die Forscher als für die Herausgeber von Zeitschriften zum Thema Psi, subtile Energie, Geist und Bewusstsein nützlich sein. Der Zweck dieser Leitfaden ist zweifach: a) er zeichnet fachübergreifende Methoden für die Forscher an, und b) er zeigt Resultate, die sonst in anderen Forschungsgebiete als wissenschaftlich begründet gelten aber in der Psi Forschung lediglich mit offener Skepsis begegnet werden. Dieser Leitfaden dient nur als Ausgangspunkt, daher möchten wir die Leserinnen und Leser ermutigen und herzlich einladen, uns ihre Anmerkungen mitzuteilen. Gerne Ihre Anmerkungen an [editor@rosicrucian.org](mailto:editor@rosicrucian.org).

## **Introduction**

Parapsychology (Broderick and Goertzel 2015, 4) is the scientific study of paranormal and psychic phenomena such as telepathy, psychokinesis, precognition, out of body experience (OBE), near-death experiences, clairvoyance, remote viewing, absent healing, other intuitive processes, and metaphysics. These terms are defined in Appendix A. The study of Psi involves the traditional sciences. Psi researchers conduct experiments using stringent criteria, controlling for chance, and using statistical analyses (Cardena, Palmer, and Marcusson-Clavertz 2015, 3-7). In many cases, the results provide strong support for the validity and reliability of Psi (Allgire 2013, 3-11), and for several decades the results of Psi studies have presented statistics showing results well beyond what random chance would predict. (Radin 2006, 208-239; Radin et. al. 2012, 157). For example, even Richard Wiseman, a foremost critic of parapsychology, has

stated (Cardeña, Palmer, and Marcusson-Clavertz 2015, 1) “by the standards of any other area of science ... remote viewing is proven.”

However, a primary challenge in measuring the efficacy of Psi has been that the nature of Psi does not lend itself well to material testing. There are multiple reasons for this. First, Psi and consciousness studies typically involve personal experiences (e.g., intuitive hunches) that are true and meaningful only for an individual test subject – “non-consensus reality,” as Mindell (Mindell 2000, 25) refers to it. In contrast, the scientific method is consensus-based and grounded in repeatable observations and experiments, even in consensus-based fundamental axioms and postulates that are beyond deductive proof (Stein 2012, 55).

Additionally, much scientific research is based on objective observations originating in, and ultimately limited by, the five senses (often as extended by instrumentation). Thus, these observations may be inadequate to capture Psi and other phenomena that go beyond the five senses. Even spacetime itself, which is sometimes experienced subjectively (e.g., in dreams and in altered states of awareness), is seemingly beyond objective knowledge, behaving as it does only at the scale of human existence and observation.

Third, the notion of a detached observer, a key underpinning of the scientific method, can no longer be assumed for scientific investigations involving subtle energies believed to be associated with Psi phenomena. The traditional Scientific Method is based on the premise that the experimenter or observer is separate from that which is being observed and impartial to the outcome. It is now recognized, however, that the experimenter, the process of measurement, and even the choices of what to observe affect the results, particularly at the quantum level or when the energies involved are subtle relative to energies associated with everyday life (Stein 2012, 52). Examples abound. In energy healing, a mutual interaction between the healer and the patient has been postulated (Oschman 2000, 107-110). In the behavioral and social sciences, and even in public opinion polls and in jurisprudence, the answer to a question can be influenced by the way in which the question is framed. An electron can manifest as a particle or as a wave, depending on how one chooses to observe it. There is the additional challenge of quantum entanglement, which “... occurs when two particles remain connected, even over large distances, in such a way that actions performed on one particle have an effect on the other...” (Starr 2015). The idea of quantum ‘entanglement,’ overturning classic notions of action-at-a-distance, was proposed in the Einstein-Podolsky-Rosen (EPR) paper (Einstein et. al. 1935, 777-780). Einstein and others later rejected this notion as impossible. However, Erwin Schrödinger remained convinced (Moore 1994, 234), leaving us with the familiar Schrödinger’s Cat paradox. Dean Radin applied this concept outside of the pure quantum physics domain in his book *Entangled Minds* (Radin 2006, 208-239), where he substantiates the idea of coherence in living beings by analyzing the results of numerous Psi experiments. Quantum entanglement is consistent with the notion of an “unbroken wholeness” postulated by the eminent physicist David Bohm (Bohm 1980, 140-157) and with holistic perspectives that characterize some traditions.

Furthermore, in Psi studies, the replication of results demanded by the scientific method is often challenging to obtain. For example, even expert remote viewers do not succeed every time (Targ and Ktra 1998, 74-76). Any or all of several factors may account for failure to replicate results:

- Psi effects typically decline as a function of time and are not consistent.
- The personal “non-consensus reality” experiences themselves, from which the results are drawn, often cannot be reliably replicated even under seemingly controlled conditions; yet cannot be disproven (Stein 2012, 55).
- The experimenter, the process of measurement, and even the choices of what to observe affect the results, as discussed above.
- Psi is weaker in labs than in “real life” (Palmer 2015, 51-52). One attribute related to Psi being weaker in labs and not commonly discussed in the literature (yet familiar to remote viewers and dowsers) is the *need* for the results, as perceived by the requester of the information, the Psi practitioner, the experimenter, or some unknown influence. This need may introduce another variable that can decrease accuracy of results. Major General J. Scott Elliot (Ret) noted the effect of need, stating that his dowsing results were more accurate when there appeared to be a more urgent need for the results (Elliot 1977, 6). Guy Lyon Playfair (Broderick and Goertzel 2015, 310) recommends that more studies be conducted focusing on “real life Psi rather than in sometimes unrealistic laboratory settings.”
- Other extraneous subtle influences (“hidden variables”) that are not taken into account can alter the results – for example weather and the Schumann resonance (Oschman 2000, 97-102), local geological conditions (Oschman 2000, 97-102), local electric and magnetic fields including magnetic shielding (Higgins 2010, 13-51; Oschman 2000, 97-102), the time of day, the sidereal time, the season, the experimenter’s emotional state, and the power of intention (“mind over matter”) – results that vary according to test subject and other influences (Ryan and Spottiswoode 2015, 377-394; Oschman 2000, 85-102). When present, these subtle influences challenge the assumption of a closed system.  
Note: Schumann resonances are extremely low frequency (ELF) frequencies in the electromagnetic spectrum generated by events such as lightning discharges in the space between the surface of Earth and the ionosphere. These frequencies are approximately 7.83 (fundamental), 14.3, 20.8, 27.3 and 33.8 Hz.
- Even the chaos and indeterminacy postulated to underlie the more predictable and orderly world may be implicated (Stein 2012, 55).

The challenges in replicating results are not unique to Psi studies. For example, one typically does not find repeatability among field archeology studies. For their part, astrophysicists must develop many different methods to test hypotheses, since the entire sky is the laboratory and often there are only a handful of detections (until a pattern emerges, often after decades of observation). Nonetheless, the results obtained from Psi studies are arguably more susceptible to influence from variables not taken into consideration, in some cases not yet known; thus the imperative to develop testable predictions (discussed further below).

The impact of the experimenter, the process of measurement, the choices of what to observe, extraneous subtle influences, and perhaps quantum entanglement, make a compelling case against basing scientific investigation entirely on reductionism. In recent decades, researchers in

neuroscience, psychology, mysticism, mathematics, and physics, having called for a new science of wholeness, have produced compelling arguments to support this position (Harman and Clarke 1994, 47-49), and approaches to extending the utility of the Scientific Method have been proposed (Neppe and Close 2015, 3-37). As this extension is envisioned to be a work in progress for years to come, additional rigor in scientific studies of Psi phenomena can serve as a stopgap measure.

## Science and the Scientific Method

The word ‘scientist’ was first coined on June 24, 1833 at a meeting of the British Association for the Advancement of Science when Samuel Taylor Coleridge complained that members of the association could no longer call themselves ‘natural philosophers’ (Snyder 2011, 3). In response, William Whewell suggested that they use the term ‘scientist.’ As described by historian Laura J. Snyder in *The Philosophical Breakfast Club* (Snyder 2011, 3), William Whewell and three friends (Charles Babbage, John Herschel, and Richard Jones) had met regularly for Sunday morning breakfast to discuss the state of science, ways to reform it, and the fact that there was at the time no accepted scientific method. Whewell noted that two centuries earlier Francis Bacon had recognized the need “for observation and reasoning in science.”

As the Science Council of the United Kingdom explains, “Science is the pursuit and application of knowledge and understanding of the natural and social world following a systematic methodology based on evidence...” (Science Council 2016). The Council describes the current Scientific Method as based on objective observation and disciplined enquiry:

- Measurement and data (possibly although not necessarily using mathematics as a tool)
- Evidence
- Experiment and/or observation as benchmarks for testing hypotheses
- Induction: reasoning to establish general rules or conclusions drawn from facts or examples
- Repetition
- Critical analysis
- Verification and testing: critical exposure to scrutiny, peer review

Investigators agree that an experiment is a recording of observations of phenomena under defined and controlled conditions and that the investigation includes the following key elements:

1. Variables: Clear definition and selection of variables (independent and dependent) that lend themselves to observation and measurements. In manipulating a variable under controlled conditions, researchers attempt to establish a causal link between an independent and dependent variable and minimize the possibility that a rival factor is accounting for changes observed. In short, the main purpose of using an *experimental method* is to establish a cause and effect relationship between the two variables (independent and dependent), thereby explaining the effects. In Psi studies, some variables may not readily lend themselves to precise definition, and other variables may even be “hidden.”
2. Conceptualization of events in terms of variables controlled, manipulated, or held constant based on the procedure and instruments used to measure the variables (independent variables are the manipulated variables that determine the values of the

dependent variables; they are not influenced by other variables); the results record their interaction.

3. Use of control and experimental groups with adequate sample sizes. Controlling the conditions minimizes extraneous, biasing, and error-producing variables; however, some environmental conditions are not readily controlled.
4. Randomly assigning test subjects to experimental and control groups. As discussed below, random assignment is not always recommended for Psi experiments.
5. Use of statistical analyses for meaningful inference and interpretation.

Although the Scientific Method traditionally focuses more on *quantitative* techniques, this paper includes discussions on both quantitative and qualitative techniques. *Qualitative* techniques of inquiry investigate “Mind” and introspective data and the “meaning” of phenomena. They assist in our understanding of social constructs and cultural norms and have gained respectability over the past few decades. Among them are the heuristic, hermeneutic, humanistic, ethnographic, phenomenological, subjective, observational, evaluative, systematic, and psycho-historical approaches. Like their quantitative counterparts, these qualitative approaches, also known as humanistic inquiry, have limitations when applied to Psi, especially as they involve reliability, repeatability, and validity. A combined approach (Bodgan and Biklen 1992, 117) using both qualitative and quantitative methodologies can capture rich numeric data, keen observations, and anecdotal data that allow for a greater awareness and understanding of the meaning of the phenomena particular to human existence.

As many researchers are aware, the Scientific Method is often not used in a rigid manner. The Scientific Method requires additional rigor when applied to the study of Psi.

### **Guidelines to Using the Scientific Method for Psi Studies**

This paper presents and discusses guidelines for applying the Scientific Method to Psi studies. It explores two main areas, “Plan Your Psi Study and Develop Testable Predictions” and “Gather Data to Test Predictions.”

### **Planning the Psi Study and Develop Testable Predictions**

Many, if not all, Psi studies are subjective, which is the nature of the phenomena being observed. As with interpretation of any subtle energy or mode of consciousness, it is subject to the ability of the observer to discern what he/she observes *and* to adequately describe it. This leads to variability that can be refined with different research approaches and points to the importance of refining the variables used in Psi studies and of developing testable predictions.

### **Registering Psi studies in a Psi research registry**

Baptista, Derakhshani, and Tressoldi (BD&T) recommend that Psi researchers always “Pre-register Psi studies in at least one of the registries available to parapsychology researchers” (Baptista, Derakhshani, and Tressoldi 2015, 199, 201, 208):

- Open Science Framework, 2014 <https://cos.io/>
- Koestler Parapsychology Unit (KPU) Registry, 2014 <https://koestlerunit.wordpress.com/study-registry/>

### **Basing Psi studies on an expanded theoretical framework**

Conducting Psi studies can benefit from an expanded theoretical framework that can perhaps incorporate several disciplines. In 2012, Edwin May (Broderick and Goertzel 2015, 310) suggested that instead of researchers investing more time on proving ESP, they rather try to “... *understand mechanisms* from physics, psychological, and neuroscience perspectives, ...and conduct studies far more complex than hitherto have been seen in Psi research.” Researchers are already correlating physics, psychology, and neuroscience to describe more “common” phenomena such as learning and memory. However, even these topics are complex, and no model can currently describe something we can all define (memory and learning), let alone Psi, which we are still learning to define. If researchers have yet to develop methodologies and describe mechanisms for learning and memory (which can be described as *objective* phenomena), can Psi researchers be ready to expand this work to investigations that are *subjective*?

Psi studies can perhaps be extended even to new models of spacetime. One such model is the “geometrical model of Minkowski spacetime,” which demonstrates consistency with Newton, Maxwell, Einstein, and Schrödinger frameworks. In 1907, Minkowski stated, “Henceforth space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality” (Minkowski 1952, 75). Minkowski made it possible to mathematically map physical fields such as spacetime, and the application of this spacetime model was proposed as a Psi framework by, amongst others, Rauscher and Targ (Rauscher and Targ 2001, 331-354).

### **Recognizing that the observer and observed are not detached**

One example substantiating the observer effect is the demonstration by Radin, Michel, Galdamez, Wendland, Rickenbach, and Delorme, using the ratio of the spectral powers in an optical system of the “interference pattern’s double-slit spectral power to its single-slit spectral power” (Radin et. al. 2012, 163). As predicted, the ratio decreased when attention was focused towards the double slit rather than away from it.

To mitigate the effects of “Non-Detached Observer and Entanglement,” Psi researchers can:

- Improve their experimental design and incorporate double blind approaches as appropriate. In a double-blind test, neither the researcher nor test subject has information about the test being undertaken; this reduces any possibility of bias until results are known.
- Be conceptual theorists with an experiential approach and not be restricted by culture-bound thought.
- Be part of a multi-paradigm, multi-disciplinary team that can also be used to approve the study. For example, one might assemble a team of researchers whose thinking skills are complementary – for example, an Analytical Scientist (AS) and Conceptual Theorist (CT); teams can include those with experimental, experiential, and multidisciplinary expertise.

## **Understanding Psi-appropriate cause and effect using a broader etiological perspective**

“Correlation does not imply causation” is a phrase used in statistics to emphasize that a correlation between two variables does not necessarily imply that one causes the other. Utts (Utts 2015, 31) reasserts that the “exploration of cause and effect (causation) must generally be considered a two-step procedure: *discovery* and *justification*.” In the discovery phase, it is statistical methods that often play a critical role; statistics is also used in the justification phase. It is through both phases that theories are elaborated and generalized:

- Discovery begins when theory, based on previous research or strongly supported experience, suggests a possible relationship or effect. For example, research on cortical pathways in the brain led psychologists to predict that listening to classical music might enhance spatial-temporal reasoning, so they designed a randomized experiment to test that hypothesis. One finding (Broderick and Goertzel 2015, 311-312) was better spatial abilities in participants after listening to Mozart than after silence or listening to a relaxation tape. The cause of the effect is not clear. Scientists continue the discovery phase by investigating the impact of different types of musical experience on spatial reasoning (such as listening to music or teaching children to play an instrument) to formulate more specific theories.
- Justification begins only after viable theories have been formulated based on the statistical results of the discovery step, and after evidence is accumulated to explore possible causes. It is based on relevant knowledge rather than statistical methods.

One example of a broader etiological perspective is inherent in the spiritual domains in Buddhism referred to as “The Nine Dimensions” (unknown author 2004). The first five of these domains are the usual five senses: 1) touch, 2) taste, 3) sight, 4) hearing, and 5) smell. The remaining four domains represent deeper layers of consciousness: 6) Conscious Mind, 7) Subconscious / limited egoistic self, 8) Karma store, and 9) Buddha nature:

- Sixth domain – where the conscious mind integrates and processes information from the various senses into a coherent understanding.
- Seventh domain – represents one’s inner life and is the first level of sub-consciousness that looks inward to the spiritual world.
- Eighth domain – hosts a vast storage for all causes and effects affecting how one accumulates positive and negative karma. For Psi research being aware of and understanding this domain could prove helpful when devising theories and models, since this domain is where spiritual phenomena occur and must be measured and evaluated.
- Ninth domain – includes pure consciousness at the deepest level. This is where the Buddhist ‘amala’ consciousness exists and is attained through enlightenment. This is believed to be the fundamental basis of all life where the true eternal self can exist in harmony with all else.

The nine levels of consciousness provide another example of an expanded framework to consider for Psi research. Note: Some schools of Buddhism describe eight or ten levels of consciousness.

## **Accounting for differences in culture and belief systems**

Cultural differences can affect Psi trials and must be considered. Studies report examples where factors such as age, sex (gender), socio-economic status, religion, culture, personal paradigms, belief systems, and educational levels all influence not only the Psi study participants but also

reports of Psi (Cardeña, Lynn, and Krippner 2000, 3-21). Hence when planning Psi trials, use a comprehensive approach that ensures cultural diversity among test subjects, where feasible. Cultural backgrounds and even the participants' fields of expertise can impact how open-minded participants are and thereby impact the results obtained. To help define cultural and belief system bias in Psi research, a separate study on this topic is needed.

### **Selecting participants that accept Psi, are good at Psi, are highly creative, or who meditate**

Broderick and Goertzel (Broderick and Goertzel 2015, 311-312) state that one lesson learned from the large number of Psi experiments conducted is that the way to prevent a small effect size is to not accept just any candidate participants; instead they recommend carefully selecting participants: "Evidence supports using candidates and experimenters that accept the reality of Psi, (have had) previous Psi experiences, exercise meditation, and (have) personality variables such as extroversion, warmth, low neuroticism, etc...." Novices do not score well. Randomly assigning novices to any group is no different from randomly assigning members of the public to participate in the Olympics with the expectation of success. Conversely, the use of participants with Psi training and experience helps maximize positive outcomes. The test subjects' scores will vary at different times, with results being more positive for experts who score high on absorption, ease of being hypnotized, openness to experience, openness to spiritual dimensions, and high mystical tendencies.

Similarly, Kelly and Tucker (Cardeña, Palmer, and Marcusson-Clavertz, 2015, p. 73) noted that several studies have shown a "strong" correlation of success in Psi experiments with mystical/higher, more advanced sublime states of consciousness. Participants may also benefit by achieving 'altered states of consciousness' using meditation, music/white noise, progressive relaxation, or even hypnosis; other participants may have their own preferred techniques.

Baptista, Derakhshani, and Tressoldi (BD&T) (Baptista, Derakhshani, and Tressoldi 2015, 192-212) contribute to the continued Psi research expectation "of high standards of evidence" with recommendations for achieving greater effect sizes and reliability. Their recommendations are substantiated by their meta-analyses on decades of research and divided into four main Psi domains: Ganzfeld, Forced-Choice ESP, Remote Viewing, and Dream ESP:

- Ganzfeld – replication of future studies can be greatly improved by *exclusively using selected participants* and a sample size of approximately 56 trials. Hit rates improve when participants have one or more of these traits: previous psi experience, feeling-perception typology on Myers-Briggs Type Indicator, and a mental discipline practice; participants who are highly creative or artistic also do well. BD&T advocate that Ganzfeld researchers: a) use conservative effect size estimate; b) use proven methods; c) pre-register their studies in the Open Science Framework or Koestler Parapsychology Unit; and d) record as much information as possible about participants and methods. Note: Instead of relying on statistical significance, data analysts use effect size, which quantifies differences between two groups studied.
- Forced-Choice ESP – this type of study is the easiest to replicate with minimum experimenter interference. For these studies BD&T recommend: a) using only participants selected on the basis of their prior performance or pilot tests; b) using trial-by-trial feedback to keep track of replication rate if applicable; c) using conservative effect size estimates; d) designing the precognition using good random number

generators to select targets (this reduces sensory leaks and anticipation skews); e) pre-registering the studies in the Open Science Framework or Koestler Parapsychology Unit; and f) recording as much information as possible about participants and methods used.

- Remote Viewing (RV) – For this type of study BD&T have nine recommendations to ensure greater and more reliable effect size: a) use trained RV participants; b) use no guidelines or questionnaires so that participants will freely report their impressions; c) limit trials to one or two daily; d) provide feedback to participants after each trial; e) select targets of large Shannon information entropy (that is, containing complex, highly uncertain information) compared to decoys with small Shannon information entropy (simple and predictable information); f) for data collection and analysis use rank-order assessment to identify the target and a “fuzzy set technique” to assess the quality and reliability of the viewer’s ‘mental lock’ on the target; g) record as much as possible about participant and method; h) aim for approximately 33 trials; and i) pre-register studies in the Open Science Framework or Koestler Parapsychology Unit.
- Dream ESP – Since this domain is not as well understood as the previous three, other than the recommendation to record participant and method details, BD&T suggest that researchers determine (in addition to recommending that participant and method details be reported): a) if the study’s z-scores and metric correlate with sample sizes; b) the moderator emotional variables; and c) a log of the overall effect size.

As for selecting participants who are good at Psi, Suitbert Ertel (Broderick and Goertzel 2015, 138-139) points out the need for a PsiQ test equivalent to the IQ test for intelligence and that in the past, there has been too much focus on whether or not Psi exists and not enough attention on how good a participant is at Psi. He proposes the use of his simple Ball Selection Test (BST) using 50 tennis balls in an opaque bag. Ten balls are marked with a number (1 to 5) with ten balls for each number. Each time the participant jumbles the balls and then reaches in the bag to select a ball; if right-handed using the right hand, if left-handed using the left hand. Before withdrawing the ball, the participant announces which number is on the ball and an experimenter writes this down; the participant can also announce the number and then select a ball. Ertel suggests ideally the need for six runs of 60 trials (guesses) each (i.e., 60 trials per run), with each run taking about 15 minutes for a total of 90 minutes. Ertel tried this technique for more than 15 years and determined that there was no decline in Psi talent when the test was repeated several years later for the same participants. It further demonstrated Psi ability regardless of the other aforementioned factors such as the participant’s personality and acceptance of Psi.

While studying the effects of observers on the interference pattern’s double-slit to single-slit spectral power, Radin, Michel, Galdamez, Wendland, Rickenbach, and Delorme (Radin et. al. 2012, 170) found that “factors associated with consciousness, such as meditation experience, electro-cortical markers of focused attention, and psychological factors including openness and absorption, significantly correlated in predicted ways with perturbations in the double-slit interference pattern.” Their results demonstrate that “meditators produced effects 2.5 times as large as those produced by non-meditators” (Effect Size (es) = -0.32 and -0.13, respectively). The effect size for all data combined (es= -0.26) is comparable in absolute magnitude to experimental effects commonly observed in the behavioral and social sciences.

Mörck (Mörck 2015, 5) notes that Serena Roney-Doual researched meditation and Psi scores and that the results of her study also indicate that meditation “may improve Psi scores.”

### **Screening participants with accepted tests**

Baptista, Derakhshani, and Tressoldi (BD&T) indicate in all their meta-analyses the importance of screening the experimental group participants and selecting only those with the highest Psi scores (Baptista, Derakhshani, and Tressoldi 2015, 193-201). Participants who can attain sublime states of mind prove more successful.

The Ertel PsiQ Ball Selection Test (BST) described above is one example of a test that helps establish the “Psi Fingerprint/Profile” parameters of Psi study participants. Other tests include:

- Creativity/artistic tests, which proved significant in Ganzfeld studies (Baptista, Derakhshani, and Tressoldi 2015, 199; Cardeña and Marcusson-Clavertz 2015, 117)
- Tellegen Absorption Scale and hypnotic susceptibility
- Profile of Mood States (POMS)
- Elkins (spiritual dimension) or Elliott Ingersoll’s spiritual well-being measures
- Transliminality scale (provides insight into threshold abilities such as projection of consciousness, telepathy, and remote viewing)
- Pekala’s consciousness measurement scales
- Hood’s Mysticism Scale

In addition, participant personality traits can be assessed and correlated with the “Psi Fingerprint/Profile.” Personality assessments can be based on one or more of several factors:

- Myers-Briggs Indicator; feeling-perception typology was significant in Ganzfeld studies (Baptista, Derakhshani, and Tressoldi 2015, 199; Cardeña and Marcusson-Clavertz 2015, 112-113)
- Openness to new experience
- Focused intentional ability
- Degree of limbic system activation (emotional part of the brain)
- Degree of inner self talk
- Left and right hemispheric influence – degrees of dominance or synergies (Rossi 1986, 179)
- Active brain lobes (frontal, occipital, temporal, or parietal)
- Baseline, normal/EEG output, to correlate with state of consciousness

Several other scores and abilities can also be correlated with the “Psi Fingerprint/Profile,” for example:

- Experience practicing mystical or esoteric traditions that involve meditation or evolutionary attunement
- Length of time practicing yoga or martial arts that use breathing, chanting, or highly focused contemplation technique
- Experience with traditions offering service to others and development of self-awareness (e.g., Masonic or Rosicrucian)
- Degree of satiation with food, drink, sleep, and exercise as they can influence brain/mind processes

- Circadian rhythms at the cellular and hormonal levels (measured hourly), and the resulting fluctuations in neurochemistry, glucose levels, and endocrine systems

No screening is suggested for the control group. Two or more control groups can be used to determine differences in success rates in and among subjects in control groups A and B and experimental group C. Researchers can then also examine whether there are any subjects in control groups who score as high as the “experts” and if so, why?

### **Using double blind procedures and simple systems/procedures to support repeatability**

Where feasible, a double-blind approach is recommended for Psi studies. Selecting simple systems for experimentation will provide a more definitive result set after experimentation has been completed. Popp (Popp 2005, 235-244) and McTaggart (McTaggart 2007, 177-179, 186-193) demonstrated this in their intention experiments, which involved measuring photons emanating from the green algae *Acetabularia*. These types of simple systems and targeting indicators, in this case photons, will result in a more definitive conclusion where a specific action resulted in the outcome achieved. In addition, this approach supports experiment repeatability and refutability.

### **Minimizing expectations of success**

To mitigate possible expectancy and bias effects, the intent and detailed objectives of the Psi research should not be mentioned to test subjects. In Psi studies the experimenter and test subjects can be influenced by either success or failure or by thoughts of success or failure. Reducing expectation is helpful.

### **Selecting an optimum time to conduct trials**

When is the optimal time to conduct Psi trials? Adrian Ryan (Ryan 2015, 181-183) found that Psi experiences vary with seasons, local sidereal time (LST), and geomagnetic field activities including solar and lunar influences. His initial research findings were further substantiated when Ryan and Spottiswood conducted a meta-analysis, noting that laboratory findings confirm that: a) real-time receptive Psi is more successful during times of low geomagnetic activity (using 6 million trials retrieved from the GotPsi database), and b) the relationship between Psi and geomagnetic activity depends on whether or not ESP occurs in real-time or across time (Ryan and Spottiswoode 2015, 377-394). The authors examined whether geomagnetic activity affects participants and experimenters or the medium through which Psi information is transmitted. Satyanatayana, Rao, and Vijaylakshmi (as cited in Luke 2015, 152) indicate that “some tentative support for the notion that ESP performance is directly predicted by pineal gland activity is also evident from experimental research that demonstrated that prepubescent children score better on ESP tests at 3 a.m. than at 9 p.m. when the pineal’s nocturnal chemicals (melatonin, etc.) are supposedly at peak concentrations in the brain.”

Geomagnetic pulsations are another area being studied.

- For seasonal variations, Ryan and Spottiswoode examined over 6,000 free response ESP trials and more than 7,000 forced-response (Zener card) trials and found that the effect sizes are high between May and August except for a dip in July; minimal effect sizes

occurred in January, February, April, and December. These results do not align with the occurrence of magnetic storms.

- For Local Sidereal Time (LST) variations on Psi, Ryan and Spottiswoode found that a maximum effect size occurred at approximately 13.5 hours LST but had to adjust this for the season and the fact that most trials took place during the day.
- For geomagnetic activity over 11 year cycles (fluctuations in the earth's magnetic field caused by charged particles from the Sun) measured throughout the world over every 3-hour period, Ryan and Spottiswoode reference studies done by Michael Persinger and note that telepathic/clairvoyance experiences were more likely to occur during low 3-hour periods of geomagnetic activity while precognition experiences (for male participants) were more common during high geomagnetic activity. Similarly, the most successful telepathy/clairvoyance experiments occurred on "geomagnetically quiet nights" at approximately 10 nanoTesla(nT) while low-score results occurred when levels were greater than 25nT.

Note: A Tesla is a unit of measurement for measuring the strength of a magnetic field. Geomagnetic fields such as the earth's magnetic field are measured using nanoTesla (nT) (a billionth the size of a Tesla), or microTesla (a millionth the size of a Tesla). For example, the strength of the earth's magnetic field at the equator at 0° longitude is 31,869 nT, 31.869 microTesla, or  $3.2 \times 10^{-5}T$ .

Mörck commented on Ryan's review (Ryan 2015, 181-191), stating (Mörck 2015, 3) that although not all results are consistent, there is a relationship between geomagnetic activity and specific types of psi success: low geomagnetic activity for telepathy and clairvoyance; high geomagnetic activity for psychokinesis.

### **Considering Psi events as statistical and not relying entirely on p-values**

Utts (Utts 2015, 32) is clear that we need to consider Psi events as statistical events, interpretable when there are sufficient numbers of results to establish statistical confidence. For example, if one tosses a fair coin, in a large study with many hundreds of trials, the probability of throwing a heads or tails is about 50-50, but in a small study with less than 20 trials, the probability of heads or tails being tossed is not 50-50. The outcomes could be in favor of heads or of tails, but this failure to demonstrate the 50-50 probability does not mean that the coin is rigged or that the randomness of the toss outcome has been violated. It means *not enough trials* were conducted to satisfy the basis for claiming that the toss should be 50-50.

Statistics may not prove anything definitively, certainly not the cause, and there will always be a degree of uncertainty when relying on statistical methods alone. Statistics can suggest causal pathways but cannot confirm them without error. So, what are researchers left to do with the practical and ethical use of statistics? One approach researchers might take would be to determine the correlation coefficient (rho) and note the range, odds, effect size, meta-analysis, cause and effect diagrams (CED), frequency distribution (FD), and z-scores. Furthermore, Mörck (Mörck 2015, 3), with reference to the 'often misunderstood p-values,' draws attention to Tressoldi and Utts' comment that  $p\text{-value} < .05$  does not necessarily mean that the effect is large and that besides p-values, researchers should present confidence intervals and effect sizes (Tressoldi and Utts 2015, 85-89, 93).

### **Minimizing impacts of experimenter Psi; use a team to plan, conduct, and review**

Psi researchers need to be aware of and minimize experimenter Psi. Mörck (Mörck 2015, 3) commented on the results of a survey conducted by the Parapsychological Association, and reported by Irwin in 2014, showing a consensus that experimenter Psi is considered a major problem in Psi studies. Different researchers have been shown to be either 'psi-conductive' or 'psi-inhibitory,' even though they did not interact directly with test subjects during trials. Experimenter Psi makes experiment repeatability difficult.

To minimize the impact of the experimenter on the results, a *team* of researchers should plan, conduct, and review the experiment. This prevents single-researcher and experimenter Psi bias and also substitutes a multi-paradigm experimental/experiential mix, with various cognitive styles among participating scientists. The research team can minimize polarized thinking and enhance complementary, creative, outside-the-box approaches, experimental designs, and methodologies.

### **Using theories in the discussion to explain results**

The Psi study should include comments about whether the findings support the hypotheses and a discussion of results. Existing scientific studies, theories, and diagrams that could explain the findings should be explored. Are there acceptable models of Psi phenomena? If not, can models from other disciplines, such as physics, neuroscience, cognitive psychology, consciousness research, or biological/complex systems be considered?

### **Gathering Data to Test Predictions**

This section covers the use of time constraints, guidelines for instructing and preparing test subjects, and data collection techniques.

#### **No time constraints**

When planning and conducting the Psi study, rigid time limits should be avoided. Rauscher and Targ (Rauscher and Targ 2001, 331-354) suggest that not only is time constraint unnecessary; it is also irrelevant to the understanding and validation of spiritual and mystical phenomena, considering the possibility of a human perceptual modality where *distant spacetime events can be accessed*, e.g. in remote viewing.

In the past, Psi studies have been time-constrained, and this may have contributed to their limited success; hence the recommendation to minimize rigid time constraints for Psi experiments/experiential procedures. Ideally, assign no time constraints during the session and after data collection; for example, one might allow one to four weeks for delayed impressions.

One intriguing study conducted by Stanford Research Institute (SRI) (Allgire 2013, 3-11; Cardeña et. al. 2000, 31; Baptista, Derakhshani, Tressoldi 2015, 202) organized a precognitive remote viewing experimentation where the target was not selected until after the session data had been collected. A target set was then randomly selected from the lab target pool. Hence at the time the viewing was done, there was no designated target. The only conceivable way to obtain correct information about the target was to access nonlocal awareness, allowing remote viewers to move outside the limitations of space-time. The "hit" rate observed in other variants of the

protocol continued to hold. No matter how a target was hidden in space or time, it could still be described, and the size of the target didn't really matter. The research protocol:

- Researchers did not know either the images or when any subjects in the experimental group were in attunement (double blind).
- Participants used a soft couch, in a reclining position or lying down.
- No time limit was imposed. Attunement was on the subjects' own time and what was observed was an increasing EEG coherence between the left and right hemispheres with various levels of consciousness.

Rosicrucian students learn that when they seek an answer through attunement, they must first concentrate and then relax and 'let go.' Those who have become adept at using Psi are aware that Psi experiences are not governed by time. Indeed, the answer may come much later, when the petitioner is more relaxed (as near bedtime) or mentally distracted.

### **Reducing participant anxiety**

John Palmer recommends that when preparing participants for trials, putting them at ease can help them achieve higher scores (Palmer 2015, 55). Examples of measures to reduce participant anxiety include a supportive and non-threatening environment and making participants feel comfortable, e.g., by avoiding the use of computers on computer-illiterate test subjects or avoiding placing claustrophobic subjects in an fMRI machine. When participants rate their level of discomfort during trials, their ratings can be included as a control variable (in the data analysis).

### **Using appropriate methods to instruct and prepare subjects**

How instructions are given to participants can also affect the outcome in Psi studies. Methods include verbal (requiring attention) or via computer (objectively generated). Common methods may keep subjects at objective levels of consciousness and contribute to their not experiencing Psi. It is suggested that as an alternative, instructions be provided in a slow, low-key, hypnotic-like soft-spoken manner, thereby allowing all subjects to more readily shift into altered states of consciousness.

The American Society for Psychical Research (White, 1964) has adopted a four-step Research Subject Preparation Protocol that seems thorough and applicable to Psi studies in general. Separation into steps is mainly for convenience when presenting the material and to facilitate discussion. Other steps are possible, and the aim is to produce a spontaneous and unconscious response:

- **Step One: Relaxation** – Early reports place a great deal of emphasis on achieving a state of deep mental and physical relaxation. Deliberate attempts are made to still the body and mind, and these techniques are, in most cases, incorporated into a kind of ritual. This is in marked contrast to more recent methods in which directions (if any) merely consist of telling the subject to "relax."
- **Step Two: Engaging the Conscious Mind** – When the test subject achieves the proper degree of relaxation, the second step in the process begins in earnest. Here the goal is to engage the attention of the conscious mind, which will wander.

- Step Three: The Waiting, the Tension, and the Release – There may be a kernel of psychological truth in the saying that “Everything comes to he/she who waits.” In patience, that quiet, unprepossessing virtue that is perhaps one of the least appreciated in modern Western culture, may lie the key to parapsychological dreams. By virtue of being willing to wait, the test subject may be more likely not only to receive the sought-for impression but also to recognize it when it comes. But before the consciousness can brighten in this way, a period of darkness, fraught with all the anxiety that is the natural accompaniment of such a state of “not-knowing,” is experienced. This period can seem quite long, especially to the habitual pushing/pulling “let’s-get-on-with-it” conscious mindset.
- Step Four: The Way the Response Enters Consciousness – If the test subject can withstand the tension and refrain from a deliberate attempt to break it by mere guessing, he/she is in an optimum condition for allowing the correct impression to enter consciousness. When this impression appears spontaneously there are tasks the conscious mind can carry out to recognize the image most likely to be correct (White, 1964).

Other techniques for quieting the test subject’s mind and focus (to achieve ‘attunement’) include spending one or more hours at home in a quiet and undisturbed room daily whenever it is most convenient, with a silent observer via remote camera (witness) observing and ensuring compliance. Techniques to quiet and focus the mind include playing calming music, meditation, chanting, and breathing exercises that assist in shifting from objective to subjective to ‘other’ conscious states.

When subjects are doing their attunement in their homes (quiet calm spaces), the room must be dimly lit since the pineal gland, one’s personal cosmic bridge, is known to be photo-sensitive and inactivated by bright light.

Ideally, no external voice instructions should be used as is commonly done with scientific studies, as this requires objective and conscious attention. Test subjects must be told ahead of time what needs to be done and the procedures. This method allows shifting of the awareness from active listening to attunement, i.e., from objective consciousness to subjective to deep subconscious states, thus enabling attunement and impressions.

### **Using accepted data collection, measurement, and data analysis procedures**

As with any serious study, rigor and integrity are of the utmost importance when collecting, recording, and analyzing data from the Psi study trials. Here are some data collection guidelines:

- a. Collect sets per session, per test subject, per group(s).
- b. Perform several correlations and statistical analyses to determine closeness of the test subject’s reality (in their mind) to actuality (the real result or image), structure, and formula to be tested or remotely viewed.
- c. Conduct a quality check on each data set. Enter the data in a matrix per subject, per group, and conduct appropriate statistical analyses or involve an external data analyst for this. For the test subject groups: Review each subject’s scores carefully, noting similarities and differences. Identify and understand the outliers for any score. For randomly assigned control group(s), record any high scores compared to the experimental

group and note any possible reasons. If two control groups are used, note differences within groups and between groups (including uniqueness).

Biomarkers such as blood pressure, heart variability, pulse rate, pupil dilation, skin conductivity, and so on are useful for measuring effect(s) on the experimental test subjects before, during, and after the trials. Biomarkers are by definition objective and quantifiable characteristics of biological processes and a subcategory of measurable medical indicators (Strimbu and Tavel 2010) commonly used in clinical research as earlier indicators (for example, of the effect of a drug). Other more precise definitions of biomarkers exist in the literature (Strimbu and Tavel 2010). Neuroimaging and sleep analysis methods can produce “dry” biomarkers that can also be used in psychological (and Psi) studies. Their use in psychological studies is not new; for example, Emil Kraepelin, of the Max Planck Institute of Psychiatry, used them in the late 19th century. Kraepelin designed a writing scale for measuring writing pressure curves of patients suffering from psychiatric disorders (Turck 2008, vi-vii). As each test subject’s unique “brain/mind” complex is the “measuring instrument,” variations among the test subjects can be expected.

### **Recording positive and negative results and adhering to ethical research norms**

Maintaining honesty, integrity, and transparency in Psi research is important. As noted by the General Medical Council (General Medical Council 2016) “...make clear, accurate and legible records of research results, as soon as possible after the data are collected. ...keep records for the appropriate period to allow adequate time for review, further research, and audit or to help resolve any concerns about the data or research project...”

On why ethical norms in research are important, Resnik (Resnik 2015) states that there are several reasons: “...norms promote the aims of research, such as knowledge, truth, and avoidance of error...” and “since research often involves a great deal of cooperation and coordination among many different people in different disciplines and institutions, ethical standards promote the values that are essential to collaborative work, such as trust, accountability, mutual respect, and fairness.” Also ethical norms in research make certain that researchers are held accountable to society, build public support for their work and research in general, and promote other important moral and social values, such as (Resnik 2015) “social responsibility, human rights, animal welfare, compliance with the law, and public health and safety.”

### **Conclusions: Implications for Theory, Research, and Practice**

This paper has provided guidelines for conducting Psi studies, guidelines that build upon the accepted scientific method and that leverage both qualitative and quantitative techniques for improved validity, reliability, and replicability. At a minimum, these guidelines are a much-needed stopgap until Psi researchers have in place a framework in which outcomes of experiments can be reliably and reproducibly predicted.

The journey to this framework is not without its challenges, one being that much knowledge remains stovepiped among the traditional academic sub-specialties. This fragmented specialization has not lent itself to a solid methodology for studying Psi, human psychology, and experiences that transcend disciplinary boundaries.

Not surprisingly, constructing an approach to building a model/theory of Psi phenomena is now one of the main objectives of Psi research. Thus, one might reasonably anticipate a *new or expanded scientific method* emerging from the seeming irreconcilability of personal experience and the “entangled” observer with the scientific method and consensus-based science – a method that encompasses subjective experiences inherent to Psi and consciousness research, experiences not readily accommodated by contemporary science any more than by consensus-based religion. A possible starting point is a framework that recognizes the interconnectedness of the observer and the observed. One can expect this expanded scientific method to be based on complementary ways of thinking that even challenge traditional notions of academic authority – *experiential* in addition to consensus-based, and *holistic* in addition to deductive and reductionist.

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## Appendix A, Psi Terminology

- Attunement: The practice of reaching a completely calm and focused state of mind that can render a feeling of becoming connected in a non-physical manner with the Cosmos.
- Clairvoyance: Obtaining information about remote events, beyond the reach of the normal senses.
- Conscious Universe: The concept that there is a “mind” within the Cosmos.
- Cosmos: An orderly portrayal of the whole universe. Pythagoras was the first to use the term (first recorded use). Theology uses the term cosmos to imply everything in the physical world while metaphysics usage seems broader, that is, ‘cosmos’ is everything both physical and non-physical in the universe. Cosmology is the study of the origin of the universe.
- Distant Healing Intentioned (DHI): “Intentional healing modalities claimed to transcend the usual constraints of distance through space or time” (Radin et. al. 2015, 67-71).
- Dowsing: The intuitive process for locating water or other objects with an understanding of the nature of the objects sought but no obvious knowledge of the objects’ whereabouts and oftentimes at great distance from the objects.
- ESP (Extra-sensory perception): A general term for obtaining information about events beyond the reach of the normal senses. This term subsumes telepathy, clairvoyance, precognition, and presentiment.
- Ganzfeld: A technique (Cardena, Lynn, and Krippner 2000, 3-21) of “sensory homogenization exposing participants to un-patterned visual and auditory constant stimulation, typically following a relaxing procedure.”
- Illumination: The receiving of “actuality” data by a human, during meditation or attunement.
- Metaphysics: The branch of inquiry that includes concepts such as being, knowing, cause, identity, time, and space.
- Mind-Matter Interaction: Previously known as psychokinesis or PK. Direct mental interaction with physical objects, animate or inanimate.
- Near Death Experience: An experience undergone when someone comes very close to death that often involves a sense of wellbeing and peace, levitating and detaching from the physical body, seeing other worldly beings, and a comforting light.
- Precognition: Also called premonition. Obtaining information about future events, where the information could not be inferred through normal means. Many people report dreams that appear to be precognitive.
- Psi Phenomena: The aggregate of parapsychological functions of the mind including extrasensory perception (ESP), precognition, intuition, psychokinesis, remote viewing, and out-of-body experiences (OBE).
- Psychic Fingerprint: An individual’s uniqueness at their Physical, Psychological, and Spiritual levels.
- Remote Viewing: Describes the anomalous cognition that allows a subject (the “receiver”) to obtain information about a distant target object or image to which the subject and the researcher are “blinded.”
- Telepathy: Direct mind-to-mind communications. Communications by means other than through the normal senses.

## Appendix B, Psi Studies Guideline Checklist

	<b>Psi Study Guideline</b>	√
1	Register Psi studies in a Psi Research Registry	
2	Base Studies on an Expanded theoretical framework	
3	Recognize that the observer and observed are not detached	
4	Understand cause and effect using a broadened etiological perspective	
5	Account for differences in culture and belief systems	
6	Select participants that accept Psi, are good at Psi, or are creative	
7	Screen participants using accepted tests	
8	Use simple systems/procedures to support repeatability	
9	Minimize expectations of success	
10	Select an optimum time to conduct the trials	
11	Consider Psi events as statistical	
12	Experimenter Psi; use a team to plan, conduct, and review	
13	Use theories in the discussion to explain results	
14	Assign no time constraints	
15	Reduce participant anxiety	
16	Use appropriate methods to instruct and prepare subjects	
17	Both the experimenter and participant can attune to the “Infinite Field”	
18	Use rigorous data collection and data analyses procedures	
19	Record both positive and negative results and adhere to ethical research norms	