



## Evaluating the Evidence for Paranormal Phenomena

A Review of

*Parapsychology: A Handbook for the 21st Century*

by Etzel Cardeña, John Palmer, and David Marcusson-Clavertz (Eds.)

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Reviewed by

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*Parapsychology: A Handbook for the 21st Century* is a successor to an earlier *Handbook of Parapsychology* published 38 years ago (Wolman, 1977). The authors of the present *Handbook* discuss the relevant empirical, methodological, and conceptual developments that have taken place in the field of parapsychology since then. It is a high-level book written primarily for academic scholars and graduate students and is sufficiently detailed to permit readers with or without previous knowledge of parapsychology to evaluate the conclusions drawn by the authors.

Parapsychology is a controversial subject, and most academic psychologists do not believe that parapsychological phenomena are likely to exist. A survey of more than 1,000 college professors in the United States found that 68 percent of natural scientists, social scientists (excluding psychologists), and academics in the arts, humanities, and education believed that extrasensory perception (ESP) is either “an established fact” or “a likely possibility.” The comparable figure for psychologists was only 34 percent. In fact, 34 percent of psychologists asserted that ESP is “impossible” compared with only 2 percent of all other respondents (Wagner & Monnet, 1979).

There are understandable reasons for the greater skepticism of psychologists. First, we psychologists are more likely to be familiar than our colleagues in other fields with the methodological and statistical requirements for sustaining “extraordinary” psychological claims and aware of previous such claims that failed either to meet those requirements or to survive the test of successful replication. Second, research in cognitive and social psychology over the past 40 years has sensitized us to the errors and biases that plague intuitive attempts to draw valid inferences from the data of everyday experience. This leads us to give virtually no weight to anecdotal or journalistic reports of ESP, the main source cited in the survey by our colleagues in other disciplines as evidence for their more favorable beliefs.

Accordingly, this review focuses on the chapters of the *Handbook* most likely to interest readers of *PsycCRITIQUES*, namely, the chapters discussing controlled laboratory experiments designed to test for the existence and nature of ESP. In contemporary parapsychology, this term has now been replaced by the word *psi* and denotes any anomalous process of information acquisition that is currently unexplained in terms of known physical or biological mechanisms. This includes *telepathy*, the apparent transfer of information from one person to another without the mediation of any known channel of sensory communication; *clairvoyance*, the apparent perception of objects or events that do not provide a stimulus to the known senses; and *precognition*, awareness of future events that could not otherwise be anticipated through any known inferential process. These three phenomena are sometimes referred to collectively as “anomalous cognition.”

## Explicit Anomalous Cognition

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Chapter 15 of the *Handbook* (by Baptista, Derakshani, and Tressoldi) reviews laboratory paradigms that the authors consider to provide the best evidence for explicit anomalous cognition: conscious attempts by participants to produce a psi effect. Their central example is the ganzfeld protocol used to test for telepathy between a sender and a receiver.

In a typical ganzfeld experiment, the receiver is placed in a reclining chair in an acoustically isolated room. Translucent ping-pong ball halves are taped over the eyes and white noise is played through headphones placed over the ears producing an undifferentiated visual and auditory field called the ganzfeld (“Total Field”).

The sender is sequestered in a separate acoustically isolated room and views a randomly selected visual stimulus (e.g., art print, photograph, or brief videotaped sequence), which serves as the target for the session. While the sender focuses on the target, the receiver provides a continuous verbal report of his or her ongoing imagery and mentation, for about 30 min. At the end of the ganzfeld period, the receiver is shown several stimuli and, without knowing which stimulus was the target, is asked to rate the degree to which each matches the imagery and mentation experienced during the session. These ratings are analyzed to determine if the receiver has successfully identified the target. Over the years, there have been more than 100 ganzfeld experiments and several published meta-analyses.

The authors state that all the psi research protocols they review have produced cumulative *ESs* and significance levels well above chance expectation and that “the ganzfeld paradigm seems to be the most promising in terms of providing a reliable recipe for producing medium to large effect sizes in tandem with replication rates of 80 percent or greater; this recipe involves the use of selected participants and other identified moderator variables” (p. 211).

## Implicit Anomalous Cognition

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Just as research in cognitive and social psychology has increasingly pursued the study of affective and cognitive processes that are not accessible to conscious awareness or control, research in psi has followed the same path, moving from explicit forced-choice guessing tasks to experiments using subliminal stimuli and implicit or physiological responses. In

these, participants perform tasks or make judgments that are designed to reveal the operation of nonconscious psi.

Several of these are reviewed in Chapter 16 by Palmer. For example, he reviews the precognitive experiments by Bem (2011) that were published in the *Journal of Personality and Social Psychology* under the title “Feeling the Future: Experimental Evidence for the Anomalous Retroactive Influences on Cognition and Affect.” In each of nine experiments, a well-established psychological effect was “time-reversed” so that the individual’s responses were obtained before rather than after the stimulus events occurred.

For example, priming experiments have become a staple of cognitive social psychology in recent years. In a typical affective priming experiment, participants are asked to judge as quickly as they can whether a photograph is pleasant or unpleasant and their response time is measured. Just before the picture appears, a positive or negative word (e.g., *beautiful*, *ugly*) is flashed briefly on the screen; this word is called the prime. Individuals typically respond more quickly when the valences of the prime and the photograph are congruent (both are positive or both are negative) than when they are incongruent. In the time-reversed version of the procedure, the randomly selected prime appears after rather than before participants judge the affective valence of the photograph. Across the nine experiments, the effect size (Cohen’s  $d$ ) was 0.22 ( $p = 10^{-11}$ ).

Palmer also reviews criticisms of Bem’s experiments and presents a preliminary meta-analysis of attempted replications. Since Palmer wrote this chapter, a full meta-analysis of Bem’s experiments has been published (Bem, Tressoldi, Rabeyron, & Duggan, 2015). It comprises 90 experiments, 69 of which were replications conducted by independent investigators. The independent replications yielded an effect size of 0.24,  $p = 10^{-5}$ . A Bayesian analysis of these same replications yielded a Bayes factor of 3,853, which greatly exceeds the criterion value of 100 that is considered to constitute “decisive evidence” for the experimental hypothesis.

Palmer concludes his chapter with conclusions and suggestions for future research on implicit anomalous cognition.

## **Psi and Psychophysiology**

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Bem’s retroactive experiments can be viewed as direct descendants of what are called “presentiment” experiments, discussed in Chapter 17 (“Psi and Psychophysiology”). In these experiments, physiological indices of participants’ emotional arousal are continuously monitored as they view a series of pictures on a computer screen. Most of the pictures are emotionally neutral, but on randomly selected trials, a highly arousing erotic or negative image is displayed. As expected, participants show strong physiological arousal when these images appear, but the important “presentiment” finding is that the arousal is observed to occur a few seconds before the picture actually appears on the screen—even before the computer has randomly selected the picture to be displayed.

The presentiment effect has now been demonstrated using a variety of physiological indices, and a meta-analysis of 26 presentiment experiments published between 1978 and 2010 yielded an average effect size of 0.21, 95% CI [0.13, 0.29], combined  $z = 5.30$ ,  $p = 5.7 \times 10^{-8}$  (Mossbridge, Tressoldi, & Utts, 2012).

## Theories of Psi

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One of the most frequently cited arguments for being skeptical about psi is that there is no explanatory theory or proposed mechanism for psi phenomena that is compatible with our current understanding of psychology, biology, or physics. Indeed, this limitation is implied by the very description of psi as “anomalous.” The *Handbook* contains several chapters that address this problem: Part Two discusses Psychology and Psi, Part Four discusses Biology and Psi, and Part Five discusses Physics and Psi.

The presumed incompatibility of psi with our current conceptual model of physical reality may say less about psi than about the conceptual model of physical reality that most nonphysicists, including psychologists, still take for granted—but which physicists no longer do. The American Association for the Advancement of Science has now sponsored two conferences of physicists and psi researchers specifically organized to discuss the extent to which precognition and retrocausation can be reconciled with current or modified versions of quantum theory. The proceedings have been published by the American Institute of Physics (Sheehan, 2006, 2011). A popular, less technical discussion of this topic can be found in Radin (2006).

## Overall Evaluation

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In addition to the topics discussed above, the *Handbook* covers several other areas of parapsychology. These include “psychokinetic” effects: anomalous mentally produced perturbations or forces on inanimate objects (e.g., random-number generators or large-scale physical objects) and mentally induced physiological changes in other living organisms, including people. Other chapters examine the evidence for survival after death, mental mediumship, reincarnation, ghosts and poltergeists, and practical applications of psi in everyday life. Overall, the *Handbook* is an excellent, comprehensive scholarly-level source of information about a long-contested area of research in psychology and related disciplines.

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