

PSYCHIC PHENOMENA AND THE BRAIN: EXPLORING THE NEUROPSYCHOLOGY OF PSI by Bryan J. Williams. Gladesville, NSW, Australia: Australian Institute of Parapsychological Research, Inc., 2015. Pp. xii + 135. ISBN 978-0-9870772-2-6.

Parapsychology is the study of conscious experiences including extrasensory perception (ESP: telepathy, clairvoyance, and precognition) and psychokinesis (PK: interaction of mind and physical matter) that are described as paranormal or anomalous because they appear to transcend our current understanding of physical laws. Neuroscience is the study of the structure and function of the brain and nervous system based on the belief that all human experience has its origins in brain activity. It would appear that these two scientific domains have little in common and cannot even speak to each other. Indeed, many neuroscientists over the years have expressed the opinion that ESP and PK cannot exist, because there is no plausible explanation for them in terms of brain activity. However, the field of parapsychology has had a long-standing fascination with neuroscientific research, looking for the fundamental explanations of psi in terms of the physical mechanisms of brain function.

This monograph, published by the Australian Institute of Parapsychological Research, brings to-

gether decades of research linking psychic phenomena and the brain. The author, Bryan J. Williams, has written on this topic in both academic review articles and book chapters. He was a research student of William G. Roll until his death in 2012 and is currently affiliated with the Psychical Research Foundation in Carrollton, Texas.

Williams' monograph serves as an introduction to this area of inquiry, well-suited to the layman or to those students who are entering into the field of parapsychology. It provides the essential information about the history of parapsychology research and the methods of neuroscientific investigations of brain activity. This material is a necessary prerequisite for an understanding of the discussion of the research studies that comprise most of the text. The monograph provides access to the scientific literature with hundreds of reference citations to the original research, which enables deeper exploration of the areas of greatest interest to the reader. The text is clear and free of jargon, which makes it accessible to those who are not already familiar with the material.

The preface and first chapter lay out the basic issue. The mechanisms of common sensory perception (sight, hearing, touch) have been thoroughly investigated. Specific sensory end-organs receive physical stimulation signals that travel through the nervous system and are processed, filtered, and integrated into perceptions within conscious subjective experience. Movement and the motor system are governed in a similar way by other components of the nervous system. However, there are instances in which people claim to perceive or to know without any apparent stimulation of the physical sense organs. As well, there are instances when individuals appear to influence events in the physical world without physical contact and the use of the motor system. These are the realm of parapsychology, the subjects of rigorous study for more than a century. Accumulated evidence supports the existence of these phenomena, in both the real world and the laboratory, which raises the questions of how they can possibly occur and whether psi phenomena can be accounted for by actions and functions of the brain and nervous system?

For many scientists, who believe that every perception, thought, emotion, and action can be completely explained by the chemical and electrical activity of the brain, the idea that perception or action can take place through mechanisms beyond brain activity leads to a flat-out rejection of the very possibility of psi phenomena, despite any evidence. Williams suggests that an examination of the research on neuropsychological correlates of psi activity could provide a bridge between these two opposed areas of scientific inquiry. For Williams, the research might show that psi phenomena are indeed connected to the brain, or at least are not far removed from it. Such a bridge could advance both neuroscience and parapsychology.

The next chapter presents essential background on parapsychology and on neuroscience. Williams describes the different psi phenomena (telepathy, clairvoyance, precognition, and psychokinesis) and provides an historical summary of research on each. Although this material will be familiar to those in the field, this introduction will be of tremendous value to those new to the field, who are the intended audience. Coverage is complete, despite the limited length, and the summaries are complemented by numerous references to the original studies than can offer deeper entry into the literature. Williams then turns his attention to a brief summary of neuroscience, necessary preparation for the discussions in later chapters. This begins with descriptions of brain structure and of the methods used for assessing brain activity. The summaries of electroencephalography (EEG) and functional magnetic resonance imaging (fMRI) are brief, but they do provide sufficient background for the later discussion of brain correlates of psi.

Williams raises an interesting point in this material, that the criticisms of neuroscientists skeptical of psi phenomena are commonly based on the assumption that ESP and PK must be based on some form of electromagnetic signal that carries the information or action from point A to point B. Williams notes that this assumption is considered antiquated by most parapsychologists, based on the empirical evidence that ESP and PK do not act as if they were transmissions of energy subject to physical laws. However, this weakness in the criticisms of psi, though it shows how ignorance can fuel skepticism, leaves questions of how psi actually works, and the role of brain activity, unanswered.

The next eight chapters provide the substance of the monograph, the review of research linking psi to brain activity. The methods used to assess brain activity are EEG, which measures the electrical activity of the brain from electrodes placed on the scalp, and fMRI, which provides three-dimensional images of the

activity throughout the brain. Williams organizes this material by the fundamental questions that have been investigated in research on brain correlates of psi. Is ESP associated with specific brain states indicated by EEG activity? Are the EEGs of paired individuals correlated with each other under certain circumstances? Is precognition, which involves time-shifts into the future, associated with EEG activity or the activation of specific brain regions indicated by fMRI imaging? Is ESP associated with known differences between the left and right hemispheres of the brain? Are the brains of psychic adepts different from those of other people? Is PK correlated with brain activity, based on EEG activity and on possible neuropsychological abnormalities?

One especially interesting chapter focuses on memory and the temporal lobe of the brain, suggesting that ESP is less like ordinary sensory perception and more like the recall of memories. Williams notes how telepathy, clairvoyance, and precognition seldom reveal distinct and accurate images of the target, like visual perception would, but more often yield relevant images that are in some way associated with the target, perhaps drawn from the memory store of the perceiver. This distinction, and the research supporting it, offers a novel alternative view of ESP processes that could lead to new domains of exploration.

Another chapter provides detailed criticism of a widely circulated study by neuroscientific investigators that claimed to disprove the existence of psi. Surprisingly, the claims were made based on the failure to find either successful ESP performance or any associated changes in regional brain activation in the study's participants. Obviously, changes in brain activity associated with ESP should not be expected when no ESP is demonstrated. Williams details the flaws in the study, making it clear that even sophisticated technologies such as brain imaging can be misused when the investigators are ignorant of the phenomena they study.

Williams' conclusions in the final chapter are appropriately tentative, given the current state of the literature on brain correlates of psi. He notes three limitations in this literature. Variations in experimental and statistical methods among the studies in each area make it difficult to compare the results across studies and reach general conclusions. Studies to date have also differed in their participant populations. Most have used ordinary volunteers from the general public who may never have experienced psi. Only a few studies have been made of recognized experts in psi who have frequent experiences and well-developed abilities. Williams favors the latter and suggests that studies of psychic experts will be the most productive for the discovery of brain correlates of psi. This is a reasonable point, given that psi activity must be present to observe correlated brain activity. The third limitation that Williams notes is that many of the tests have only a small number of trials, which can lead to false negative conclusions due to lack of power to detect the small effects often observed in parapsychology. But, he admits, small studies can also inflate positive psi effects and lead to results that cannot be replicated reliably. Overall, he suggests that the decades of research have produced many promising findings linking psi activity with brain function. But, he argues that much more research is needed before conclusions about the brain functions associated with psi can be drawn.

One issue that I think does not receive enough attention here is the possibility that brain activity supports some, but not all, of the activities associated with ESP or PK. As a simple example, an ESP experience, whether telepathic, clairvoyant, or precognitive, may require brain activity, or it could take place in consciousness outside of the brain. Either way, reporting the experience will almost certainly require brain-based language functions. Similarly, any memory of the experience will likely require the same brain-based activities associated with ordinary memories. Given that most experimental studies rely on memory and reporting of psi experiences, turning them into behaviors that can be recorded, assessments of brain activity no matter how sophisticated may illuminate only a small and perhaps insignificant component of the overall process. Conclusions drawn from such limited information may mislead us as to the true nature of psi and never answer the most important questions.

In conclusion, I strongly recommend this monograph to those who desire an introduction into what is currently known about the links between psi phenomena and the brain. These may be individuals who are just beginning to explore in the field of parapsychology as well as experienced parapsychologists considering the use of neuroscientific methods to further their investigations. Williams has provided a concise summary suitable for both. He is commended for his thoughtful and even-handed presentation of the

current state of knowledge, both the accomplishments and the failures, with appropriate recognition of the limitations of each. We can hope that his optimism for the future of this field will be confirmed by the work of those who are influenced by his writing.

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