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Tracking a **FINER MADNESS**

Many believers in psychic phenomena are also inventive—a fact that may help bridge the gap between creative genius and clinical insanity

By Peter Brugger

The experimental setup is simple: a six-foot-wide, 60-foot-long corridor with a straight black line running along the floor. A blindfolded subject attempts to walk the line, and a researcher records any wobbles to the right or left. Christine Mohr, now a lecturer in experimental psychology and neuropsychology at the University of Bristol in England, designed the study for her doctoral dissertation at the University of Zurich. Before the study participants walked the line, Mohr asked them about parapsychology—specifically, their belief in so-called psi phenomena, including telepathy, clairvoyance and psychokinesis (using mental imagery to move objects).

How could there be any connection? In fact, the results were incontestable. Among some three dozen subjects, Mohr found that the more strongly an individual believed in extrasensory experiences, the more likely he or she was to stray to the left side of the line. This drift was slight—the subjects themselves were unaware of it—but Mohr's calculations proved it. Further experiments at the University of Zurich revealed other trends among psychic devotees: on word association tests, they were apt to make more connections more quickly than skeptics were; they had far more notions about what a murky ink blot might resemble; and they were faster at identifying meaningful shapes among randomly generated patterns.

In fact, various indices suggest that believers in the paranormal tend to be “right-brained.” It is this right-hemisphere dominance that explains their leftward drift in Mohr's experiment and the greater creativity they demonstrate on psycho-

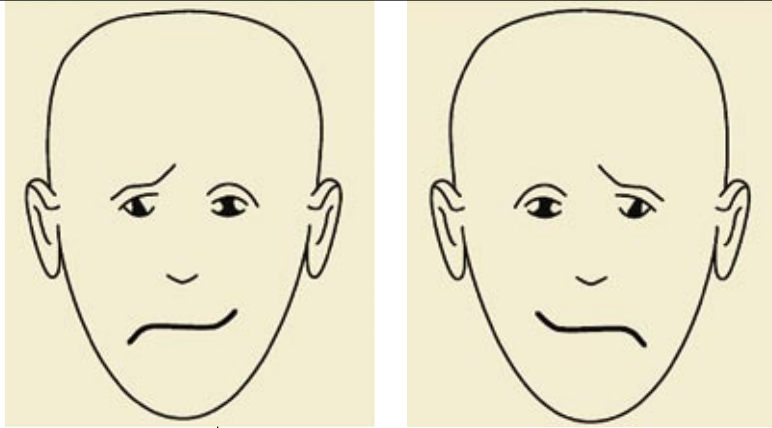
logical tests. The aptitude for drawing meaning from seeming abstraction must also inform psychic believers' worldview, which is so often colored by magical thinking and heightened spirituality. Of interest, these same associative abilities taken to an extreme characterize people with schizophrenia, who also show leftward-veering proclivities. Along the spectrum from skeptics to schizophrenics, psychic enthusiasts fall somewhere in the middle—benefiting from increased creativity within the bounds of normalcy. Studying these people may afford insight into the neuronal sources of innovation and help neuroscientists explore the borders between artistic inspiration and pathological ideation.

Right of Way

Just as each brain hemisphere controls almost exclusively the movements of the opposite side of the body, our perceptions—by eye, ear or touch—are also organized primarily on a crossover basis. In most people, particularly those who are right-handed, the left hemisphere is the speech-dominant half, whereas the right hemisphere takes a lead in solving spatial and nonverbal problems. Because of this division of labor, a majority of individuals tend to place slightly more weight on information presented to them in the left visual field. To ESP believers, images from the left seem to bear even greater significance than they do among right-handed skeptics.

(The Author)

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Which face seems happier? If you said the one on the right, the right hemisphere of your brain probably dominates your visual processing, leading you to pay slightly closer attention to information in your left visual field.

To study such asymmetries, neuropsychologists sometimes use images of chimeric faces, composites in which one corner of the mouth may arch up while the other corner curves down [see illustration above]. Many interpret chimeric faces as somewhat ambiguous, but whether a person regards such a face as slightly happy or slightly sad depends on which side draws more of his or her attention—and thus which hemisphere dominates that person’s visual processing. As expected, most right-handed people view the face on the right as just a bit happier than the one on the left. Those with a pronounced psychic bent perceive the difference between the two faces as even greater. This preference for information on

the left also extends to spatial reasoning, as demonstrated by another study in which blindfolded subjects felt a rod and attempted to identify the midpoint. The right-handed control subjects drifted slightly toward the left, whereas the more psychically inclined among them placed the middle even farther left of center.

In addition, there seem to be left-right asymmetries in mental imagery. Try to answer the following question without calculating: What number lies halfway between 15 and 3? Such estimation tasks are generally solved using a kind of internal number line, which in our culture generally extends from left to right, from lower to higher numbers [see box on opposite page]. Patients who have had a stroke on the right side of their brain tend to estimate high. Healthy right-handed people, in contrast, more frequently err lower (or toward the left). In keeping with the other experiments, those who believe in parapsychology tend to produce even lower guesstimates.

Psychic Ability

Spatial tasks aside, various studies have found that people who believe in the paranormal also show an above-average involvement of the right hemisphere in word association tasks. Contrary to received wisdom, the right hemisphere appears to dominate some aspects of speech processing, including the formation of silent associations and the interpretation of intonation and vocal stress. Moreover, the right hemisphere seems to trump the left in spotting indirect interrelations. Patients who have suffered damage to the right hemisphere, for instance, can often form associations only within narrow limits; irony and metaphor typically escape them. In comparison, those with a penchant for extrasensory phenomena draw quick metaphorical links, and schizophrenics make associations that soar well beyond normal perceptions.

Such associations lie at the heart of all creativity. In 2005 Bradley S. Folley and Sohee Park of Vanderbilt University compared the creative potential among normal test subjects, people with schizotypal tendencies—who, like psychic believers, typically give credence to magical ideas and explanations—and schizophrenic patients. On one task, subjects had to think up as many uses as possible for particular objects, such as an eraser. Participants with schizotypal characteristics showed by far the greatest creativity. As measurements of brain activity using near-infrared optical spectroscopy demonstrated, the creative challenge activated areas in the frontal lobe of both hemispheres—or, more precisely, the pre-

FAST FACTS

Reading the Minds of Psychics

1>> On psychological tests, believers in the paranormal very often display above-average creativity: on word association tests, they make more connections more quickly than skeptics do; they have more definite ideas about what ink blots might resemble; and they are faster at identifying meaningful shapes among randomly generated patterns.

2>> These same associative abilities taken to an extreme characterize people with schizophrenia. Along the spectrum from skeptics to schizophrenics, psychic enthusiasts fall somewhere in the middle. Studying these individuals may help neuroscientists explore the borders between artistic inspiration and clinical insanity.

3>> The transitions from the rejection of parapsychology all the way to the experience of hallucinations are fluid. The assumption of a continuum is important for neuropsychology. Unfortunately, present-day psychiatry is based on a one-sided understanding of pathology. Studying healthy subjects offers an often missed chance to exclude variables such as medications, hospitalization and the effects of social stigmatization.

Test Your Brain

What number is in the middle?

Read the following pairs of numbers to a friend and ask him or her to guesstimate the number halfway between each pair. Spend no more than two seconds on each one. It does not matter if your friend makes mistakes.

2, 8 15, 3 17, 7 3, 11 5, 17 14, 2

Got them wrong? No worries. Healthy right-handed people generally misestimate to the left—that is, their incorrect answers are a shade low. Individuals who believe in telepathy, clairvoyance and other magical associations drift even farther left than skeptics do.

Solution: Only every other pair consists of two words that are indirectly related. The most common answer for lighting and noise, for example, is thunder. For every other pair the answer is the common answer: water, ham, mer, cat, tears, age. But there are certainly other conceivable answers. Were you able to think up a semi-plausible response to an unrelated pair of words? Congratulations! It speaks to your creativity.

What word connects sand and time?

Correct: clock! Write the word that connects the other two in the pairs listed below. If you can't think of anything quickly, skip ahead. Then read the solution printed upside down in this box.

worm, sofa	—	box, photo	—
lightning, noise	—	dog, mouse	—
hometown, reader	—	effect, brother	—
hunger, passion	—	onion, sadness	—
pitcher, flight	—	oatmeal, fur	—
fish, fire	—	bean, tea	—
thorn, bride	—	stall, flag	—
anvil, nail	—	youth, pension	—

frontal cortex. The more magical a person's thinking, however, the more the areas on the right side were involved.

Some of this activity may be attributable to neurochemistry. In a separate experiment, my colleagues and I tested 20 self-confessed paranormal believers and 20 skeptics by asking them to try to identify real faces or real words among images of either scrambled faces or made-up words. In general, psychic believers were more likely to see real faces and words when there were not any, and the skeptics more often missed the real faces and words when they did appear. Then we gave the subjects L-dopa, a drug that increases levels of the neurotransmitter dopamine in the brain. Both groups made more mistakes under dopamine's influence, but the skeptics also became less skeptical, more often interpreting scrambled information as meaningful. The dopamine system is thought to help the brain prioritize important information, and higher levels of this messenger substance may enable individuals to see patterns where none are obvious.

Scryer or Skeptic?

Seeing paranormal relationships in everyday coincidences is not at all the same as the distinctive denial of reality that characterizes schizophrenia. Nor should we confuse a belief in telepathy with the delusion that hidden unknown persons are tapping into one's thoughts. We must

also avoid lumping a belief in extrasensory phenomena with pathology per se. After all, people with psychic predispositions are not the only ones who are capable of making extraordinary associations. And isn't that precisely what we so value in artists—the facility to interpret what is familiar in ways that are surprisingly new?

In truth, the transitions from the unimaginative rejection of parapsychology all the way to the experience of florid hallucinations are fluid. The assumption of a continuum is important for neuropsychology. Unfortunately, present-day psychiatry is based on a one-sided understanding of pathology. The possibility of learning about psychological disturbances from the systematic study of healthy individuals is foreign to most researchers. This approach, however, offers the often missed chance to exclude variables such as medications, hospitalization and social stigmatization. **M**

(Further Reading)

- ◆ **From Haunted Brain to Haunted Science: A Cognitive Neuroscience View of Paranormal and Pseudoscientific Thought.** Peter Brugger in *Hauntings and Poltergeists: Multidisciplinary Perspectives*. Edited by James Houran and Rense Lange. McFarland & Company, 2001.
- ◆ **Magical Ideation Modulates Spatial Behavior.** Christine Mohr, H. Stefan Bracha and Peter Brugger in *Journal of Neuropsychiatry and Clinical Neurosciences*, Vol. 15, No. 2, pages 168–174; Spring 2003.
- ◆ **Verbal Creativity and Schizotypal Personality in Relation to Prefrontal Hemispheric Laterality: A Behavioral and Near-Infrared Optical Imaging Study.** Bradley S. Folley and Sohee Park in *Schizophrenia Research*, Vol. 80, pages 271–282; August 24, 2005.

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