

## TESTING NONLOCAL OBSERVATION AS A SOURCE OF INTUITIVE KNOWLEDGE

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This study explored the hypothesis that in some cases intuitive knowledge arises from perceptions that are not mediated through the sensory system. The possibility of detecting such nonlocal observations was investigated in a pilot test based on the effects of observations on quantum systems. Participants were asked to imagine that they could accurately perceive a color simultaneously from a distance (Michelson interferometer). If such observation were possible, it would theoretically perturb the photon's quantum wave function and change the pattern of light produced by the interferometer. The optical apparatus was located inside a light-tight, double-walled, shielded chamber; participants sat quietly outside the chamber with eyes closed. The light patterns were recorded by a cooled digital camera once per second, and average (theta) nonlocal levels of three images were compared to a noninterfered control blocking source-matching conditions. By design, participants would produce a lower overall level of illumination, which was

predicted to occur during the blocking conditions. Based on a series of planned experimental sessions, the outcome was in accordance with the prediction ( $t = -0.63, P = .002$ ). This study was previously due to one session, and subsequent analysis (combined  $t = -0.28, P = 0.61 \times 10^{-3}$ ) of the other two sessions with normally sized wave functions was not significant (combined  $t = 0.29, P = .01$ ). The same experimental protocol was subsequently also used in two sessions, but with no-one present, avoided to hardware or protocol artifacts that might have accounted for these results (combined control  $t = 1.30, P = .01$ ). Generalized explanations for these results were considered and judged to be implausible. This pilot study suggests the presence of a nonlocal perturbation effect that is consistent with a reduced concept of intuition as a direct source of gaining knowledge about the world, and null the predicted effects of observation on a quantum system.

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## INTRODUCTION

"The intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honors the servant and has forgotten the gift."<sup>1</sup>

—Albert Einstein<sup>2</sup>

Intuition is widely regarded as a key source of inspiration in medical diagnosis,<sup>3,4</sup> technological innovation, business decisions, artistic achievement, and scientific discovery.<sup>5</sup> Based upon an analysis of the lives of numerous scientific icons, Rosalind Wiseman<sup>6</sup> concluded that "Virtually without exception, the greatest mathematicians and scientists agree that the development of the personal, social, behavioral, or generally second-algorithm [associated with intuition] is the basis for scientific thinking."<sup>7</sup>

But what is intuition? Given its central role in advancing science and civilization, one might expect that this topic has been a long subject of inquiry, especially within academic psychology, the many theories, hypotheses, and models it has been randomly queried. (This may be because the quasi-sensual, nonrational nature of intuition presents an extraordinary challenge to science, which prides itself on the power of rational knowing. Intuitive knowledge does not appear to function like the methodical substance associated with rational thought. It runs "in a flash," "in-out-of-the-blue," sometimes with correct answers to theory questions and technical problems, elegant solutions to complex mathematical theorems, and complete cures for various medical complications.)<sup>8</sup>

Because of the scientific emphasis on rational knowing, and especially of physicians—the belief that "rational entities, processes, relations and laws are all physical"<sup>9</sup>—other ways of knowing, including intuitive knowing, have been regarded as an inferior epistemology at best and a source of epistemological confusion at worst. For half a century, the belief held within psychology to simply deny the importance of subjective experience,<sup>10</sup> heeded, when behaviorism was in full bloom, many psychologists embraced a psychophysic catch-22 in which results concluded with great confidence that there were no results at all.

But as the cognitive sciences and neuroscience advanced, the idea of an unconscious mind, once the sole province of popular analysis, became scientifically acceptable again. This reinforced the original concept of intuition from a systematic source of gaining unmediated knowledge of the world to the more heuristic domain of computer-aided background information processing. The computer analogy spawned experiments looking for physiological markers of explicit learning. For the brain-science responsible for the "ah ha" experience,<sup>11,12</sup> and for identification of unconscious cognitive biases,<sup>13</sup> in medical research, responses about the accuracy of intuition contributed to the enthusiastic acceptance of evidence-based medicine, which is "based on the assumption that a purely rational reduction of experimental evidence will always be more reliable than relevant intuition."<sup>14</sup>

Given these results, the traditional concept of intuition as a nonrational, nonanalytical way of knowing seems well on its way to extinction. And indeed, experiments testing the possibility that there may be other ways of knowing are rarely reported in psychological, neuroscience, and medical journals. By contrast, in the literature of parapsychology—the discipline that studies these ancient links between physics and psychology—one

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