

■ **critical thinking** thinking that does not blindly accept arguments and conclusions. Rather, it examines assumptions, discerns hidden values, evaluates evidence, and assesses conclusions.

“The real purpose of the scientific method is to make sure Nature hasn’t misled you into thinking you know something you don’t actually know.”

Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance*, 1974

mostly by deeply religious people acting on the religious idea that “in order to love and honor God, it is necessary to fully appreciate the wonders of his handiwork.”

Of course, scientists, like anyone else, can have big egos and may cling to their preconceptions. We all view nature through the spectacles of our preconceived ideas. Nevertheless, the ideal that unifies psychologists with all scientists is the curious, skeptical, humble scrutiny of competing ideas. As a community, scientists check and recheck one another’s findings and conclusions.

This scientific attitude prepares us to think smarter. Smart thinking, called **critical thinking**, examines assumptions, discerns hidden values, evaluates evidence, and assesses conclusions. Whether reading a news report or listening to a conversation, critical thinkers ask questions. Like scientists, they wonder, How do they know that? What is this person’s agenda? Is the conclusion based on anecdote and gut feelings, or on evidence? Does the evidence justify a cause-effect conclusion? What alternative explanations are possible? Carried to an extreme, healthy skepticism can degenerate into a negative cynicism that scorns any unproven idea. Better to have a critical attitude that produces humility—an awareness of our own vulnerability to error and an openness to surprises and new perspectives.

Has psychology’s critical inquiry been open to surprising findings? The answer, as ensuing chapters illustrate, is plainly yes. Believe it or not . . .

- massive losses of brain tissue early in life may have minimal long-term effects (see page 83).
- within days, newborns can recognize their mother’s odor and voice (see page 143).
- brain damage can leave a person able to learn new skills, yet be unaware of such learning (see pages 367–368).
- diverse groups—men and women, old and young, rich and working class, those with disabilities and without—report roughly comparable levels of personal happiness (see pages 537–544).
- electroconvulsive therapy (delivering an electric shock to the brain) is often a very effective treatment for severe depression (see pages 715–716).

And has critical inquiry convincingly debunked popular presumptions? The answer, as ensuing chapters also illustrate, is again yes. The evidence indicates that . . .

- sleepwalkers are *not* acting out their dreams and sleeptalkers are *not* verbalizing their dreams (see Chapter 7).
- our past experiences are *not* all recorded verbatim in our brains; with brain stimulation or hypnosis, one *cannot* simply “play the tape” and relive long-buried or repressed memories (see pages 364–369).
- most people do *not* suffer from unrealistically low self-esteem, and high self-esteem is not all good (see pages 633–636).
- opposites do *not* generally attract (see pages 758–759).

In each of these instances and more, what has been learned is not yet what is widely believed.

The Scientific Method

OBJECTIVE 4 | Describe how psychological theories guide scientific research.

Psychologists arm their scientific attitude with the *scientific method*: They make observations, form theories, and then refine their theories in the light of new observations. In everyday conversation, we tend to use *theory* to mean “mere hunch.” In science, however, *theory* is linked with observation. A scientific **theory** *explains* through an integrated set of principles that *organizes* and *predicts* behaviors or events. By organizing isolated facts, a theory simplifies things. There are too many facts about behavior to remember