How to Think Like a PSYCHOLOGIST

Critical Thinking in Psychology

Donald H. McBurney

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Preface

Too often, students find the content and methods of their introductory psychology course to be very different from what they expected. Partly this is because few of them have studied psychology in high school, but the ones who have seem equally alienated by the course, if not more so. After teaching introductory psychology for more than thirty years, I have come to realize that students have many misconceptions about science, and psychology in particular, that serve as impediments to understanding psychology.

As a consequence of this realization, I spend much of the class time dealing with these misconceptions. One mechanism for doing this is to have students turn in written questions at the beginning of class for me to answer. This excuse gives me the opportunity to deal with some issues that may seem peripheral to the course but pose significant stumbling blocks to understanding what we think of as the material of the course.

This book answers some of the most common questions asked by my students. By so doing, it seeks to motivate students by dealing directly with their real concerns. The answers to their questions illuminate principles of psychology and philosophy of science that present stumbling blocks to students' understanding of psychology.

Another stimulus for this book comes from the current interest in teaching critical thinking skills. Too many books, and too many students, appear to treat science in general, and introductory science courses in particular, as a collection of facts to be mastered for an exam. To be sure, one of the essential tasks of an introductory psychology course is to introduce students to a wide variety of technical terms, research paradigms, and empirical data. But the main goal of a psychology course should be to get students

to think like psychologists; to apply the same critical skills to human behavior that scientists do.

Critical thinking is a very large umbrella for a number of skills and attitudes that educators attempt to instill in their students (e.g., Brookfield, 1987). Instructors have had these same goals from time immemorial. Recently, however, research in cognitive psychology applied to the learning process (Resnick, 1987) demonstrates two principles that are significant to teaching critical thinking in psychology: (1) Critical thinking is not learned in the abstract, but in the specific subject matters of the various disciplines, and (2) the skills needed for critical thinking vary from discipline to discipline:

> One cannot reason in the abstract; one must reason about something....Each discipline has characteristic ways of thinking and reasoning....Reasoning and problem solving in the physical sciences, for example, are shaped by particular combinations of inductive and deductive reasoning, by appeal to mathematical tests, and by an extensive body of agreed upon fact for which new theories must account. In the social sciences, good reasoning and problem solving are much more heavily influenced by traditions of rhetorical argument, of weighing alternatives, and of "building a case" for a proposed solution....Only if higher order skills are taught within each discipline are they likely to be learned. (p. 36)

I believe that the answers to the questions posed in this book provide a highly motivating way to help students develop the skills necessary to think like psychologists.

This book takes a different approach to critical thinking than most others do. The principles covered do not map especially well onto the list of skills generally promulgated as characterizing critical thinking, which tends to be less domain specific. Rather, the book models the process of critical thinking and encourages the student to engage in it. John McPeck (1990) says:

> I think that the phrase "critical thinking" refers to a certain *combination* of what we might think of as a willingness, or disposition (call it an "attitude," if you like), together with the appropriate knowledge and skills, to engage in an activity or problem with *reflective skepticism.* (p. 42) (emphasis in the original)

The attitude of reflective skepticism is one that is insufficiently encouraged in our educational system, for reasons that I discuss in the introduction to this book.

The book takes strong positions on certain controversial issues, such as the paranormal. I believe that the principles stated and positions taken are well within the mainstream of academic, research-based psychology. Thus, the book should be compatible with the viewpoints of the typical introductory psychology text and instructors of psychology courses.

Psychology, however, is a heterogeneous field, and I do not pretend to reflect all points of view, some of which are mutually contradictory.

I try to strike a balance between critical thinking and open-mindedness. Paul and Nosich (1991) list the following as part of critical thinking: "fairmindedness, intellectual humility...willingness to see objections, enter sympathetically into another's point of view, [and] to recognize one's own egocentricity or ethnocentricity" (p. 5). Even when I inevitably fail to meet these ideals, it is my experience that students appreciate finding out where I stand on an issue. They are sophisticated enough not to swallow whole what I say.

The book attempts to represent the common philosophical tradition within which psychologists work. I have not, in general, tried to reflect the latest developments in philosophy of science. This is a book for beginners in psychology; I leave the finer points to later study.

The organization of the topics is designed to follow the most common order of chapters in an introductory psychology book. The material could be assigned along with the text and dealt with in class or in recitation sections. Exercises at the end of each section invite the reader to apply the principle just discussed. The book is intended also to be helpful for students of research methods, history and systems, and other later courses in psychology.

A number of people have contributed to the development of this book. Robert D. Jewell, University of Calgary; Jane F. Gaultney, University of North Carolina, Charlotte; Tony Johnson, LaGrange College; John T. Long, Mt. San Antonio College; Drew Appleby, Marion College; and Bruce Goldstein, University of Pittsburgh; made helpful comments on the manuscript. I have tried to acknowledge the sources of ideas when possible. I have absorbed many of the points, and even some of the examples and phrases, from others over the years, and the sources have been forgotten. My apologies to any who should have been cited.

Donald H. McBurney

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learn that he had been speaking prose all his life without knowing it. I had been doing critical thinking since I was a little kid and teaching critical thinking as an integral feature of my courses all along.

What is critical thinking? As popular as this concept is, there seems to be little agreement about its definition. I believe that critical thinking is primarily an attitude of asking why—why is that so; why did that happen; why should I believe that claim? Unfortunately, most kids have at least one Mr. Emerick for a teacher. They learn that it is easier not to ask questions.

Long after I was a professor, I took some additional graduate courses in another school at my university. One instructor was very explicit about his desire that we understand his material and that we ask questions when things were not clear. He would stop lecturing every few minutes and say, "Is that clear—Susan?" Every student in the class would always say "yes," including me. The problem was, the material was often unclear to me. One day when he said, "Don, is that clear?" I stiffened my resolve and said, "No." The entire class looked at me as if I had make a rude noise. Later, during the break, several thanked me and said that they never understood what he was talking about. So a whole web of experiences, habits, social expectations, instructors' body language, and the like work against the application of critical thinking. We learn that there are the rules, and there are the real rules. We have years of training in passivity before we get to college. You can get into trouble by doing critical thinking, as many a small child with more curiosity than social grace has found out.

How does one teach critical thinking? Years ago, educators emphasized general principles of thinking that could be applied to any area of study. This was part of the reason so many of us studied Latin in high school. Today, however, there is broad agreement that critical thinking skills are best learned in the context of a particular discipline rather than in the abstract. Cognitive psychologists have found that in order to think like an expert in a discipline, one must have a considerable base of knowledge in that discipline. Further, critical thinking skills learned in one discipline do not always transfer to another.

For these reasons, I will avoid giving lists of rules for critical thinking, as if one could simply memorize them and then be a critical thinker. This is as impossible as becoming an expert pianist by memorizing the keys on the piano. Instead, we will take up a number of typical questions that students have asked me over the years that reveal stumbling blocks to understanding psychology. The answers to each of these questions involve the application of a particular principle or critical thinking skill that is important in psychology. It is my hope that studying these principles and exercising these skills will help you begin to think like a psychologist.

Section 1

Why Do Psychologists Use So Much Jargon?

Principle: *Terms are used in science in a technical sense that is often very different from the everyday sense of the term.*

Specialists frequently annoy us by using their own arcane vocabulary. Why is it necessary to say *learning resources center* instead of *library*, or *sanitation engineer* instead of *garbage collector?* Why do psychologists talk about *negative reinforcement* instead of *punishment?*

The word *jargon* has two meanings of interest to us. The first meaning refers to an obscure, pretentious language characterized by the use of fancy words—and usually more of them than necessary. I do not defend the use of jargon in this sense. People who use jargon this way are trying either to sound important, or to snow the listener, or both. They wind up sounding pompous and boring instead.

The second meaning of the word *jargon* is technical language characteristic of a specialized group. Any specialty, whether scientific, artistic, or whatever, requires some special language. In sailing, *coming about* refers to the maneuver of changing direction in such a way that the boat, which has been sailing at an angle toward the direction from which the wind is blowing, turns directly toward the wind but continues to turn so that the wind is now blowing at an angle onto the other side of the boat. (I purposely avoided using any technical sailing terms to describe the process of coming about.)

When the skipper says, "Ready about," these two words tell the crew exactly what he wants to happen and what they are required to do to accomplish it. It might seem more understandable to a novice if the skipper

said, "Get ready to turn," but an experienced crew would be in the dark about what they should do next. The jargon saves a great deal of time and effort by conveying precise and often complicated information in a concise form.

Jargon always makes it hard for outsiders to understand what some group of specialists is talking about, but the good use of jargon improves communication among knowledgeable people. The problem is how to decide whether a particular example is technical in the proper sense or whether it is just pretentious. Most of us might agree that *sanitation engineer* is jargon in the bad sense, because it is mainly used in an effort to make the occupation sound more high class than *garbage collector*. The case of the learning resources center is not so clear. Those who like this term will say that it conveys the notion that the center contains not just books, but also films, audio and video material, and the like. But probably everyone knows that already, in which case the term *library* would do just fine. In the case of sailing, however, knowing all the technical terms for the parts of a boat and the actions taken in sailing can not only save much effort and confusion, it can also even be a matter of life and death.

Psychologists use their share of jargon. For example, we distinguish between the terms *punishment* and *negative reinforcement*. The first term may sound like ordinary English, and the second may sound like jargon. Laypeople often use the two interchangeably, assuming negative reinforcement is just a fancy way of saying punishment. In fact, they are very different.

Punishment refers to an unpleasant event that is *presented* when someone does something. A child may be spanked for stealing a cookie, for example. Negative reinforcement, however, refers to an unpleasant experience that is *removed* when someone does something. A child may be permitted to come out of her room after she apologizes to her brother for calling him a name. The important distinction is that punishment always *reduces or eliminates* some behavior, such as stealing cookies, whereas negative reinforcement, like any other reinforcement, *increases* the frequency of some behavior, such as apologizing. Failure to distinguish between the two terms leads to a failure to understand the difference between two psychological processes.

Even when scientists do not seem to be using jargon, they may be. Scientists often use words that originally came from everyday usage, but they have given these different definitions when they use them scientifically. We have already used the example of punishment. This term came from everyday usage, but it has been given a specific definition that is not the same as the everyday definition you would find in a dictionary. This practice can also be frustrating to laypeople.

I remember attending a conference on olfaction (jargon for the sense of smell) in which we spent a long time trying to define odor. The spouse of

one of the conferees, who had sat in on the meeting, said afterward with some exasperation, "Why didn't you just look in the dictionary and be done with it?" The reason we didn't was that the dictionary definition is not intended to deal with the distinctions that scientists need to make when dealing with odor.

The simplest example may be how the term *work* is used in physics. We know in everyday life that work can consist of many different activities, some of which are purely mental, as when we work on a problem in our head. But to the physicist, work is defined as force times distance. By the physicist's definition, if you stood for 10 minutes holding up a piece of lumber while someone else nailed it in place, you would have done no work because, although you exerted force, you did not move anything. By everyone else's definition, you would have done work, and hard work at that.

In psychology, students often think they understand what is being talked about because terms such as *reinforcement, punishment, discrimination,* and the like are being used. What they may be missing is that even though these terms sound like ordinary English, they are really a different language, with different definitions.

Exercise: Find three terms in the glossary of a psychology textbook that have everyday meanings that are different from their technical meanings.

Section 2

Why Don't You Skip the Theories and Give Us More Facts?

Principle: *The main goal of science is theories, not facts.*

People like facts. They seem direct and concrete. Theories, on the other hand, seem tentative and speculative. The line made famous by Sergeant Friday in *Dragnet* was, "Give me the facts, Ma'am, just the facts." Psychologists, on the other hand, always seem to be talking about theories: Pavlov's theory of conditioning, Freud's theory of the unconscious, and so on. Some of these theories contradict one another. As a result, students get the idea that nothing in psychology is known for sure and that we develop theories because we are unsure of the facts.

As a matter of fact (!), theories are far more important to science than facts. A *theory* is a set of interrelated concepts that explains a large number of facts in a particular area of study. Pavlov's theory of conditioning explains why dogs salivate to a bell after the ringing of the bell has been paired with the appearance of a little food in the dog's mouth. Pavlov developed his theory to explain why the dog salivated when the bell was rung without any food. Pavlov's theory is an explanation of the facts.

Science differs from most other human activities in that its primary goal is the understanding of a set of phenomena, not simply being able to predict or control them. An animal trainer may know a great deal of practical information about how to get a dog to jump through a hoop. In fact, most animal trainers certainly know far more about how to train a dog than almost any psychologist who does not happen to be an animal trainer as well. The goal of the animal trainer is to get the animal to jump through the

hoop. The goal of the psychologist is to develop a theory to explain the processes that are involved when the dog learns to jump through the hoop.

The goal of the animal trainer is practical. The goal of the scientist is understanding. This is the difference between a cook and a chemist, an electrician and a physicist, a physician and a physiologist, an engineer and a scientist. My inclusion of the last two pairs of professions may require some elaboration in order to make the point clear. The physician and the engineer study a lot of science in their training. And physicians and engineers may both at times be involved in scientific research. But the goal of the physician is healing people, whereas the goal of engineers is building a rocket, or whatever. The practical and scientific roles of some professions overlap enough that we often talk of science and engineering as a single category for purposes of education, employment, and the like. Nevertheless, it is necessary to understand that generally the scientist is the only one whose main goal is to develop an understanding of whatever it is she is working on.

You might object that both the scientist and the practitioner have the goal of understanding. But the goal of the practitioner is recipe knowledge: practical, or "how to," knowledge. The goal of the scientist is theoretical, or "why," knowledge. Once, when I was teaching about personality theory in introductory psychology, a student offered to bring in some very good films from her place of business that she thought would be helpful in studying personality. Upon questioning her, I discovered that the films were training films on how to get along better with fellow employees, how to be a better manager of people, and similar topics. No doubt these were excellent films, and very helpful to her company and its employees. But they were aimed at imparting "how to" knowledge, not theoretical knowledge.

There are many reasons why scientists are so interested in theory. A good theory will explain facts that previously were not seen to be related; it will suggest further research that results in new facts; it will suggest new ways of dealing with problems that people face. Someone has said that nothing is as practical as a good theory. Theoretical understanding of learning has improved animal training as well as classroom instruction; theoretical understanding of disease processes has led to new treatments for disease, and so on.

But you are probably still bothered by my emphasis on the importance of theories. Don't we ever get to the point where we prove a theory to be a fact? Actually, a theory that is accepted by all as true is still a theory. We still talk about the germ theory of disease, or the gene theory of heredity, or Einstein's theory of relativity, even though there is no serious doubt that they are all true.

Once when I was trying to explain this to a class, one of the students asked, "Do you mean that a theory never grows up to become a fact?" The

student had gotten the point. Some theories are wrong; some theories are better supported than others. But a theory cannot grow up to be anything else, because there is nothing better to become.

This last point is misunderstood by religious fundamentalists who claim that creationism should be taught in schools along with evolution because Darwin's theory is only a theory. Now evolution is a "fact" because it happened. (In other words, the theory of evolution is true, because it explains a great many facts.) But it is still a theory, because it is an explanation (the only scientific one, in fact) of a (very large) set of observations.

Exercise: Name several theories of science that are "facts" in the everyday sense, because they are universally accepted as true.

Section 3

But That's Just Your Theory!

Principle: *Scientists as a rule believe the theory that gives the best explanation of a phenomenon, not just the one they like best.*

Occasionally when I am lecturing about some topic and I describe the theory behind it, a student will say, "But that's just your theory; mine is such and such." More often, they sit there and write down what I say so they can regurgitate it for the test, and keep on believing what they want.

Students sometimes have the attitude that they should decide to accept a theory because it appeals to them more than others. Never mind that the theory I am describing is the one accepted by most psychologists. Never mind that it is supported by empirical evidence. Never mind that it makes connections with related theories in other areas of science.

This is a tricky problem to deal with. It is true that no theory explains everything there is to know about a topic. It is true that all theories are incomplete explanations, or oversimplifications, of reality. It is true that there are often competing theories for any given phenomenon, and that each one will explain certain facts better than the other. So most scientists will not claim that any particular theory is 100% correct.

It is also true that there is plenty of evidence that scientists let their biases influence how they decide which theory to prefer. Many times a scientist will prefer one theory to another because it seems more aesthetically pleasing.

An influential movement in the humanities, known as *postmodernism*, questions whether it is possible to discover truth independent of personal