Current psychology has profited from the wisdom of the Gestalt psychologists as well. Indeed, a hard lesson was learned when it was realized that many conclusions reached regarding human memory based on the study of nonsense syllables (e.g., GUX) did not apply to meaningful words and sentences. For example, it has been demonstrated that the individual letters in words are processed simultaneously rather than sequentially (Adelman, Marquis, and Sabatos-DeVito, 2010). This means the word is processed as a "Gestalt" (organized whole), not separate letters.

Functionalism continues to be influential within psychology. Indeed, evolutionary psychology, an approach consistent with major themes of this book, has emerged recently as a unifying perspective for such distinct content areas as biological psychology, learning, and social psychology (Confer, Easton, Fleischman, Goetz, Lewis, and Buss, 2010).

By virtue of being first, Wilhelm Wundt was able to define, state the goals, and develop the methodology of psychology. We have seen that this advantage had its cost since it provided others the opportunity to make suggestions and offer criticisms, not always in a collegial manner. Still, the most important components of structuralism have been incorporated within current practice. The fact that Introduction to Psychology textbooks practically all include chapters on perception, learning, and cognition demonstrates continued interest in conscious experience. We do not directly observe people perceive, learn and think. These topics must be studied in an inferential manner based upon behavioral observations. That is, people behave as though they perceive, learn, and think.

Introspection continues as a methodology for acquiring data in the form of self-report with the inherent limitations of such data being recognized and studied in their own right. Wherever possible, confirmatory measures other than self-report are
frequently obtained. For example, in studies designed to reduce cigarette smoking, subjects are often required to provide carbon dioxide measures in addition to cigarette per day self-reports.

### Exercise

Describe Wundt’s initial structuralist definition, goals, and methods for the science of psychology along with the reactions of the functionalist, Gestalt, and behavioral schools. Show how our contemporary approach to psychology reflects the contributions of the early schools.
Research Methods in Psychology

Scientific Explanation

As mentioned previously, by explanation we usually mean a statement of cause and effect. Scientists refer to potential causes as independent variables and the related effects as dependent variables. Different sciences are defined by the dependent variables of interest. That is, physics studies the effects of different independent variables on matter and energy. Biology studies the effects of different independent variables on life processes. Psychology studies the effect of different independent variables on the behavior of individual animals.

All sciences assume that nature is lawful and that if you study nature systematically the underlying laws can become known. This assumption is referred to as determinism and is not today considered controversial with respect to physics, chemistry, and biology. We look to these disciplines to provide answers regarding questions regarding how nature works and benefit from technological advances resulting from scientific understanding. The assumption of determinism with regard to human behavior, however, is
considered very controversial by those believing we possess freedom of the will. I hope to reduce or eliminate the controversy by pointing out that the logical opposite of determinism is not freedom of the will, but non-determinism. That is, the logical opposite of the assumption that nature is lawful is that nature is not lawful. Everyone, including those believing strongly in freedom of the will, acts as though behavior is lawful. We (usually) stop at red lights and proceed when they turn green. We (usually) take turns listening and speaking. We (usually) show up for class on time, etc., etc. None of this would be true if we did not expect others to act in a predictable manner. Predictability, implying lawfulness, can only be true within a deterministic system.

Let us now consider what psychology considers a lawful explanation of human behavior. We start with a couple of scenarios. Imagine that you are in a classroom and a person your age enters, walks over to a wall and starts banging their head against it. Then the person takes a seat and starts talking out loud to someone else, although no one else is present. Someone from the university counseling center enters the room and concludes these behaviors occur as the result of schizophrenia. Another person your age enters the classroom, congested and coughing. Someone from the university health services concludes the person is experiencing these symptoms as the result of influenza.

These two scenarios appear very similar. An individual’s behaviors or physical symptoms are explained by reference to an underlying condition or illness. However, the first example constitutes an example of a pseudo- (i.e., false) explanation whereas the second example could fulfill the requirements of an adequate