what they have heard from friends or relatives.

Classic Conditioning

The expectation that a treatment can cause a psychologic change can, by itself, induce that change. An early experimental demonstration of the placebo effect was done by Pavlov. Dogs reacted with nausea, salivation, and emesis to the injection of morphine. On repeated injections, these reactions occurred as soon as the dogs were approached with a syringe. The finding that reactions to drugs can occur quicker than when induced by pharmacologic means has also been attributed to classic conditioning.

Classic conditioning may account for the occurrence of placebo reactions after patients have experienced the effects of active treatments. Cognitive dissonance may help explain how expectations can induce placebo responses in individuals who have never experienced the effects of an active treatment.

Internal Standards

Classic conditioning or another cognitive mechanism may help explain how expectations can result in physical responses to placebos. In addition, expectations can influence judgments of whether treatment is a success or failure. An individual who expects too much from a treatment may judge results to be unsuccessful. The same outcome may be viewed as a therapeutic success by patients who have lower expectations.

An interesting finding of placebo research is that unfulfilled promises of the therapist sometimes produce a "boomerang" effect (4). Patients may experience a worsening of their initial symptomatology if therapists tend to oversell treatments. This may be especially true for patients with accurate expectations because of prior experience with the treatment or the disease.

Hope

Anticipations about a therapy and the desire for improvement are essential components for the mobilization of hope. The importance of hope, closely associated with faith, is reflected by a major religious group in the United States disputing the efficacy of medicine and attributing therapeutic benefits to their own faith.

The Placebo Effect as a Result of Therapy Evaluation

The environment created by the evaluation of treatment may itself influence the reporting of placebo effects. Mistakes can be made in the measurement of placebo effects. They can be misrepresentations of reality. The measurement process itself can be a potent stimulus which distorts clinical evaluations made by patients. The general environment in which measurements are made may significantly influence the judgments of therapeutic effects by patients and physicians.

Response Artifacts

The reactive effects of measurement have always been a problem for researchers. Patient and staff behavior may change with evaluation of behavior. When filling out questionnaires, patients may distort responses by lying, faking illness or health, responding thoughtlessly and carelessly, or tending to give socially sanctioned responses. Since placebo effects are often assessed in uncontrolled studies, it is impossible to know the degree to which response-bias artifacts influence the assessment of placebo effects.

Labeling

It is sometimes assumed that the self-reported feelings or emotions are accurate reflections of psychologic states. However, an individual's response is often vague and interpretable only within the social context. The same psychologic reaction may be called "anger" or "euphoria" depending on the situation in which the response occurs (5). Patients may label their therapeutic reactions in terms of their expectations or the descriptions furnished by their physicians. Furthermore, there may be a tendency for patients to use somatic labels when describing response to physical treatments such as medication but to use more affective and cognitive labels when describing response to treatments such as psychotherapy.

Misattribution

Patients also judge the cause of an observed change. A powerful therapeutic variable is the knowledge that a therapy has been rendered. Slight changes in a patient's emotional or physical state, which might otherwise go unnoticed, may