Directions: Review the content below and answer the questions that follow

Mind over Matter

by Carolyn Reeder

What a person believes to be true can have a powerful effect on the body. Medical studies show that between 30 percent and 40 percent of patients experience relief of their symptoms if they think they've received medicine, even when they actually received an inactive substance, or *placebo*.[1] This positive response based on the expectation that treatment will improve their condition is called the *placebo effect*, and it works to reduce pain and promote healing in a variety of conditions and injuries. There is also a *nocebo effect*, in which negative expectations cause a negative response in the patient.

Experiments Using Placebos and Nocebos

Here is an example of the placebo and nocebo effects at work. When researchers asked people with asthma to breathe a harmless substance that they were told was a chemical irritant, almost half of them quickly developed breathing problems. Those affected patients were asked to breathe the same substance again, but this time they were told it was medication and many quickly recovered.

A comparable experiment was done in Japan using high school boys who in the past had developed rashes after contact with lacquer trees, which are in the same plant family as poison ivy. After each boy was blindfolded, researchers brushed one arm with lacquer tree leaves but said they were using leaves from chestnut trees–and only a few of the boys had skin reactions. Researchers then brushed each boy's other arm with the chestnut tree leaves, saying they were using leaves from a lacquer tree–and an itchy red rash developed almost at once.

What people believe can have an effect on their behavior as well as their health. A Stanford University professor set up an experiment to see if expectations could influence students' test scores. Mathematics students–half of them male, half female, and all good in math–were told that the test they were about to take was gender-neutral.[2] They were the *experimental group*. Other students were chosen to be the *control group*. They were as much like the experimental group as possible–the same number of good math students, equal numbers of males and females–and they were given the same test. Just one thing was different: they were not told that the test was gender-neutral. In the control group, male students did significantly better than female students, fulfilling the still-common expectation that men will do better in math. But women in the experimental group scored much higher on the test than women in the control group did, and men in the experimental group scored lower than men in the control group. The scientist believes that his experiment's results show the effect that confidence has on performance.

Why Does the Placebo Effect "Work"?

Scientists have several theories to explain the placebo effect. One is that patients simply are responding positively to attention from doctors or researchers. Another is that, since taking medicine has made them feel better in the past, people have become conditioned, or accustomed, to feeling better after taking what they believe to be medicine. But whatever the reason, there is no doubt that placebos can "work"–the improvement in a patient's health after being given a placebo can be measured on medical tests.

To make sure that improvements in patients' conditions are due to medical treatment and not to the placebo effect, a pharmaceutical company must prove that its product produces better results than a placebo. Before a new medication can be approved for use by the public, scientists set up a "placebo-controlled study" with an experimental group and a control group. Patients in the experimental group are given the new medication; patients in the control group receive the placebo. These clinical trials are usually *double-blind* experiments in which neither patients nor doctors know which group is taking the medication being tested and which group is being given the inert substance.

Some doctors regard the placebo effect as a problem to be overcome, but others believe that medical science should make use of such a powerful healing force. This, however, raises the question of whether it would be ethical to "trick" a patient into believing that he or she was receiving medicine when that was not the case–even if the results were positive and the patient was being protected from possible side effects of the actual substance. Dr. Gershom Zajicek, a professor at Hebrew University of Jerusalem, has suggested a new way of looking at the placebo effect. He writes that both explained and unexplained processes are at work in illness and that what has been called the placebo effect should be redefined as "a nonspecific treatment that mobilizes unexplained processes." Then making use of this aid to healing would be a valid treatment.

Whether you realize it or not, you have no doubt experienced the placebo effect on numerous occasions. Remember all those tumbles when you were a young child? Didn't someone who cared for you kiss your bruise to "make it go away"?

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[1]For instance, a capsule that looks like it contains medicine will actually contain a nonmedicinal substance like sugar.

[2]Showing no preference or advantage for either males or females; in this case, a test on which men and women students would perform equally well.

More about the Nocebo Effect

Medical scientists who have studied the nocebo effect suggest that it could explain the *mass hysteria* that sometimes occurs when a large number of people quickly develop disturbing symptoms in response to something in the environment that they regard as a health threat. An example is when people become physically ill after smelling a peculiar but harmless odor that they fear is a toxic gas.

1. Which sentence BEST states what the author is expressing in the first paragraph?
   - A. People's beliefs are studied in medical schools.
   - B. People's beliefs are observed in control groups.
   - C. People's beliefs can raise their confidence levels.
   - D. People's beliefs can affect their physical comfort.

2. How do the footnotes assist the reader in understanding the passage?
   - A. They define difficult concepts.
   - B. They describe the control group.
   - C. They detail the patient's condition.
   - D. They provide information about the experiment.

3. What is the MAIN idea of paragraph 1?
   - A. People's beliefs affect their physical comfort.
   - B. People's beliefs are observed in control groups.
   - C. People's beliefs can raise their confidence levels.
   - D. People's beliefs are being used to create medical treatments.

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