

“Placebo Effect: Real or Imagined.” Gerald T. Korty, April 24, 2007

[The cure for the headache] was a kind of leaf, which required to be accompanied by a charm, and if a person would repeat the charm at the same time he used the cure, he would be made whole; but that without the charm would be of no avail.

-Socrates, according to Plato<sup>1</sup>

### **What is a “Placebo Effect”?**

A common definition of a placebo effect is any genuine psychological or physiological response to an inert or irrelevant substance or procedure<sup>2</sup>. Placebo effects are most often associated with clinical trials for pharmaceutical drugs. During these trials, participants are randomly assigned to two conditions: placebo or experimental. The experimental group receives the drug to be tested while the other group receives a placebo, a pill physically similar to the real drug. The difference between the two is that the placebo will contain an inert substance like water, sugar (glucose), or starch. This shouldn't produce a psychological or physiological response in the participants. But many times, researchers and participants do report both objective and subjective responses which are commonly referred to as placebo effects.

Placebo effects aren't only confined to clinical trials though. They can be seen all around us. Consider a child who has just fallen down. The child's mother, responding to the child's distress calls, arrives on the scene to find her child has a “boo-boo”. She kisses it and says that everything will be all better. The kiss and the words spoken by the mother are irrelevant procedures that shouldn't effect how much pain the child feels. Yet the child will get up, renewed and ready to go thanks to the mother's treatment. The child's response in this case would be a common example of a placebo effect.

### **Who is affected by placebo effects?**

You may assume that placebo effects are only found in gullible or ignorant people. This would logically make sense because these types of people may not be able to distinguish the difference between effects from real drugs and those of placebos. But research has failed to identify personality characteristics or other qualities of persons who frequently react to placebos.<sup>3</sup> This means that placebo effects could happen to us all. There is no type of personality or characteristic that would make any subgroup of people more likely to react to placebos more than the general population.

However, it has been shown that people's expectations can influence outcomes of both placebo and active treatments.<sup>3</sup> For example, if you're sick and you go to the doctor's office, you're probably expecting him/her to give you something to help make you feel better. Because of this expectation, you're more likely to improve regardless of whether the doctor gives you a placebo or an active drug. This shows how powerful the connection is between the mind's expectations and the physical state of the body. These expectations are so strong that they've been shown to significantly change or even reverse the actions of many potent pharmaceutical agents.<sup>3</sup>

Although there is no set characteristic or personality type of the people who commonly respond to placebos, there is for practitioners or the people who provide the treatments to patients. It has been shown that practitioners must play the role of the confident rescuer to facilitate a placebo effect in their patients.<sup>3</sup> This is logical since placebo effects are shaped by people's expectations. If a confident doctor says that you'll improve, you're expectations of improving will probably be stronger than if an apprehensive or uncertain doctor told you the same thing. Since you're expectations are stronger, your placebo effect will also be stronger.

## **Why/ How do placebo effects occur?**

Since almost every pharmaceutical drug study includes a placebo condition you may think that the placebo effect has been well studied. However, surprisingly little research has been conducted focusing on the placebo effect.<sup>4</sup> This becomes even more surprising when it has been estimated that more placebos have been dispensed to research participants than any other experimental drug or treatment.<sup>4</sup>

There have been some studies that have focused on the placebo effect. These studies focus on how the context of beliefs and values shape brain processes related to perception and emotion and, ultimately, mental and physical health.<sup>5</sup> From these studies three general theories have emerged in attempts to explain the placebo effect: Expectancy theory, Classical Conditioning theory, and Motivational theory.

The Expectancy theory states that the placebo effect is driven by an anticipation that a treatment will result in a particular outcome.<sup>4</sup> In this theory, a hypothetical expectancy (example, “If I take drug X, I will experience effect Y”) sets the stage for a placebo effect. Taking a placebo then produces a categorical expectancy (example, “I will experience effect Y”), and it is this belief that produces the placebo effect.<sup>2</sup>

The Classical Conditioning theory models the research done by Pavlov and his dogs. According to the traditional descriptions, classical conditioning occurs when an organism is exposed to the repeated pairings of an unconditioned stimulus (US) and a conditioned stimulus (CS). The US is a stimulus that elicits an unlearned or unconditioned response (UR). Initially, the CS has no such effects. After sufficient CS-US pairings, however, the CS presented in the absence of the US elicits a response similar or related to the UR. This is known as the conditioned response (CR).<sup>2</sup> Using the

traditional view in the Classical Conditioning theory, active medications are the US, the methods or techniques used to administer the treatments are the CS, and the placebo effect is the CR.<sup>4</sup> Some people believe that the Classical Conditioning theory is really just a special case of the Expectancy theory and thus shouldn't be considered as a separate theory.

The Motivational theory states that the placebo effect is an outcome of one's desire to feel better or reduce anxiety.<sup>4</sup> Using the example of the child and mother stated earlier, the child's desire to be better elicits a placebo effect when the mother states that everything is fine. This theory closely resembles the Expectancy theory so there is some controversy over whether this is really a separate theory as well.

Each of these theories has its advantages and disadvantages when it comes to explaining the placebo effect. Although these theories have some differences, one thing is clear in all of them. Expectancies appear to play a pivotal role in most placebo effects in humans.<sup>2</sup> In the future, I suspect that an integrative theory will come to preeminence in explaining the placebo effect. This will take much more investigation of this topic though.

### **Where can you get more information?**

For more information you can go online to <http://en.wikipedia.org/>, <http://www.ama-assn.org/>, or <http://www.nih.gov/> and search for "Placebo effects".

## **References**

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