

## PLACEBO EFFECTS

THE TERM PLACEBO refers to any component of therapy without specific effects that is used, deliberately or inadvertently, as a treatment or as a control in experimental studies.<sup>1</sup> A placebo by this definition may consist of a pill, injection, surgical procedure, psychotherapeutic format, or machine that does not have, or does not depend entirely upon, specific psychophysiological processes to produce particular effects. A *placebo effect* is the psychological or physiological outcome that a placebo produces.<sup>†</sup>

With the help of placebos, countless people have experienced alterations of mood and perception, improvement of their autonomic and motor functioning, or relief from disability and suffering. Like the hysterical stigmata and false pregnancies discussed in the previous chapter, psychosomatic changes induced by placebos dramatize our capacity for self-transformation.

### [12.1]

#### PLACEBO RESEARCH

The placebo concept has a long history in Western medicine. The term itself, which is taken from the Latin verb meaning "I shall please" or "I shall serve," entered medical parlance in the late eighteenth century. Quincy's *Lexicon* of 1787 called it a "commonplace method of medicine"; Hooper's *Medical Dictionary* of 1811 defined it to mean any medicine "adapted more to please than benefit the patient."<sup>2</sup> But the idea behind the term was familiar to doctors of Greek antiquity,

<sup>†</sup> For a discussion of these definitions and their various connotations, see philosopher Adolf Grunbaum's *Explication and Implications of the Placebo Concept*, and Howard Brody's *Placebo Effect: An Examination of Grunbaum's Definition*, both of them chapters in *Placebo: Theory, Research, and Mechanisms* (White, L., et al. 1985).

who knew that their cures depended largely upon psychological factors such as their patients' expectation of therapeutic success. The idea that most prescriptions had morale-boosting properties as well as specific effects was part of ancient medical wisdom.

Placebo effects were not studied systematically, however, until the twentieth century. Since the early 1900s, hospitals, research centers, medical schools, and drug companies have found that dummy treatments relieve an amazing range of afflictions, produce toxic side effects, and catalyze alterations of mood and behavior. The dramatic changes induced by placebos in modern experiments have convinced many psychologists and medical people that human beings possess largely untapped capacities to balance and restore their own functioning.<sup>3</sup> For example, in a landmark study published in 1955, Harvard University's Henry Beecher reviewed fifteen double-blind experiments in which patients were given a placebo for postoperative pain, cough, angina pectoris discomfort, headache, seasickness, anxiety, drug-induced mood changes, or the common cold, and found that 35 percent of their 1,082 subjects had been satisfactorily relieved. Beecher wrote:

The constancy of the placebo effect, in a fairly wide variety of conditions, including pain, nausea, and mood changes, suggests that a fundamental mechanism is operating in these several cases, one that surely deserves further study. Many "effective" drugs have power only a little greater. To separate out even fairly great true effects above those of a placebo is manifestly difficult or impossible on the basis of clinical impression.<sup>4</sup>

Psychiatrist Arthur Shapiro suggested that the history of medicine was largely the history of placebo effects. When illness kept him bedridden in 1956, he read through a 100-year file of medical journals to find recurring patterns of treatment. "Medical fads came and went," he wrote. "A treatment would look wonderful, produce marvelous results and then disappear. *Something* seemed to work."<sup>5</sup> Guided by this observation, medical people now generally believe that a placebo's effect is produced by various aspects of a medical procedure that do not have pharmacologically specific effects upon the patient's functioning. A treatment's reputation, the patient's expectations about it, the therapeutic setting, and the doctor's belief in his own diagnoses all contribute to medical success.<sup>6</sup> As several experi-

ments have shown, even a capsule's size, shape, and color help determine its effectiveness.<sup>7</sup> No treatment, it seems, is without some placebo effect, whether it be healing or toxic. Pharmacologically active drugs such as insulin, penicillin, or Dilantin may become either more or less effective, depending upon their recipients' attitudes toward them and the circumstances in which they are given.

In a study published by *The New England Journal of Medicine*, Herbert Benson and David McCallie reviewed the history of treatments for angina pectoris. Summarizing their review, they wrote:

Many types of therapy . . . have been advocated, only to be abandoned later. A partial list would include heart-muscle extract, pancreatic extract, various hormones, x-irradiation, anticoagulants, monoamine oxidase inhibitors, thyroidectomies, radioactive iodine, sympathectomies, various vitamins, choline, meprobamate, ligation of the internal mammary artery, epicardial abrasions and cobra venom. Since most of these are now known to have no specific physiologic effect in the treatment of angina pectoris, we can analyze the benefits [attributed to them] and assess the degree of influence of [their] placebo effect.

Nearly all of these treatments had been greeted with enthusiasm by the doctors who administered them and the patients who received them, but controlled tests of their effectiveness by skeptics who operated under circumstances that minimized their placebo effect eventually called them into question. As the number of negative findings increased or when another new therapy appeared, the original therapy was abandoned. Benson and McCallie wrote:

Quantitatively, the pattern is consistent. The initial 70 to 90 percent effectiveness in the enthusiasts' reports [decreased] to 30 to 40 percent "base-line" placebo effectiveness in the skeptics' reports. This pattern was recognized by the nineteenth century French physician, Armand Trousseau, who allegedly stated, "You should treat as many patients as possible with the new drugs while they still have the power to heal."

Benson and McCallie illustrated their argument with histories of five abandoned treatments, and detailed the divergent results reported by enthusiasts and skeptics. They concluded:

Even with inactive procedures, physicians in the past have consistently achieved marked symptomatic improvement in approximately 80 per-

cent of patients with angina pectoris. This remarkable efficacy should not be disregarded or ridiculed. After all, unlike most other forms of therapy, the placebo effect has withstood the test of time, and continues to be safe and inexpensive.<sup>8</sup>

Like psychogenic stigmata or the disappearance of allergies in multiple personality, placebo-induced cures and toxic effects demonstrate our capacity to mobilize latent transformative powers—for either sickness or health—without external devices. "The placebo is an emissary between the will to live and the body," wrote Norman Cousins. "But the emissary is expendable."<sup>9</sup>

[12.2]

## PLACEBO-INDUCED RELIEF FROM PHYSICAL AFFLICTIONS

### *Angina Pectoris*

Ligation of the internal mammary artery was used in the United States during the 1950s for the relief of angina pectoris in the belief that it improved coronary blood flow. Henry Beecher compared the results of enthusiastic and skeptical surgeons who performed the operation.<sup>10</sup> Four enthusiasts described in Beecher's paper operated on 213 patients, of whom 38 percent experienced complete relief, and 65 to 75 percent showed considerable improvement. However, studies by Dimond (1958) and L. A. Cobb (1959) led to the abandonment of the procedure. In these two studies, a skin incision was made in every case, but the internal mammary artery was ligated only in randomly selected patients. In Dimond's group, 100 percent of the nonligated and 76 percent of the ligated patients reported decreased need for nitroglycerine and increased exercise tolerance; and six months after their operation, five ligated and five nonligated patients in Cobb's group reported more than 40 percent subjective improvements.<sup>11</sup> "Both studies showed that ligation of the internal mammary artery was no better than a skin incision, and that such an incision could lead to a dramatic, sustained placebo effect," Benson and McCallie concluded in their review of angina treatments.

Benson and McCallie also summarized the results of the Vineberg procedure, in which the internal mammary artery was implanted into a 3- to 4-cm tunnel burrowed into the myocardium to improve coronary blood flow. "Although an improvement rate of 85 percent was reported," they wrote, "several investigations demonstrated that neither objective nor subjective measures of improvement correlated with patency of the implanted artery or establishment of collateral circulation. In none [of these investigations] did improvement correlate with angiographic evidence of revascularization." Yet some 10,000 to 15,000 operations of this kind were performed (with a mortality rate of approximately 5 percent) before the procedure was abandoned, so convincing were its results until skeptics published their studies of it. Several drugs used for angina treatment, too, became less effective when shown to be nonspecific.<sup>12</sup>

### *Warts*

In 1934, physician Herman Allington reported an experiment in which 105 patients were given sulpharsphenamine, a drug used successfully in treating warts, and 120 a dose of distilled water that was colored to match it. The experiment was conducted double-blind—that is, the operators who gave the injections did not know if they were administering the drug or the placebo. Of those treated with sulpharsphenamine, 52.5 percent, against 47.6 percent of those receiving the placebo, achieved complete remission.<sup>13</sup> In an earlier study, reported in 1927, physician Bruno Bloch cured 44 percent of his patients who had suffered from one kind of wart and 88 percent who had suffered from another by suggestion alone, thus reinforcing the belief among many physicians that psychological factors play a large role in the onset and cure of the affliction.<sup>14</sup> After reviewing the research literature in 1959, psychiatrist Montague Ullman concluded that suggestion was the most important factor in the cure of warts, even when they were treated by X ray, drugs, or surgery.<sup>†</sup>

<sup>†</sup> Ullman 1959. In a later study, Ullman and Dudek analyzed the nature of the therapeutic relationship involved in such treatments, and found that 8 out of 15 patients who went into deep hypnotic trance were completely cured within four weeks compared to just 2 of 47 who could not be deeply hypnotized (Ullman & Dudek 1960).

For further research on the role of suggestion in the cure of warts, see: Dudek 1967 and Sulzberger & Wolf 1934.

### *Asthma*

Much research has shown that placebo effects can either stimulate or relieve breathing difficulties among asthmatics. In one study, for example, 19 of 40 asthmatic subjects developed airway resistance after they inhaled saline solution that they believed to be allergenic, and 12 of those 19 developed full-blown wheezing and bronchial spasms. Three minutes after the inhalation of a saline-solution placebo, every subject's airway resistance returned to baseline levels.<sup>15</sup> In a second study by the same researchers, 15 of 29 asthmatic subjects developed bronchospasm after breathing saline solution which they believed to contain allergenic agents. "In light of [these] findings," the authors concluded, "a meaningful assessment of the precipitants of asthma and the treatment of asthmatic patients must necessarily include an appraisal of the role played by suggestion. The expectations of the patient may have a marked influence on the efficacy of any given therapeutic regimen."<sup>16</sup>

### *Pain*

In a review of 11 double-blind studies conducted between 1959 and 1974, medical researcher Frederick Evans found that 36 percent of 908 subjects who received placebo medication achieved at least 50 percent relief from various kinds of pain. His results agree almost exactly with the 35 percent figure Henry Beecher found in his 1955 survey of 15 double-blind placebo experiments.<sup>17</sup>

### *Arthritis and Other Disorders*

In a study of placebo effects among arthritic patients, about the same number benefited from placebo tablets as those who received conventional antiarthritic drugs. Furthermore, when patients who had not experienced relief were given placebo injections, they too felt their symptoms were alleviated. Among the benefits these subjects experienced were improvements in eating, sleeping, and elimination, as well as reductions in swelling.<sup>18</sup> Hay fever, coughing, headache, diabetes, peptic ulcer, seasickness, and the common cold, too, have been relieved or cured with placebos.<sup>19</sup>

[12.3]

## MOODS AND BEHAVIOR INFLUENCED BY PLACEBOS

*Anxiety*

Both clinical and experimental research has shown that placebos facilitate pain reduction when they help lessen anxiety. In one study, for example, 14 subjects whose anxiety decreased after they took a placebo could endure experimentally induced pain for longer periods of time than they had before.<sup>20</sup> Frederick Evans, one of the experimenters, concluded that “these results and other recent studies suggest that one can anticipate a placebo-induced reduction in suffering when anxiety decreases.”<sup>21</sup>

*Depression*

Like anxiety, depression is caused by organic disease or by affective disorders, and like anxiety it is sometimes relieved by placebos. In a double-blind study of 203 depressed patients, for example, subjects given placebos improved as much as patients in six groups given various antidepressant drugs.<sup>22</sup> These patients’ symptoms included sadness, tearfulness, despondency, suicidal thoughts, loss of interest in self and environment, concentration difficulties, psychomotor retardation, sleep impairment, appetite disturbance, weight loss, and diminution of sexual desire. Studies by Louis Lasagna and other placebo researchers have produced similar results.<sup>23</sup>

*Other Affective and Behavioral Changes*

Various studies have shown that placebos can

- produce slowed or speeded pulse, observable calm or nervousness, and feelings of comfort or euphoria;
- help relieve insomnia and other sleep difficulties;
- induce emotional and perceptual changes among marijuana users that mimic experience with the drug; and
- help reduce obesity and urinary incontinence.<sup>24</sup>

*Adverse Reactions to Placebos*

Henry Beecher counted 35 toxic side effects of placebos in the fifteen studies he reviewed for his classic 1955 paper, among them nausea, dry mouth, heaviness, headache, concentration difficulties, drowsiness, fatigue, and unwanted sleep.<sup>25</sup> In a study of the drug mephenesin, Stewart Wolf and Ruth Pinsky found that placebos produced combinations of weakness, palpitation, nausea, rash, epigastric pain, diarrhea, urticaria, and swelling of the lips that mimicked known side effects of the drug in some of their subjects.<sup>26</sup> And a group of Mexican researchers reported that women given placebo contraceptives reported decreased or increased libido, headache, bloating in the lower abdomen, dizziness, lumbar pain, nervousness, dysmenorrhea, nausea, epigastric pain, anorexia, acne, blurred vision, and palpitations.<sup>27</sup> Studies such as these show that placebos can induce destructive as well as beneficial responses. Like psychotherapy or religious practice, they can act like a two-edged sword upon us.

[12.4]

## PLACEBO EFFECTS AND TRANSFORMATIVE PRACTICE

The studies I have just reviewed, and others that a complete inventory of placebo research would include, show that afflictions can be relieved, that moods and perceptions can be altered, and that autonomic and motor functioning can be improved to some extent by the use of nonspecific treatments that promote their recipients’ self-regulative powers. Such research, however, has provided little evidence to date that placebos can stimulate exceptional functioning of the kind produced by the conscious cultivation of particular capacities.<sup>28</sup> This is the case because we typically develop extraordinary attributes through activities that involve self-awareness, whereas a placebo’s effectiveness generally depends upon its subject’s *lack of awareness*.<sup>29</sup>

Nevertheless, placebo effects are important for this discussion because they dramatize our capacity for dramatic psychosomatic changes. Here I will briefly describe certain elements involved in both placebo effects and successful transformative practice.

*Supportive Social Conditions*

Positive social support generally facilitates placebo-induced healing and self-regulation. Several studies have shown, for example, that:

- Enlarging patient groups in which treatments are administered can improve responses to placebos, probably because the power of suggestion is increased by the greater number of participants.
- A placebo's effectiveness depends to a large extent upon the physician's interest in the patient involved, interest in the treatment, and concern about the treatment's results.
- A placebo's power is increased by experimental studies that impart a sense of interest and care to their subjects.
- Placebo effects in most treatments are increased when the treatment has a good reputation.<sup>30</sup>

### *Expectation, Positive Suggestions, and Faith*

To demonstrate the role of suggestion in placebo effects, experimenters have administered the same dummy therapy with different descriptions of it. In one study, for example, volunteers received the same placebo on three separate occasions, each time with a magnetic tracer by which their stomach activity could be monitored. With the first administration, all subjects were told they were getting a drug that would cause strong gastric churning; with the second, that the drug would make their stomachs feel full and heavy; with the third, that the drug was a placebo. Though they took the same substance each time, these subjects showed changes in stomach activity that conformed to their expectations.<sup>31</sup> This study, and others, show that mental sets affect physiological processes with great specificity.

Physicians since antiquity have recognized the healing power of faith, evident in shrines such as Epidaurus and Lourdes (see chapter 13.1). Indeed, faith can be so strong that subjects suffering from upset stomachs have been relieved by *nausea-inducing* agents when told by doctors that such agents would help them.<sup>32</sup> Psychologists have identified several ways in which expectant faith facilitates healing. Richard Bootzin, for example, argued that patients with increased expectancies regarding their ability to cope tend to rehearse positive ideas, images, and moods. "The person receiving a supposedly effective therapy," Bootzin wrote, "may reduce the number of self-defeating thoughts and images in which he engages and may increase the frequency of [his] coping self-statements and positive images."<sup>33</sup> Psychologist William Plotkin, too, has suggested that faith is a distinctive process in the placebo effect:

As soon as the treatment is believed to have commenced persons who have faith in that treatment will begin, on the basis of that faith, to treat themselves as persons whose problems have been cured. The reason, again, is that if they do not lack faith in the treatment, there is no question in their minds as to whether it will succeed; if they see themselves as being in the process of being cured, and if they have the necessary competence to act accordingly, then we can say that they have already started to be persons who are cured—they are treating themselves that way and acting appropriately (not merely going through the motions).

. . . Coming to act as cured persons, patients may also strengthen those skills that are relevant to therapeutic improvement. Through practice and experience in acting as cured persons, they may improve at those behaviors that aid or express a cure. It should be noted that the person who has faith in a therapeutic procedure is even more likely to improve than one who merely has "positive expectancies," "conviction," or "hope": If an individual does not merely expect to be cured, but takes it for granted that he or she has been cured or is well on the road to a cure, then that individual is less likely to see things as evidence to the contrary, and, accordingly, is more likely to act in a manner consistent with and facilitative of cure.

. . . Consider a man who suffers from chronic muscle contraction headaches. If he is given a prescription of placebo pills, and if he has faith in the efficacy of the putative medicine, he will take it for granted that his headache problem has been cured and will treat himself accordingly. He may no longer expect to be stricken with headaches; he may cease to worry about being regularly incapacitated; he may experience a lifting of a tremendous burden, and may perhaps celebrate by spending his newly "won" time in pursuing various pleasurable and relaxing endeavors for which he previously felt ineligible; and he may no longer present himself to others (or to himself) as a headache sufferer, with a consequent reduction in social pressure to behave (and experience) accordingly.<sup>34</sup>

Expectant faith, in short, stimulates healing behavior, along with positive imagery and mood. Like Renaissance doctors who subscribed to the Hippocratic doctrine that elements of mind and body "tread in a ring," contemporary medical researchers have shown that cognition, affect, and behavior powerfully influence one another, for better or for worse.

### *Complex and Redundant Mediations*

In 1978, it was reported in the British journal *Lancet* that some dental patients whose impacted molars were removed experienced significant

reduction of pain when given placebos, whereas similar patients given naloxone, a substance that blocks the action of endorphins, did not. Furthermore, when the subjects who experienced pain relief were given naloxone, their pain increased to the levels experienced by those who did not respond to the placebo and by those who initially received the endorphin-blocker. Because naloxone undid the analgesia triggered by the placebo, the *Lancet* study authors concluded that endorphins help cause placebo pain relief.<sup>35</sup>

Subsequent studies, however, have suggested that the mediation of placebo pain relief is more complex. In 1983, Richard Gracely reported in *Nature* that placebos helped relieve pain in some patients suffering postoperative dental pain even though the endorphin receptors in their brains were blocked by naloxone. The results of this and other experiments suggest that naloxone binds preferentially to certain types of receptors, leaving others available to pain-relieving opioid peptides other than endorphins.<sup>36</sup> It is now evident that pain relief involves different kinds of physiological interaction. Indeed, ongoing medical research suggests that because our bodies are highly complex, many if not most somatic changes are mediated in multiple ways, by differing pathways or interaction chains, through various combinations of central nervous, immune, endocrine, or other activity. Our psychosomatic complexity, and the redundancy of many bodily processes, make it possible for transformative programs to work in various ways, overcoming obstacles such as blocked endorphin receptors, injured organs, or impaired nervous functioning. In an authoritative review of placebo research, Leonard White, Bernard Tursky, and Gary Schwartz noted, "There is no single placebo effect having a single mechanism and efficacy, but rather a multiplicity of effects, with differential efficacy and mechanisms."<sup>37</sup>



In summary, then, placebo effects depend upon supportive social conditions surrounding a treatment's administration; positive expectations (and accompanying suggestions) that the treatment will succeed; hopeful faith, which stimulates positive images, emotions, covert rehearsals, and behaviors supporting the treatment involved; and various physiological processes that can be mobilized for healing and growth. As we shall see, these factors operate in activities other than placebo-induced treatment, including the transformative disciplines discussed in this book.