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# Does the Placebo Effect Change Our Understanding of the Causal Relationship between Mind and Body? <sup>1</sup>

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## Summary

The “placebo effect” refers to what happens when a patient or test subject is given a dummy drug or non-authentic medical treatment and, despite the fact that it should not have any pharmacological or authentic medical and/or physiological effects, a therapeutic effect can be seen in the individual concerned. This effect is an influence that is exercised from the mental to the physical; it is one that runs counter to the perspective of modern physics and medicine (called physicalism) and is considered to provide empirical grounds for mind-body dualism. Physician and ethicist Howard Brody has offered quite an interesting interpretation of the placebo effect. He argues that in taking the placebo, patients will attribute certain meanings based on their conditioning and expectations or anticipation; the meanings they attribute in turn bring about physical changes. The placebo effect thus constitutes a “response” that is both epistemic and physical. Using this interpretation enables us to show how the placebo effect can be understood within the framework of modern-day physicalism. This suggests that the placebo effect, including that which occurs in alternative medicine, is not necessarily something that leads to mind-body dualism or the endorsement of causal influence from the mind to the body.

*Keywords:* Placebo effect, alternative medicine, mind-body relationship, physicalism, causal relationship

## Introduction

Giving a patient a dummy drug with no inherent medicinal properties that is misrepresented as being a real drug may result in the appearance of some medical or physiological improvement. Such improvement is called the placebo effect. When some sort of effect is brought about even though the patient has been given what is not an authentic drug, we should see the cause of that response as coming from something other than whatever it is that the patient has been given. If this is indeed the case, it would appear to be difficult to find the empirical grounds for this in anything other than the patient’s awareness and understanding of what they have been given. This effect does not occur universally, as we shall see below. But if it often occurs, then it would be safe to say that changes at the level of consciousness and belief bring about medical or physiological changes in the body.

The tacit premise of modern-day science including medicine is what is called the physicalist schema, which inevitably sees physical changes (including those in the body and the flesh) as the cause of other physical events (including those involving the body and the flesh). When the placebo effect occurs, however, a physical change is brought about solely by the patients’ awareness or belief that they have taken medicine despite having taken a

dummy drug that clearly has no medicinal effects. While it may seem possible to regard this as an influence from the consciousness to the body (causal effect), if that were the case then it would have a logical conclusion that overturns the aforementioned physicalist premise. Given the implication of the placebo, there come the moves to criticize the physicalist schema of modern-day science and to endorse traditional philosophical the dualism.

This article will attempt to show the possibility that, based on a certain interpretation, the placebo effect does not absolutely run counter to the physicalist schema; to be more precise, it can also be seen within the scope of physicalist understandings of causal relationships. This is not far-reaching for a philosophical objective. However, this understanding logically entails that it is not necessary to make claims for some dubious type of dualistic view in making use of alternative medicine. Demonstrating this in terms of the placebo effect is the secondary objective of this article.

## 1. Alternative Medicine and the Placebo Effect

In recent years, so-called alternative medicines such as acupuncture, chiropractic, and aroma therapy have attracted attention as tools that can complement the treatment of diseases and conditions of poor health that cannot be treated by Western medicine alone, and at times serve as the actual treatment. It is said that the assessments of these alternative medicines vary. Moreover, the so-called placebo effect makes it difficult to evaluate their effectiveness and meaning. The interpretation from the perspective of Western medicine is that although an alternative medicine whose medicinal value can be questioned, for example, may still produce a positive effect in a patient, that result is due to the placebo effect.

While the placebo effect is inseparable of the effects of alternative medicine and one which makes it difficult to evaluate such medicine, we nonetheless need to acknowledge that the two concepts are independent of each other. The National Center for Complementary and Alternative Medicine (NCCAM) does not exclude the impact of the placebo effect in assessing the effectiveness of alternative medicine, which probably constitutes evidence that the two concepts are mutually independent. To be more precise, it can be said that modern-day alternative medicine is attempting to establish its significance in relation to Western medicine by introducing aspects of the placebo effect. Western medicine has been reluctant when it comes to scientific explanations of the placebo effect; accordingly, the effect does not have a central place in its treatments. If the placebo effect does exist, it would be natural for alternative medicine, which is more affirmative when it comes to introducing methods that are not (cannot be) explained by Western science, to direct its attention to the placebo effect. However, the big problem is, if alternative medicine seeks to systematize itself and define acceptable standards, then how is it to integrate to its “medical methods” in a persuasive form something like the placebo effect that does *not occur universally*?

## 2. What Is the “Placebo Effect”?

The word “placebo” comes from Latin and originally means “I shall please.” The term has been used for dummy drugs with no medicinal properties that are given to patients for whom an authentic medical treatment cannot be found. It appears that there were times when some inert substance (sugar pills, etc.) would be used in a form that resembles an authentic medicine as a placebo to satisfy patients who wanted medicine or expected some implicit effect when they were not presenting symptoms that indicated the need for any authentic treatment. These substances with no pharmacological effect were called placebos. Normally substances are made as control drugs whose shape, size, color, flavor, and smell are exactly the same as those drugs whose medicinal properties are being investigated; they are used in clinical medicine as placebos to test and verify the effectiveness of the authentic drugs (the effectiveness of the drugs being tested is normally evaluated using the “double blind test” method). The

issue at hand is that the placebo effect may appear with the control drug.

The “placebo effect” can be thought of as the nonspecific physiological effect that occurs as a result of giving someone a placebo that is not expected to have any medicinal properties. Given the frequency of psychological and psychophysiological responses as well as the fact that a specific placebo effect cannot be consistently anticipated when using certain placebos, the prevailing orthodoxy is that the appearance of the effect is probabilistic. Henry Beecher, the first person to report on the placebo effect in publishing the results of a study, found that the effect appeared in 35% of the 1,082 people he studied [Beecher 1955] (a number of critics have contended that his study cannot be said to constitute enough evidence to underpin the placebo effect since that rate was by no means high). Currently, it is said that no medically or physiologically complete explanation exists as to why this effect is seen.

The things that can be understood as placebos are not restricted to substances like dummy drugs that are taken directly into the body. Physician and ethicist Howard Brody has cited a variety of extremely interesting case studies in which the placebo effect occurs due to something other than a dummy drug [Brody 2000; page citations to this work are to the Japanese translation].

- Venezuelan physician Dr. Marianella Castes and colleagues attempted to see if giving “conditioning” to asthma medication would allow the sole conditioned stimulus to show medicinal effects, performing an experiment involving 42 children with asthma over a 15-day period. The conditioning group received two daily doses of a typical asthma medication through a metered-dose inhaler, plus a vanilla aroma added as the conditioned stimulus. Another group of children were given the vanilla aroma and the medication, separately, at different times of the day, so that no conditioning would occur. After 15 days, the lungs of the children in the conditioning group functioned better when they were given the vanilla aroma without the medication. On average, they showed improvements at about one-third the rate of the group who continued to receive the authentic drug. Through this experiment Dr. Castes realized that not only the vanilla aroma but also the metered-dose inhaler functioned as a conditioned stimulus. When the same inhaler was used to provide water instead of the drug, the water vapor alone produced improvements in the children’s lung functions (in this case, too, at a rate of roughly one-third that for those given the real drug) [Brody 2000: 112-3].
- When a child cuts himself, his mother puts a Band-Aid on the wound. Usually the wound heals and the pain goes away not because of the Band-Aid but rather because of the body’s natural healing ability. Nevertheless, the child feels that the Band-Aid will make the pain go away quickly. The Band-Aid in this case must be put on by the same person who has been doing so all along [Brody 2000: 113].
- In the 1960s, a Harvard University Team led by Professor Lawrence Egbert conducted a study in which he divided 97 individuals who had received major surgery for various wounds into two groups. The first group received the conventional medical examination and basic medical history check from an anesthetist prior to surgery. In addition to the conventional procedure, the second group received a lengthy and detailed explanation about postoperative pain from an anesthetist. The anesthetist’s explanation took the following form. “I think you know this, but people experience pain after surgery. What I want you to be sure to know is that having pain is normal. It’s something you would naturally expect to have after the surgery you are going to have. There are any number of things we can do to ease the pain.” The anesthetist would then hand the patients a list of things that they could do and add, “Please don’t hesitate to let us know if you think you need a painkiller. The nurses here will always be keeping an eye on you, and if you say you want something because the pain is severe they will respond quickly.” The results were astonishing. The amount of painkillers administered to the patients who received this solicitous and meticulous explanation and were shown possible

treatments was half that given to the first group, and on average they left the hospital two days earlier. The researchers claimed they had produced the “placebo effect without a placebo” [Brody 2000: 129–30].

Brody reports on countless cases of this sort in his work. How should we interpret these cases that clearly did not occur due to the administration of a dummy drug? While Henry Beecher popularized the term “placebo,” Stewart Wolf’s definition of the placebo effect is cited the most widely [Wolf 1959: 689]. According to the definition, the placebo effect refers to “any effect attributable to a pill, potion or procedure, but not to its pharmacodynamic or specific properties.” The NCCAM uses an interpretation that goes one step further. Their interpretation holds that the placebo effect is “a beneficial health outcome resulting from a person’s *anticipation* that an intervention—pill, procedure, or injection, for example — will help them. A clinician’s style in interacting with patients also may bring about a positive response that is independent of any specific treatment” (emphasis added).<sup>2</sup>

Viewing the placebo effect as a “response” that takes into consideration the psychological aspects of the patient or test subject has become more and more common in recent years. Andrew Weil, a central figure in the field of alternative medicine, argues, “Such results are not effects of the dummy pills but *responses* of patients to taking them. They should be called ‘placebo responses’” (emphasis in original) [Weil 1988: 277, page citations to this work are to the Japanese translation]. David Moerman argues that the patient is not simply being duped by the placebo effect, but rather is trying to create a “meaning response” to an event that has meaning [Moerman 2002]. “Expectancy,” “response,” “the attribution of meaning” — the understanding that a placebo effect occurs when such things are together appears predominant (accordingly, I will use the term the placebo “response” rather than the placebo “effect”). Is it possible to see all these various points in a consistent manner?

Brody’s interpretation in this regard is of great interest. He offers the following cases as examples that demonstrate the importance of expectancy and conditioning.

- In a case from the 1950s, a certain physician had a patient known as “Mr. Wright,” who was suffering from cancer of the lymph system and had developed large tumors throughout the body that were easily palpable by the doctor. At that time, a group of physicians were studying a new chemical formula called krebiozen, which was being widely hailed by the media as a miracle cure for cancer — although the medical establishment was less convinced. Wright’s cancer was so far advanced that this group of physicians initially thought to exclude him from the research study; however, they gave him the drug on compassionate grounds, as an exception, and not because they expected any treatment response. Miraculously it seemed, Mr. Wright gained weight, looked and felt better, and his tumors shrank so much that they were barely detectable. Wright continued to improve, until local newspapers began reporting krebiozen was not actually the great advance as had first been thought. After reading this negative coverage, Mr. Wright became discouraged, immediately began to lose weight, and his tumors starting growing again. On the assumption that the power of suggestion had been largely responsible for Mr. Wright’s response to the medication, the physicians decided to tell him that the first batches of krebiozen sent to their clinic had not been at full potency. They assured him that the lab had corrected the problem and the new, stronger batch of the drug would soon be available. They continued to encourage Mr. Wright’s hopes, finally announcing that the big day had arrived — the new batch of the drug had arrived. They proceeded to give Mr. Wright injections as before, actually using sterile water. Despite this, Mr. Wright showed the same dramatic improvements that had occurred with the first course of krebiozen. His remission lasted until, for a second time, the newspapers undermined the physicians, stating unequivocally that the “AMA reports that krebiozen is worthless against cancer.” Mr. Wright once again began to decline, his tumors grew massively, and he died shortly thereafter [Brody 2000: 14–5].

• Robert Ader of the University of Rochester assisted in the treatment of a young teenager named “Ruth” who had developed a severe case of systemic lupus erythematosus at the age of 11. At the age of 13, she was suffering from kidney damage, high blood pressure, and bleeding as a result of this severe autoimmune disease. Her physicians decided she needed immediate treatment with the powerful drug cyclophosphamide to shut off her overactive immune system. But cyclophosphamide was known to have strong side-effects.

Her mother, a psychologist, knew that Ader had experimented with cyclophosphamide on rats; the rats had received a harmless but distinctive substance along with the cyclophosphamide and later, when they received the harmless substance alone, their bodies reacted as if they had received another dose of cyclophosphamide. Ruth’s mother wondered if a similar method could be used to reduce the amount of cyclophosphamide her daughter would be receiving — thereby possibly avoiding the toxic side effects of the medicine. The physicians agreed to try this, eventually combining the cyclophosphamide treatment with two other distinctive substances, cod liver oil and a strong rose perfume.

For the first three months, Ruth received full-dose treatments with cyclophosphamide and was also given cod liver oil and allowed to smell the perfume. At subsequent monthly treatments, she continued to receive the cod liver oil and the perfume but the cyclophosphamide was administered in one of every three sessions. A year later Ruth was being given only half the normal amount of cyclophosphamide, yet the treatment had produced remarkable results and her symptoms had eased [Brody 2000: 16–7].

We should note that “expectancy” and “conditioning” play extremely important roles in these examples. How do such “expectations” and “conditioning” become a “response”? According to Brody, the placebo response “is the body’s reaction to a healing signal in its environment, which acts through the mind” [Brody 2000: 21]. As a means for understanding these healing signals he introduces the perspective of *symbols*. Brody defines the placebo response as follows:

a change in the patient’s health or bodily state that can be attributed to the symbolic effect of medical treatment or the treatment setting [Brody 2000: 24].

The function of symbols such as words, codes, pictures, and movements is to suggest some other things or cause someone to think of other things. Elsewhere, Brody says a symbol is something that refers to or reminds one of that which is greater or more powerful than the symbol (a “national flag,” for example, is a symbol of “patriotism”) [Brody 2000: 20]. Symbols in the sense of such coded meanings require a network of knowledge and beliefs behind them. For a “national flag” to be the symbol of “patriotism,” we have to have observed situations and events where it was used to rouse patriotism and people must know and believe that this is what is happening. In order to say that a “dove” is a symbol of “peace,” people must have a piece of knowledge or belief that the images or designs of doves express “peace,” and that this knowledge and belief must have (meaningful) connections with words, say, “hawks” and “doves” in political contexts and knowledge and beliefs about concrete examples recently seen (regarding some politician or another), thus creating a network of some sort. Knowledge and beliefs do not exist independently; they usually create networks of relationships with other knowledge and beliefs. What I am talking about here is our epistemic condition; this holistic view of knowledge and belief is regarded as conventional wisdom in epistemology. Such networks should connect easily with the conditioning based on a patient’s past experiences and the expectancy and presuppositions that are based on that conditioning. Given this understanding, there is the possibility that any kind of dummy drug or operation that satisfies reasonable conditions (a network based on experience, conditioning, and expectancy) will take on symbolic value and evoke a placebo response.

Of course, as long as it takes on symbolic value, then not only the dummy drugs and fake effects seen thus far, like

sugar pills and injections of sterile water, but also authentic medical treatments should be taken involve a placebo response. The following passage from Brody makes this point clear.

This is not to say that only those things that while normal in terms of symbols or signals do not affect the body will cause the placebo response. For example, pills, injections, and surgical procedures directly act on the human body through methods in keeping with conventional biomedical theory while also simultaneously operating as a symbol that evoke a placebo response [Brody 2000: 25].

Here we see that the placebo response can also be observed in methods in keeping with conventional biomedical theory. Accordingly, what Brody understands as the placebo response may be criticized as something whose scope is far broader than conventional understanding would have it. However, when a conventional biomedical treatment produces an effect other than that which was originally intended, or when that effect is produced in a way not originally imagined, this may play a certain role in the discussion of explaining it medically. In that sense, Brody's use of "the placebo response" is not eccentric.

If the important thing first of all is that a placebo brings about a response from the standpoint of awareness, that is an epistemic response, then the placebo effect (response) as Brody sees it can first be understood as an issue of how things are *understood*, *meaning* is attributed, and the way the patient or test subject *feels*. However, how do the attribution of meaning and ways of thinking affect the body? Brody responds to that question in the following way. Dubious hypotheses may also be included here when it comes to the relationship between consciousness and the brain or the mind-body connection. Nonetheless, the interpretation is extremely suggestive, and simultaneously in a certain sense it also presents the issues for modern-day medicine and science. This interpretation holds that, when a patient for example takes a placebo pill and the placebo response occurs, they are affected by their consciousness and the way they think, and the following phenomena occur.

- (1) (When taking a placebo pill,) if the way the patient thinks changes, then the chemical actions in the brain are also changed. This is because the consciousness and the chemical actions of the brain are in a mutually reciprocal relationship.
- (2) If the chemical actions of the brain change, then it is possible that the biochemical pathways that connect the brain with the other parts of the body will also change.
- (3) If a change occurs in the pathways that connect the brain and the body, then it is possible that the systems of that body which are affected by those routes will also change.
- (4) If the systems of a body are biochemically affected, then healing may occur. [Brody 2000: 160]

The point in (1) — "there is a mutually reciprocal relationship between the consciousness and the chemical actions of the brain" — is a hypothesis that likely calls for questions if seen from the perspective of trying to make clear the mutually reciprocal relationship between the mind and body based on the placebo response. Moreover, as Brody himself is aware, the question of whether it is possible to specify such biochemical pathways is a point of concern for this interpretation. He says, "What's unfortunate is that the research I have done thus far does not specify these biochemical pathways. Accordingly, the data that would directly connect the understanding of attribution of meaning and the symbolic attribution of meaning to biochemistry does not in fact exist" [Brody 2000: 160-1]. This interpretation, therefore, does not go beyond the domain of hypothesis.

However, as we shall see it does greatly help us to understand the placebo response from a physicalist perspective. Let us summarize the extremely interesting interpretations to be found in Brody [Brody 2000]. First, we see a placebo not as the effects of a dummy drug, but rather as "meaning responses" on the part of the body (or



the body and the mind). Second, meaning responses produce changes in the body and those changes produce “healing.” Third, in alternative medicine, too, it may be possible to understand many treatments as placebo responses from the perspective of how they “act as symbols.” However, fourth, the mechanism (biochemical pathways) of those changes is not yet specified.

### 3. Physicalism

It is common knowledge that traditional post-Cartesian mind-body dualism (substance dualism) is disappearing from modern-day Anglo-American philosophy. Even when someone makes a claim for dualism, they do so for property dualism, which emphasizes the special characteristics of mental properties. Denying the distinctiveness or uniqueness of mental properties and that which operates as mental properties in mind-body causation is referred to as materialist monism. Such monism in the present day takes the form of “physicalism.” (In the discussion that follows, I refer to those events that seemingly occur in the so-called “mind” — even though they ultimately are physical phenomena — as “the mental” or “mental properties,” while those events that take place in the physical, biological body and flesh I refer to as “the physical.” )

There are two aspects to physicalism as a theoretical assertion. The definition that I cite here expresses them precisely.

“[Physicalism is] the thesis that whatever exists or occurs is ultimately constituted out of physical entities. But sometimes ‘physicalism’ is used to refer to the thesis that whatever exists or occurs can be completely described in the vocabulary of physics” (Audi 1995: 617).

In short, physicalism contains two notions, an ontological claim (“whatever exists or occurs is ultimately constituted out of physical entities”) and an explanatory claim (“whatever exists or occurs can be completely described in the vocabulary of physics”). The logical conclusions that arise from this physicalist understanding are the negation of the existence of the mental (in the Cartesian sense, and hence the negation of Cartesian dualism) and the negation of the non-physical (which includes “properties”, not just “substance” as claimed by Descartes). Physicalism also makes an aggressive claim about how events occur in the world. It claims that the world is “causally closed” (also expressed as “causal closure”).<sup>3</sup>

There are numerous interpretations of causal closure. I begin here with one that highlights the characteristics of causes with regard to physical events:

*Any physical event, if it has some cause, has a physical cause.*

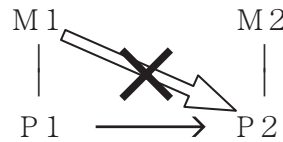
This idea is the principle for understanding our world (known as the “causal closure of the physical” principle) [see Kim 2010: 112-3]. What this means is that if we trace back the causal relationships for some event (of course, meaning some *physical* event), we will inevitably arrive at something physical. However, this principle cannot exclude the possibility of causes that are other than the physical—that is to say, this does not exclude the possibility that a dualist would say some non-physical causes may be operating simultaneously (e.g., a cause may be some magical being or effect from like angels or witchcraft). In short, this principle does not guarantee complete closure in the domain of the physical. Thus, as the “causal closure of the physical” principle a stronger guiding principle is often presented:

*Any physical event has only a physical cause.*



Modern-day physicalism makes frequent use of this stronger causal closure principle. Scientific and medical practitioners (scientists and health professionals) do the same.

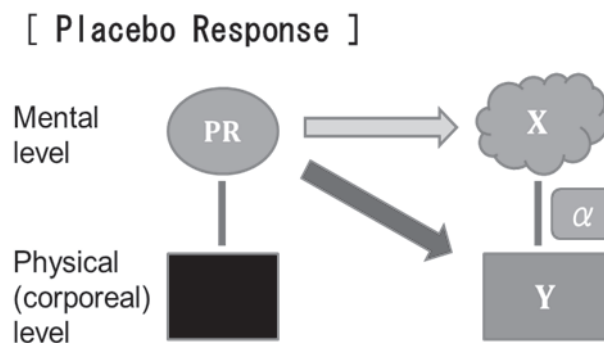
What implication does this stronger causal closure principle have for the mind-body relationship? Given that it claims that any causal relationship is physically closed, it theoretically includes the idea that causation leading from the mental to the physical is impossible. This can be diagrammed as follows, where M1 and M2 refer to “the mental” and P1 and P2 to “the physical.”



When one makes a positive claim for the causal efficacy of the mental on the physical (in discussions over the mind-body problem, this is called “downward causation”), the result is dualism.<sup>4</sup> Of course, downward causation is denied in physicalism, since only the physical is expected to provide the causal effect (this is shown on the diagram by crossing out the large arrow). Also, physicalism contains a hidden inclination to generally reject the notion that certain events are causally excessively determined. When someone is shot by a gun and knifed at nearly the same time, the cause of that person dying is either being hit by the bullet or stabbed by the knife in a vital location; it normally does *not* regard both as causes. In this way, physical causation normally is grasped solely through one route. Understanding both to be causes is taken as causal “overdetermination” (in the above diagram, P2 is causally overdetermined by both M1 and P1, meaning P2 is taken as having been determined in causal routes from both M1 and P1) — a scenario that physicalism rejects.

#### 4. The Physicalist View of the Placebo Effect

What happens when the foregoing physicalist understanding is applied to the placebo response? Let us denote conscious responses to placebos (including conditioning and expectancy) that occur at the level of consciousness and belief (i. e., the level of the mind) as *PR*, the feeling that one has been healed as a result of the placebo response as *X*, the physiological-biological response that occurs as the physical basis (foundation) of that healing as *Y*, and the biochemical sensory creation of a sort one expects between *X* and *Y* as  $\alpha$ . These variables are used on the diagram that follows to illustrate the workings of the placebo response. As Brody has pointed out, what happens in the body (in Brody’s terms, the biochemical pathway) when the placebo response occurs remains unknown (it is thus a black box). The important things are that meaning is attributed—an element with which the placebo response cannot do without—and that this also brings about a change (though what that is remains unknown) at the physical level of the body.



What we understand to be the placebo effect or response is the link that goes from “a conscious response to a placebo” to “the feeling of having been healed that is obtained as a result of the placebo response.” In short, it is:

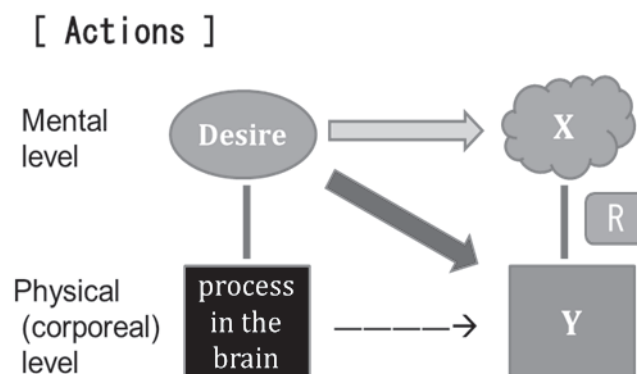
PR  $\longrightarrow$  X

If the feeling of having been healed is presumed to manifest itself normally — more precisely, if we assume a normal body — then “the feeling of having been healed obtained as a result of the placebo response” would be natural for a person who accepts scientific knowledge. Because we also assume that physiological–biological responses occur as the physical basis for that healing (the  $\alpha$  relationship), then  $PR$  (assuming a normally working body) also brings about a physiological–biological response. In short, with the placebo response, the relationship

PR  $\longrightarrow$  Y

is simultaneously brought into being. This is a case of “downward causation” as indicated earlier, but if we make a claim on these grounds for the causal efficacy and the significant characteristics of the mental, then the case is being made for dualism. More precisely, understanding the placebo response as something where “PR  $\longrightarrow$  Y” can occur ought to provide the grounds to underpin dualism.

How would a physicalist respond to this? Let us consider this bearing in mind how physicalism explains the relationship between actions and desires. As an example, think of a desire as I want to brighten a room where I cannot read books because it is too dark. When I have that desire, we assume what is happening in the body (mainly within the brain) as being a black box just like the one discussed earlier with respect to the placebo response (the diagram is shown below). Assuming there are no issues when it comes to having such a desire and generating an action, I will flip the switch ( $Y$ ) to turn on the light in the room. (More precisely, not only must there not be any problems when it comes to generating actions, but I also must have knowledge of which room I am in at that moment, know where the light switch to the room is, remember that the switch is not broken, and believe that my eyesight is not abnormal — these and various other understandings are connected to one another in a network, but to keep this discussion simple I am expressing the situation as I expressed above.) If nothing is amiss in the wires connecting the light switch and the ceiling light — that is to say, if they are in a normal relationship ( $R$ ) — then flipping the switch will result in the light going on and allow me to read my book (thus, fulfillment of desire) ( $X$ ).



Note here the causal relationships that occur. As a result of the initial desire, because it is possible to obtain a feeling of satisfaction by generating an action and turning on the light, the causal relationship of

Desire  $\longrightarrow$  X

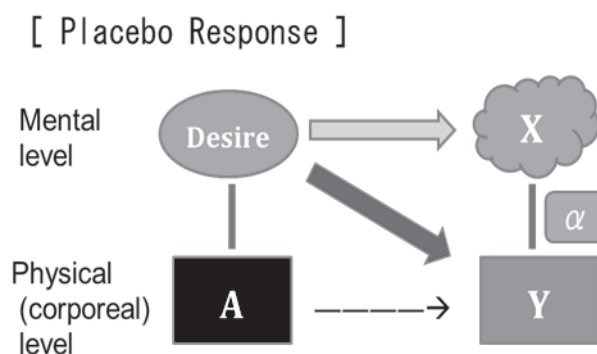
comes into being. However, this is brought into being because the desire (normally, the person with the desire) leads to the switch going into the “on” state, or more precisely, to my flipping the switch on. In this case, the causal relationship of

Desire  $\longrightarrow$  Y

also comes into being. For the former causal relationship to come into being, the wires between the switch and the light must be working normally (the relationship  $R$  must establish) without any problem (better still, when the light is on, I must normally perceive that change). Only when those conditions are fulfilled can the former causal relationship coexist with the latter one.

Is the causal relationship from the desire to  $Y$  one of downward causation? Physicalism has prepared an answer for this. Current scientific knowledge regards desire as being brought about as the physical foundation for an event or process that occurs in the brain. This is a purely physicalist understanding of the mechanism by which desire originates. As I noted earlier, the question of what exactly this event is that occurs in the brain is still not yet completely known and awaits empirical investigation. However, no changes to the physicalist framework are necessary, as long as the particular mechanism with respect to the origins of such an event is a biochemical (physical) phenomenon though it may be a black box. On the other hand, this event in the brain, which is the physical foundation leading to the action of flipping the switch to turn on the light in the room ( $Y$ ), can also be explained within causal closure — the core claim of physicalism — by saying that the physical leads to the physical (electric signals come from the behavioral domain of the brain, etc., etc.). Accordingly, the fact that  $Y$  is brought about turns into something that can be fully and consistently explained within the physicalist framework. So, it is unnecessary to cite downward causation starting from the desire to explain  $Y$ . Of course, it is still possible to make a claim for downward causation, but in that case we wind up being confronted directly by the issue that  $Y$  is overdetermined (determination by both the desire and an event in the brain). This would leave to us the problem of how we should consider overdetermination within the framework of physicalism (I will discuss overdetermination below).

Applying this physicalist understanding to the previously outlined schema of the placebo response will solve the problem for us. As I pointed out, important for the placebo response is the change that occurs at the physical level (even if that mechanism is a “black box”) as a result of meaning attribution. Applying the physicalist idea of causal closure, the change at the physical level can be seen as leading to the physical–biological response ( $Y$ ) that occurs as the physical basis of healing due to the placebo response, as the following diagram illustrates.



If we are to abide by this physicalist understanding, then it also becomes unnecessary to interpret how  $Y$  comes into being in terms of downward causation. It might also be possible to make a claim for overdetermination just like with the setting of an action, but within the framework of physicalism this would likely lead to a further theoretical burden (I will discuss later the problems of overdetermination with respect to the placebo effect). Also, if we wind up explaining in physical-causation terms in this way the physiological–biological response ( $Y$ ) that is the physical basis for healing, then when the feeling of being cured as a result of the placebo response ( $X$ ) comes into being, it, too, can be explained through physicalism premised by a normal body ( $a$ ). In short, we explain the matter of  $X$  being produced when  $PR$  has come about as something that happens because the change at the physical level corresponding to  $PR$  (black box  $A$ ) brings about  $Y$  in a physical causal relationship, and then (presuming  $a$ )  $Y$  emerges as the physical response  $X$ . The physicalist understanding is able to present a *thoroughly consistent physical explanation* of the placebo response.

In this section, I have shown that it is possible to apply a thoroughly physicalist explanation of causation even to the placebo effect. In sum, we have seen that there is no need to look for a mental response leading to downward causation even in the case of the placebo response, and that it can be coherently understood within the framework

of physical changes. However, this is premised by Brody's understanding that, in a placebo response situation, meaning attribution occurs within a patient or test subject and this leads to a change at the physical level. This is not to say, as Brody also acknowledges, that the physical mechanism premised here has been completely established. However, if we consider the fact that the countless examples of placebo effects and responses indicate that, first of all, epistemic changes occur in the individuals who have received placebos — whether in the form of a dummy drug or some action or another — then describing an epistemic change premised by conditioning or expectancy as “attributing meaning” is not mere wordplay. Certainly, Brody's understanding of the placebo response based on meaning attribution also ends up including a truly varied range of procedures and actions, including not only dummy drugs and surgical procedures but also the explanations physicians give to their patients. His definition is open to the charge of being far too broad. The result almost seems that it would be unusual if the placebo response did not occur even for standard medical treatments. Overly broad definitions in general are not useful. However, the possibilities of the definition of the placebo response being too broad implies that we can also understand a placebo response in medical treatment as an alarm bell that should not be ignored.

## 5. On Overdetermination

In the foregoing discussion founded in physicalism, we have denied the idea that events (for instance, *Y* in the previously discussed diagram) are overdetermined. Overdetermination is something that physicalism has argued should be excluded as a matter of course. For example, to give a simple example, let's think of the balls on a pool table striking one another and moving. Imagine that the 9-ball has been hit by the 6- and 3-balls exactly simultaneously and the 9-ball has moved. In this case, can we say that the two balls (or the two balls' movements) are the cause for the 9-ball having moved, or more precisely, that there are two causes? This is a tough problem, but generally, if the 6- and 3-balls strike simultaneously and the 9-ball rolls off in a certain direction (assuming a direction that is different from what it would have been had the 6- or 3-ball struck it independently), then the respective impacts of the 6- and 3-balls would be the *necessary conditions* for the motion of the 9-ball, and the impact on the 9-ball created by these necessary conditions coming together from the two balls striking simultaneously are regarded as comprising a *sufficient condition*.<sup>5</sup>

However, such an analysis applies when the things that are being claimed as multiple causes are of the same nature. When two types of causal relationship are judged and assessed as to whether they are overdetermining, if those causal relationships are of completely different natures then it may not be possible to sweep it away simply as overdetermination. For example, if we speak in terms of the diagram shown earlier, if the relationship between *PR* and *Y* is not equally a physical causation relationship that appears like one between physical things (the physical), then perhaps we cannot exclude the causal relationship between *PR* and *Y* and give overdetermination as the reason.

A causal relationship is a metaphysical relationship between events; to be more precise, it is not solely an epistemic issue of the observer, but rather something that should be seen as something taking place in the outside world, independent of the observer. This is the perspective normally stressed in modern-day Anglo-American philosophy. (Certainly, there is also the projectivist view of causation such as the one Hume set forth, but as many points out, it cannot explain the definite differences between correlation and causation.) Nonetheless, this understanding of causal relationships naturally does not exclude the idea that there are multiple explanations or descriptive possibilities for some happening. When explaining why when Mr. A was driving his car the other day it hit the guardrail, it can be expressed as “he was going too fast and he lost control” and also as “because he made an error in properly stepping on the brakes, he made an error in lowering the acceleration state extant at that moment.” There usually are multiple possibilities when it comes to the description of an event.

The two causal relationships — “physical state P1 brings about physical state P2” and “mental matter M brings about physical state P2” — are two separate descriptions; for that reason, it is not logically impossible to claim that M has some significance. Arguments that seek the significance of the mental in the effectiveness of descriptions and explanations have been making appearances in recent years, even among those studying the mind–body problem. Brian Loar, for example, takes such a position [Loar 1990]. In neuroethics, too, there are moves to do more than look only to reduce psychological explanations to neurological ones on the basis of the preciseness and completeness of neuroscience; rather, scholars draw out the explanatory efficacy of psychology, thereby its explanatory significance, from its importance in the developments of our researches and claim that the two types of explanation, psychological and neurological explanations, can coexist [Churchland 1986, Bickle 1998].

Seeing two scenarios — “PR brings about Y” and “A (the black box) brings about Y” — as two separate descriptions also has practical merits. It is possible to see the latter as a scientifically (medically) precise understanding and the former as simplifying that understanding along with the recognition of “having taken a placebo.” This can perhaps be expressed in the following manner: the latter is an explanation that physicians and scientists normally employ, while the former is an expression frequently used by patients. To this sort of division of labor in light of explanation, we can see, correspond, for example, the differences in how an illness or disease is grasped by the physician and by the patient respectively, as is manifestly shown and emphasized in terms of the “framework of the physician” vs. the “framework of the patient” [Isobe 2011] or through the “explanatory model” [Kleinman 1980].

While this depends also on what alternative medicine wants, if in judging its effects we cannot avoid using vocabulary about the mental or do without it (e.g., if in discussing *the impact of aromatherapy on the mind*, references to the mental cannot be avoided), then perhaps causal relationships or descriptions that include the mental will instead become a necessary explanatory component. Nevertheless if the argument presented in this article is correct, that will not lead to endorsing downward causation or mind–body dualism.

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  - 2 <http://nccam.nih.gov/health/placebo>
  - 3 When the paper was presented, one participant noted that, based on how causation is understood in Indian philosophy, monism and dualism might best be understood in terms of how a cause relates to an effect, rather than assuming first that monism and dualism provide a theoretical framework for exploring the notion of causation. This appears to be a perspective that changes the understanding of the causal relationships that are the premise of Anglo-American philosophy from the ground up. I am grateful for the most valuable comment.
  - 4 More precisely, a discussion is needed for causal efficacy to provide the theoretical grounding for the existence of properties, but I present only a shortened version here.
  - 5 As for an analysis of overdetermination in terms of counterfactuals, given its level of complexity I will forego it here.