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Hypnosis and Placebos: Response Expectancy as a Mediator of Suggestion Effects

Irving Kirsch

■ Data are reviewed indicating that responses to hypnotic suggestion and placebo effects share a common mechanism. These data show that response expectancy is a causal factor in the production of both of them. The reason for this is that both are subsets of a broader phenomenon: the phenomenon of suggestion. It is recommended that research on hypnosis be broadened so as to focus on the broader topic of suggestion, in and out of the hypnotic context.

Hypnosis is a procedure in which a person designated as hypnotist suggests changes in experience to a person designated subject (Kirsch, 1994; Kirsch & Lynn, 1995). A representative range of hypnotic suggestions are sampled in standardized scales of suggestibility, most of which are highly reliable and substantially correlated with each other (Council, 1999). Suggestions on these scales are of three basic types. Ideomotor suggestions are suggestions that a particular action, such as an arm rising in the air (arm levitation), will occur automatically, without awareness of volitional effort. Challenge suggestions are suggestions that the person cannot perform an act that is normally under voluntary control, such as bending an arm (arm rigidity). Cognitive suggestions are suggestions for various cognitive or perceptual distortions, such as selective amnesia, pain reduction, and hallucinations. Note that some cognitive suggestions contain challenges. Amnesia suggestions, for example, require that the person not recall particular information. Suggestions of this sort differ from challenge suggestions only in that what is inhibited is a cognition, rather than an action. Thus, divisions between types of suggestion are somewhat fuzzy. These hypnotic phenomena have been characterized as the "domain of hypnosis" (Hilgard, 1973). An adequate theory of hypnosis should be able to account for the full range of behavior contained in this domain.

There are many books and journal articles focusing on the topic of hypnosis and hypnotizability. In contrast, despite notable exceptions, such as the work by Amigó (1999) and Capafons (1999) at the University of Valencia, the broader subject of suggestion has been relatively neglected. There are historical reasons for this state of affairs. The effects of mesmerism and hypnosis have seemed so unusual that many

observers dismissed them as fraudulent, and others attributed them to some special condition or state. It seemed impossible for suggestion to have such extraordinary effects, without there being some kind of special state creating them.

The results of research on hypnosis in the twentieth century has clearly invalidated that conclusion. One of the first things that was learned through experimental research on hypnosis was that all behaviors seen in hypnosis can also be obtained without hypnosis. Clark Hull (1933, p. 391) wrote: "The only thing which characterizes hypnosis as such and which gives any justification for calling it a "state" is its generalized hypersuggestibility. That is, an increase in suggestibility takes place upon entering the hypnotic trance. The difference between the hypnotic and normal state is therefore quantitative rather than qualitative. No phenomenon whatever can be produced in hypnosis that cannot be produced to lesser degrees by suggestions given in the normal waking condition. the essence of hypnosis lies in the fact of *change* in suggestibility" [emphasis in the original]. These data suggest that suggestion, rather than hypnosis, is the fundamental phenomenon on which we should focus.

This conclusion is reinforced by two more recent sources of data. One is the work of nonstate theorists, and in particular, the experimental work of T. X. Barber and his followers. It was Barber (1969) who most clearly demonstrated that all of the observed effects of hypnosis, including the increase in suggestibility that was observed following a hypnotic induction, could be duplicated by nonhypnotic procedures. Thus, hypersuggestibility, the single remaining justification that Clark Hull could find for retaining the trance concept, can be produced by nonhypnotic methods. Importantly, the Barber Suggestibility Scale differed from previous scales in that it included a measure of subjective or experiential response to suggestion, as well as a measure of behavioral response. Thus, Barber was able to demonstrate that the subjective responses to suggestion did not depend on the induction of a hypnotic trance. This, of course, cast doubt on the concept of hypnotic trance, doubt which has been reinforced by the failure to find any physiological or even self-report markers of the hypothesized state. It turns out that the most prominent experts cannot distinguish the self-reports of hypnotized subjects from those of subjects who have not been hypnotized (Kirsch, Moberg, Council, & Kenny, 1992).

Paradoxically, it is the work of E. R. Hilgard (1965) on suggestibility as a trait that most clearly indicates the need for a change in focus from the topic of hypnosis to the topic of suggestion. Hilgard's data indicated that the effect of hypnotic inductions on suggestibility were generally quite small. A person who responds to six of the twelve suggestions contained in a typical hypnotic suggestibility scale is likely to respond to five of them even without the induction of hypnosis (Kirsch, 1997).

Some of the effects of hypnosis may not be suggested by the hypnotist. The best known of these is so called spontaneous amnesia, which in past centuries was a hallmark of hypnosis, but currently is virtually nonexistent. Although not directly suggested by the hypnotist, these phenomena are far from spontaneous. Instead, they too are

products of suggestion--in this case, suggestions that are transmitted by the culture. This was demonstrated quite nicely by Young and Cooper (1972). They told one group of subjects that hypnotized people experience spontaneous amnesia, and they told a second group that hypnotized subjects do not experience spontaneous amnesia. The subjects were later tested for their beliefs about hypnosis. Forty-eight percent of those in the first group agreed, with the statement "If I were to be hypnotized I would not remember what had happened after I woke up (Young & Cooper, 1972). In contrast, only 15% of the second group expected to experience spontaneous amnesia. When later hypnotized and tested for so called "spontaneous" amnesia, 37% of the subjects in the first group displayed it, compared to only 10% of the in the second group. Thus, the occurrence of amnesia was hardly "spontaneous." This is further confirmed by another interesting finding in these data. Across both groups, 75% of the subjects who expected amnesia experienced it, whereas none of those who did not expect amnesia experienced it. This illustrates a central theme of this paper: the mediating role of expectancy in the ability of suggestion to elicit a response.

What makes hypnosis interesting is people's responses to such suggestions as analgesia, amnesia, age regression, nonvolitional movements, and positive and negative hallucinations. Without phenomena such as these, there would be little to interest scholars or lay persons in hypnosis. So if these responses do not require hypnosis for their production, and if the effect of hypnosis is merely to enhance them to a slight degree, then clearly, the focus of investigation should be on the broader topic of suggestion and its effects.

Broadening the focus of attention from hypnosis to suggestion also has the advantage of adding the very important topic of placebo effects. Typically viewed as artifacts to be controlled in treatment outcome research, the documented effects of placebos on pain, asthma, tension, anxiety, depression, blood pressure, heart rate, sexual arousal, skin conditions, nausea, vomiting, gastric motility, and angina (reviewed in Kirsch, 1990) reveals it to be a very important phenomenon, well worthy of study in its own right.

There are, of course, both similarities and differences between hypnotic and placebo phenomena. Whereas responses to the kind of suggestions typically used in hypnosis are notoriously trait-like, individual differences in response to placebos appear to be very unreliable. There does not appear to be a "placebo reactor," comparable to the "hypnotizable subject." Still, the stimulus for hypnotic and placebo responses are suggestions, and hypnotic inductions are so nonspecific that they might well be regarded as placebos. In fact, placebo substances have been used successfully as hypnotic inductions (Baker & Kirsch, 1993; Glass & Barber, 1961). Most important, as will be shown in this paper, the effects of hypnotic and placebo suggestions are mediated by response expectancy (Kirsch, 1985, 1990). But first, it may be worthwhile to define what is meant by the term suggestion.

What is a Suggestion?

A suggestion is a communication indicating that an individual will experience a particular response. It differs from an instruction or command in that the response is to occur nonvolitionally, rather than emitted intentionally. Often this distinction is clear in the phrasing of the suggestion. "Raise your hand" is an instruction, whereas "Your hand is getting lighter and beginning to rise" is a suggestion. The first calls for an intentional act; the second for a nonvolitional response. Similarly, "Take this medication" is an instruction, whereas "It will help you sleep" is a suggestion.

Sometimes, the suggestive nature of a communication is not apparent from its linguistic character. In fact, suggestions need not be linguistic utterances at all. Suggestive information may be conveyed by the size, shape, and color of a pill, for example, or by the behavior of a model. Furthermore, the suggestive nature of words depend more than the words themselves. The command "Sleep!" for example, can be interpreted as either an instruction or a suggestion, depending on the context in which it is delivered. When given to a volunteer at a stage hypnosis performance, it is a command; important, then, is the meaning of the communication, as it is understood by the person to whom it has been directed.

Of course, most hypnotic subjects want to experience suggested phenomena, and they intentionally do their best to bring them about. However, the experience of automaticity or nonvolition is part of the communicated suggestion, so that simple behavioral compliance would not be experienced as a successful response.

Statements are often interpreted as suggestions, rather than commands, because the response is not experienced as being under direct volitional control. Most people cannot intentionally reduce pain, see things that are not there, sleep, or forget, in the same direct way that they can raise or lower their arms. If they can accomplish these responses at all, it is by doing other things that are under volitional control. For example, they may think about other things to distract themselves from the pain, or they might try to imagine the suggested hallucination. Their behavior is much like that of an actor who thinks of sad experiences in order to produce tears. The thoughts of the sad experiences are voluntary acts aimed at producing the nonvolitional response of tears. Still, it is the contextually determined meaning of the communication that differentiates a suggestion from an instruction or command. The stage director who tells an actor to cry is giving an instruction; whereas the physician who says "Crying is a side effect of this medication" and the hypnotist who says "You are beginning to cry" are giving suggestions.

Finally, it is important to note that whether or not some verbal or nonverbal stimulus is a suggestion does not depend on the response of the subject. Suggestions are suggestions, even when subjects do not respond to them.

Suggestions, Expectancies, and Nonvolitional Responses

A suggestion is a particular type of stimulus. It is a stimulus that conveys information that a nonvolitional response will occur. Sometimes the response occurs, sometimes it does not. So the question is, what is it that determines the response to a suggestion? In my work on hypnosis and placebo effects, I have focused on the role of expectancy as a mediating variable. Accepting a suggestion means coming to expect that the suggested event will occur.

That expectancies are determinants of behavior is a central tenant of cognitive-behavioral learning theory (Tolman, 1955) social learning theory (Bandura, 1977; Rotter, 1954; Mischel, 1973), behavioral decision theory (Edwards, 1954), achievement motivation theory (Atkinson, 1957; Heckhausen, 1977), and the theory of reasoned action (Ajzen & Fishbein, 1980). In all of these theories, behavior is postulated to be a multiplicative function of expected outcomes their values.

In these theories, expected outcomes are generally thought of as external events, such as food, water, money, school grades, recognition, and affection. In developing response expectancy theory, it is important to distinguish between these stimulus expectancies and response expectancies (Kirsch, 1985). Response expectancies are expectancies for the occurrence of nonvolitional responses, such as pain, alertness, fear, sadness, and joy. Like expected stimuli, expected responses are valued outcomes, and as such they are determinants of voluntary behavior. We may drink coffee in the morning to help wake us up, and we may avoid it in the evening, if we think it will keep us from getting to sleep. However, response expectancies seem to have a property that stimulus expectancies do not have: They are self-confirming. When people expect to feel alert, they often do feel alert; and when people expect to stay awake, they may find themselves unable to sleep.

The self-confirming nature of response expectancies indicate that they might mediate the effects of suggestion. The logic behind this conclusion is as follows. First, the suggestive nature of a communication is defined by the recipient's interpretation that a nonvolitional response is expected to occur. Second, response expectancy is defined as an expectancy of a nonvolitional response (Kirsch, 1985), in contrast to intention, which has been defined as the expectancy of a voluntary behavior (Ajzen & Fishbein, 1980). Thus, a connection between response expectancy and suggestion is implied by the definitions of these terms. Perhaps we are hard-wired in such a way that expecting a subjective experience produces that experience, in the same way that deciding (terminated intending in reasoned action theory) to emit a voluntary act (e.g., lifting one's arm) produces that act. The two clearest examples of this phenomenon are placebo effects and hypnosis.

Placebo Effects

Although the mechanisms by which placebos produce their effects have not yet been established, the data exclude some hypotheses and indicate some parameters within

which any successful theory must fit. Most importantly, explanations of placebo effects must account for their specificity. Data indicating the highly specific nature of placebo effects indicate that they cannot be explained fully by such global factors as rapport, trust, faith, hope, anxiety reduction, or endorphin release.

First, it is clear that placebo effects are not entirely due to the quality of the doctor/patient relationship. Although such relationship factors as touch have been demonstrated to affect some therapeutic outcomes (Whitcher & Fisher, 1979), there are ample data indicating that the effects of placebos depend on their information value. With relationship factors held constant, different placebos produce different results. For example, placebo injections are more effective than placebo pills (Traut & Passarelli, 1957). Also, placebo effects are readily obtained in relatively sterile, nonclinical, experimental settings.

Second, placebos produce both positive and negative effects, and they do so in the same people. Furthermore, the specific nature of the effect (i.e., whether the placebo affects gastric motility, sexual arousal, pain perception, etc.) depends on the information available to the recipient. Placebo analgesics, for example, have very different effects than placebo tranquilizers. These characteristics of placebo effects cannot be explained by faith, trust, hope, or any other hypothesis based on the valence of placebo-induced expectancies.

Third, recent data from my laboratory indicate that placebo pain reduction cannot be explained by mechanisms like anxiety reduction or endorphin release (Montgomery & Kirsch, 1996). These are global mechanisms that would affect the entire body. We obtained a placebo effect by administering the placebo in the guise of a local anesthetic and applying a pain stimulus to treated and untreated parts of the body. Because the pain stimulus was applied simultaneously to both the treated (by placebo) and untreated locations, the differences in reported pain could not have been due to any global changes in sensitivity, perception, or affect. After all, one cannot be anxious in one hand and calm in the other.

Taken together, these data demonstrate that placebo effects are specific to the information with which the placebo is administered. This specificity makes theories based on global mechanisms implausible. An adequate theory of placebo responding must be able to account for the specific nature of the effects.

Classical Conditioning

Classical condition is one of the most frequently proffered theoretical explanations of placebo effects (Turkkan, 1989; Wickramasekera, 1980). According to conditioning accounts of placebo effects, effective medical treatments are conditioning trials, during which the vehicles (pills, capsules, etc.) in which active medication (the US) is delivered become conditional stimuli (CSs), thereby acquiring the capability of evoking the effects of medication as conditional responses (CRs). The classical conditioning model has the advantage of being able to account for the specificity of placebo reactions. It predicts side effects as well as therapeutic effects, and it is consistent with the

observation that placebos evoke the same responses as the active drugs they are replacing. However, there are two problems with conditioning explanations of placebo phenomena. First, they are based on an outdated account of classical conditioning. Second, there are abundant disconfirming data.

Traditional accounts of classical conditioning suggest that pairings of the CS with the US lead to the automatic evocation of URs following presentation of the US. In contrast, contemporary theorists (e.g., Rescorla, 1988) view classical conditioning as a means by which information is acquired. Conditioning trials endow the CS with information value, so that it becomes a cue for the occurrence of the US. As a result, the CR may not be the same response as the unconditional response (UR). Instead, the UR is an anticipatory response that prepares the organism for the onset of the US. Also, pairings of conditional and unconditional stimuli result in conditioning only under those circumstances in which they impart information value to the CS. One way of interpreting this is that the effect of conditioning trials on behavior is mediated by expectancies, so that if expectancy change is blocked, so too is the effect on behavior.

This contemporary understanding of conditioning phenomena can explain how placebos (the CS) come to generate internal representations of active medications (the US), and since responses have stimulus value, it is not much of a stretch to invoke this model to account for the acquisition of response expectancies as a function of conditioning trials (Kirsch, 1985). However, this leaves the occurrence of the placebo response (the presumed CR) unexplained. It is not difficult to understand the occurrence of salivation following a stimulus that signals food. The conditional stimulus elicits the expectation of food, the thought of food causes the organism to salivate. Similarly, because of their previous association with active medication, pills elicit expectations of particular changes. But why should the expectation produce the expected effect?

Unlike contemporary accounts of classical conditioning, traditional stimulus substitution models seem to explain the occurrence of the placebo responses. However, leaving aside the data that led to the replacement of that model by contemporary cognitive models, data from many placebo studies are inconsistent with traditional conditioning models: First, with tranquilizers as UCs, conditioning trials weaken the placebo response instead of strengthening it (Meath, Feldberg, Rosenthal, & Frank, 1956; Pihl & Altman, 1971; Rickels, Lipman, & Raab, 1966; Segal & Shapiro, 1959; Zukin, Arnold, & Kessler, 1959). Also, there is an inverse relation between the strength of the US (i.e., the tranquilizer) and the magnitude of the placebo effect that is presumed to be the CR (Rickels et al., 1966). Second, placebo effects can resist extinction over periods as great as two years or more (Boissel, et al., 1986; Coryell & Noyes, 1988; Traut & Passarelli, 1957). Third, when people expect effects that are different from those produced chemically by the drug, the placebo effect is consistent with the expectation rather than with the UR (Fillmore & Vogel-Sprott, 1992; Hull & Bond, 1986; Kirsch & Weixel, 1988). Finally, under some circumstances, placebos can produce effects that are stronger than those of the active drugs that are presumed to be the USs (Franken-

haeuser, Post, Hagdahl, & Wrangsjö, 1964; Ikemi & Nakagawa, 1962; Lyerly, Ross, Krugman, & Clyde, 1964; Ross, Krugman, Lyerly, & Clyde, 1962; Wolf, 1950). All of these data are inconsistent with explanations of placebo effects based on simple Pavlovian models.

Psychophysiological Explanation and the Hypothesis of Unmediated Expectancy Effects

Faith, hope, rapport, and anxiety reduction are psychological intervening variables that have been hypothesized to mediate the relation between expectancy and expected response. The data I reviewed earlier in this paper indicate that none of them are necessary for evocation of placebo effects. It is possible that there are no intervening psychological variables between a response expectancy and an expected response (Kirsch 1985). In this sense, the relation between expectancy and response may be the same as that between intention and intended response. The relation between an intention and a voluntary response is presumed to be immediate, rather than mediated (Ajzen & Fishbein, 1980). This means that there are no intervening psychological variables between the intention and the response. Similarly, the relationship between sadness and the perception of loss is presumed to be immediate. One may ask, "Why are you sad?" and the answer may be "Because my mother just died?" There seems no need to ask, "Why did that make you sad?" I have hypothesized that the relation between response expectancies and nonvolitional responses may have this same immediate quality. If this is the case, further explanation requires consideration of physiological rather than psychological variables.

One of the pitfalls to avoid in psychophysiological theorizing is that of treating a physiological variable as a mediating variable between a psychological variable and a dependent variable. For example, a finding that endorphin release may be required for certain kinds of pain reduction tempts one to consider it an explanation of placebo pain reduction. Notwithstanding the importance of such data, they do not constitute an explanation. Instead, they are phenomena in need of explanation. How is it that placebo enhance endorphin release (if and when that does in fact occur)?

The problem that is illustrated by the endorphin release example is that which occurs when any psychological variable (such as suggestion) is hypothesized to produce a physiological effect. Following the conventions proposed by Michael Hyland (1985), discovering an apparent cause of a physical effect ought to trigger a search for the physiological substrates of the psychological event. Hyland proposed a principle of mind/brain complementarity, based on Bohr's principle of wave/particle complementarity in physics. Briefly stated, it suggests that mind states and their corresponding brain states are complementary descriptions of the same underlying event, a position that Hyland and I have shown to be a logically necessary consequence of virtually all monist mind-body philosophies (Kirsch & Hyland, 1987). If mind states and body states are descriptions of the same underlying event, it is technically improper to state that one causes the other. Instead, psychophysiological explanation requires establishing

three sorts of relations between variables. These are: (1) causal relations between mind states and other mind states; (2) causal relations between physiological states and other physiological states; and (3) identity relations between mind states and their corresponding physiological states.

It is here that the data on the specificity of placebo effects becomes particularly useful. It suggests that we need to look for physiological substrates of very specific psychological states. Even the psychological construct of expectancy is likely to be too broad. Instead, we need to establish the physiological correlatives of specific expectancies, such as expectations of alterations in arousal, pain sensitivity, nausea, and so on.

Hypnosis

Hypnotic Inductions as Nondeceptive Placebos

What is a hypnotic induction? Charcot induced hypnosis by clanging gongs, flashing lights, applying pressure to subjects' heads. Braid thought that eye-fixation was necessary, but others have subjects roll their eyes, and many hypnotists merely ask subjects to close them. Most contemporary inductions include suggestions for relaxation, but increased alertness can be suggested instead, and relaxation can be prevented by having subjects pedal a stationary bicycle. The only common ingredient to these inductions is the label hypnosis. As Sheehan and Perry (1976, p. 72) noted, "it is not the procedural conditions per se that are important but whether or not the subject perceives them as part of a context that is 'appropriate' for displaying hypnotic behavior."

When the effect of administering a drug is found to be independent of its specific ingredients, the drug is deemed to be a placebo. Similarly, hypnotic inductions must be expectancy manipulations, akin to placebos, because their effects on suggestibility are independent of any specific component or ingredient. In fact, it is possible to produce all of the suggestive effects of hypnosis by giving subjects placebos and telling them that the medication produces a hypnotic state (Baker & Kirsch, 1993; Glass & Barber, 1961). If hypnosis is an altered state or condition, then it is a state that is produced by placebos. This establishes a clear association between hypnosis and placebo effects.

Recall that placebo effects are highly specific, in that the nature of the effect depends on the information that is presented to subjects. A similar specificity is found in hypnotic responses. Subjects' responses during hypnosis depend on their expectancies of how a hypnotic subject should respond. These expectancies have been shown to affect the qualitative experience of trance (Henry, 1985), spontaneous arm catalepsy (Orne, 1959), spontaneous amnesia (Young & Cooper, 1972), the ability to resist suggestions (Lynn, Nash, Rhue, Frauman, & Sweeney, 1984; Spanos, Cobb, & Gorassini, 1985), the ability to breach suggested amnesia (Silva & Kirsch, 1987), and the nature of "hidden observer" reports (Spanos & Hewitt, 1980). In sum, hypnotic inductions are as nonspecific as placebos, but hypnotic and placebo-induced experiences and behaviors are as specific as the expectancies that mediate their occurrence.

The seminal study of McGlashan, Evans, and Orme (1969) has been interpreted as indicating that hypnosis and placebo effects are not related. That study purported to demonstrate that hypnotic analgesia was more effective than a placebo among highly responsive subjects, thus indicating that there was more to hypnosis than expectancy effects. As important as that study was, however, there was a fatal flaw in its design. One of the essential characteristics of placebo controlled investigations is that the placebo match the treatment for which it is serving as a control. The importance of this requirement derives from the fact that different placebos have different effects. In a review of double-blind drug studies, for example, Evans (1974) concluded that placebo morphine was considerably more effective than placebo Darvon, which in turn was more effective than placebo aspirin. In the McGlashan et al. study, the placebo was presented as an analgesic and administered in Darvon capsules. It stands to reason that subjects who have experienced hypnotically-induced hallucinations and amnesia during the selection procedure would expect greater pain relief from hypnosis than from Darvon.

In a more recent study, a colleague and I compared hypnotic analgesia to the effects of two different placebos. One of these was described to subjects as a "pain-reducing analgesic." The other was described as a "hypnotic drug" that "increases suggestibility." We replicated the superiority of hypnosis to placebo when the placebo was presented as a pain-relieving drug. However, placebo and hypnosis were equally effective when the placebo was presented as a drug that induces hypnosis (Baker & Kirsch, 1993). Furthermore, in both the placebo condition and the hypnosis condition, expectancy was significantly correlated with pain reduction, whereas the association between hypnotizability and pain reduction was only marginal.

Individual Differences in Responsiveness

Expectancy determines the circumstances under which a good hypnotic subject experiences and displays hypnotic phenomena. It also determines the kind of phenomena that good subjects experience and display. But what determines the degree to which a subject responds? Does expectancy produce hypnotic experiences only in susceptible subjects, or is it also one of the determinants of hypnotic susceptibility?

Expectancy is one of the few stable correlates of hypnotizability (Kirsch & Council, 1992). Although early studies indicated that these correlations were only moderate, much higher correlations, some as high as .71 and .84, have been reported in more recent studies (Council et al., 1983; Council et al., 1986; Johnson et al., 1989; Kirsch, 1991). Still, correlation does not establish causality. It is possible that expectancy is an epiphenomenon rather than a cause of responsiveness. More convincing evidence of causality is provided by studies in which manipulated expectancies produced changes in responsiveness. Kirsch, Council, and Mobayed (1987) demonstrated that altered expectancies can account for more variance than trait hypnotizability (i.e., pre-manipulation responsiveness) in subsequent hypnotic suggestibility. In another study (Wickless & Kirsch, 1989), the effect of an expectancy manipulation was so strong that

73% of the subjects scored in the high range of responsiveness (9-12) on form C of the Stanford Scale and the remaining 27% scored in the moderate range (5-8). Not one subject scored in the low range (0-4).

These data suggest strong evidence for a causal relation between expectancy and hypnotizability, but they still leave some variance in responsiveness unexplained. It is possible that expectancy is the sole proximal determinant of hypnotizability and that the residual variance is a result of measurement error. Conversely, the unexplained variance may be due to a talent or personality characteristic, the nature of which is yet to be established.

Placebos, Hypnosis and "Sensory Suggestibility"

There is an important difference between placebos and hypnosis that is worth noting for practical reasons. The administration of placebos entails deception. Hypnosis does not. Physicians and psychotherapists are justifiably reluctant to use placebos for this reason. Because the use of hypnosis does not require deception, it can be used as a non-deceptive means of exploiting the therapeutic potential of suggestion.

The deceptive nature of placebos makes those phenomena similar to the tests from which the concept of "secondary suggestibility" (Eysenck & Furmeaux, 1945) was derived. In fact, the labels deceptive and nondeceptive suggestion might be preferable to direct and indirect, so as to avoid confusion with the very different concepts of direct and indirect suggestions used by the Ericksonians. Gheorghiu's (1989) "indirect-direct" approach to measuring "sensory suggestibility" occupies an intermediate ground between the nondeceptive suggestions used in hypnosis and the deceptive procedures used in earlier attempts to measure sensory suggestibility.

There is, however, a dimension on which placebo and hypnotic suggestions differ from those used to measure sensory suggestibility. Both placebo and hypnotic suggestions elicit response expectancies. They are suggestions that changes will occur within the individual. In contrast, tests of secondary or sensory suggestibility are more closely related to stimulus expectancies. They are suggestions that the stimulus will change. The placebo literature demonstrates clearly that response expectancies are self-confirming. Stimulus expectancies may be less so, perhaps because internal states are more ambiguous than external stimuli. In any case, suggesting that a person has become less sensitive to pain is not the same thing as suggesting that the pain stimulus has been reduced in intensity. The degree to which they elicit comparable results and the correlations between them are worthy topics for future investigation.

Conclusion

The data presented in this paper indicate that hypnotic responses and placebo effects share a common mechanism, that of response expectancy. They share a common mechanism because they are subsets of a broader phenomenon: the phenomenon of suggestion. Expectancy is not the only variable mediating the effects of suggestion on

behavior, but it is certainly a critical variable. Among the questions that remain to be answered are the following: What other variables can be shown to influence response to suggestion, and what are the relations between those variables and expectancy? Specifically, is expectancy the final link in the causal chain between suggestion and response, so that other mediating variables affect response by means of their impact on expectancy, or are there other mediating variables that have direct (immediate) effects on response?

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