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THE ROLE OF SELECTIVE ATTENTION IN HYPNOTIC SUSCEPTIBILITY: AN EMPIRICAL STUDY

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THE ROLE OF SELECTIVE ATTENTION IN HYPNOTIC SUSCEPTIBILITY: AN EMPIRICAL STUDY

by

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Abstract

THE ROLE OF SELECTIVE ATTENTION IN HYPNOTIC SUSCEPTIBILITY: AN EMPIRICAL STUDY

Advisor: Professor Howard Ehrlichman

This study tested the hypothesis that in hypnotic situations high as opposed to low susceptible subjects evidence a more pronounced restriction of attention to hypnotic suggestions. Also tested was the hypothesis that high susceptible subjects evidence attentional biases aimed at enhancing the subjective reality of these suggestions. Fifteen high susceptible and 15 low susceptible subjects participated in a hypnotic procedure while ostensibly extraneous phrases emanated from an adjacent cubicle. Hypnotic suggestions coincided with phrases that were consonant, neutral, and dissonant with the theme of each suggestion. In a control condition, high and low susceptible subjects performed nonhypnotic tasks while exposed to the same phrases which were neutral with relation to the theme of each task. Contrary to the present hypothesis, subsequent phrase recognition was equal and poor for all groups. Moreover, all groups showed an identical pattern of differential phrase recognition which consequently precluded thematic value as an organizing factor. The findings suggest that selective attention is not a critical factor underlying hypnotic responsiveness. Alternatives to attentional conceptions of hypnosis are discussed.

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Chapter One

Introduction

Though the efficacy of healing techniques involving faith and suggestion is a phenomenon dating to antiquity, the formal history of hypnosis began with Franz Anton Mesmer's monumental attempt to wrest these techniques from their magico-religious substrata and render them intelligible in terms of the electromagnetic mechanics of eighteenth-century science. Mesmer, in other words, claimed to cure a host of maladies by correcting imbalances in a spatiotemporal cosmic fluid, a procedure that was accomplished by allowing some of his own fluid to "magnetically" influence a receptive patient. However, since the criteria for receptivity consisted of cooperation and a genuine wish to be cured, this physical explanation implicated the role of such psychological factors as belief, expectancy, and a favorable doctor-patient relationship (Ellenberger, 1965a; Shor, 1979).

Concurrent with Mesmer's official discreditation in 1784, the Marquis de Puysegur outlined his discovery of artificial somnambulism, or mesmerically induced sleepwalking. He considered it a special trance state characterized by an inordinate responsiveness to the commands of the mesmerist, and an inevitable inaccessibility

to waking memory of the events that had occurred. Puysegur's discovery initiated a surge of investigations concerning the phenomena that might be elicited in this special state. However, the general finding was an inverse relationship between somnambulistic success and the skepticism of the investigator. This empirical finding preceded by three decades Jose Custodi di Faria's demystifying affirmation that attitude and expectancy were the sole factors responsible for mesmeric events (Ellenberger, 1965a; Shor, 1979a).

In 1843 James Braid proposed a physiological explanation of Puysegur's putative trance state by suggesting that the traditional eye fixation induction technique promotes a nonspecific diminution of central nervous system activity. A few years later, however, Braid relegated this theory of neuro-hypnotism to a subordinate status and adopted the psychological concept of monoideism. This concept represented a condition in which a single idea or train of thought attains the intensity of subjective realism due to a highly focused exclusivity of attention. The subjective reality of the dominant train of ideation is based on an insensibility to all other ideas and considerations, and thus allows for unusual influences of the imagination on mind and body (Ellennberger, 1970; Tinterow, 1970).

Despite Braid's theoretical reformulation and the subsequent crystallization of a mentalistic orientation, the 1880's were ushered in by a reversion to neurology upon Jean Martin Charcot's insistence that hypnosis be understood as a fixed sequence of physiological reflex stages in potentially hysterical individuals. Yet it was Hippolyte Bernheim, inspired by the impressions of his twenty year predecessor Ambroise Liebeault, who shortly thereafter countered this reversion with an exclusive emphasis on psychological principles. The view that was advanced depicted hypnosis as a sleep-like state of heightened suggestibility in which an isolated idea might be implanted and subsequently expressed in an ideomotor, reflexive manner. Hypnotized subjects, in effect, were considered will-less automata, obeying without volition the ideas and commands of the hypnotist (Ellenberger, 1965b; Shor, 1979a).

The last decade of the nineteenth century spawned a conceptual renaissance with the emergence of psychoanalysis and its "dynamic" approach to symptomatology. Proceeding from the influences of Charcot, Janet, Bernheim, and Josef Breuer, Freud adopted the hypnotic induction as a therapeutic tool for gaining access to both repressed memories of traumatic events and associated affects presumed to have undergone somatic conversions. Though Freud ultimately renounced hypnosis for such investigative

substitutes as direct suggestion, free association, and dream interpretation, his topographical analysis of cognitive functioning remains the heuristic foundation for much of contemporary hypnotherapy (Breuer & Freud, 1893/1955, 1895/1955; Ellenberger, 1970; Freud, 1892-1893/1966, 1894/1962, 1896/1962, 1900/1953).

By the 1930's hypnosis research was undergoing extensive methodological advances due to increasing statistical and psychometric sophistication. The availability of the Null Hypothesis model, correlational techniques, and graded scales of hypnotic responsiveness served to heighten the precision and sensitivity of control experiments, and permitted both the assessment of hypnotizability and the potential delineation of a network of associated variables (Hull, 1930, 1931, 1933; Shor, 1979a).

Despite this history of disparate conceptions concerning the precise nature of the hypnotic state, paradigmatic investigations of hypnosis have traditionally proceeded from the following assumptions: a) A variety of verbal concoctions known as "induction procedures" may facilitate the institution of a special "hypnotic trance state," or help to render an individual "hypnotized," b) this special state is a qualitative constant which endures throughout the administration and implementation of

subsequent suggestions, as well as the temporal intervals between suggestions, and c) this special state is the requisite to an overt and subjective responsiveness to the specifications of the hypnotist. Deferring, for the time being, an empirical analysis of the temporal qualities of the hypnotic state, the more fundamental question addresses its ontological status as a valid medium for hypnotic suggestion. In other words, if the hypnotic induction institutes a special state that is basic to an overt and subjective responsiveness to the specifications of the hypnotist, it follows that this state is identifiable within the hypnotic context by relatively invariant differences between high and low susceptibles in terms other than level of responsiveness.

Hypnosis as a Physiologically Distinct State: Influence of (Early) Braid and Charcot

Despite the contention that an altered state of consciousness should involve unique organismic parameters (Barber, 1979), studies have been consistent in the finding that the inferred institution of a hypnotic trance does not reliably coincide with any special physiological change. In other words, high susceptibles who are exposed to an induction procedure fail to manifest unsuggested electroencephalographic, cardiovascular, electrodermal, respiratory, or electromyographic patterns that might

distinguish them from either waking controls or insusceptible simulators (Barber, 1979; Bauer & McCanne, 1980; Chertok & Kramarz, 1959; Evans, 1979; Graham, 1977; Maiollo, Porro & Granine, 1969; Sarbin & Slagle, 1979). Rather than constituting the organismic underpinning for some unique and absolute state of consciousness, special physiological changes among high susceptible hypnotics occur only when specifically suggested, and vary qualitatively according to the content of the suggestion (Damaser, Shor & Orne, 1963; Hepps & Brady, 1967; Ikemi & Nakagawa, 1962; Sarbin, 1956).

Concerning dispositional factors, it appears that hypnotically susceptible and insusceptible individuals are indistinguishable in terms of waking, cortical activity. Galbraith, London, Cooper and Hart (1970) and Evans (1979), for instance, found no significant correlations between waking alpha frequency, density, or amplitude and scores on either the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C) of Weitzenhoffer and Hilgard (1962), or the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A) of Shor and Orne (1962). Studies reporting significant and positive correlations between alpha parameters and hypnotic susceptibility (Engstrom, London & Hart, 1970; London, Hart & Liebovitz, 1968; Nowlis & Rhead, 1968) have been confounded by the subjects' apparent knowledge that the two

sets of measures were being related, thus suggesting problems of bias or demand characteristics (Evans, 1979). In addition, investigations conducted by O'Connell and Orne (1962, 1968) imply that seeming physiological indices of hypnotic susceptibility may be artifacts of relaxation. In other words, situational anxiety may function as a moderator variable between alpha density and hypnotic responsiveness such that increased relaxation both disinhibits alpha production and provides the requisite comfort for "letting go" and accepting new (hypnotic) experiences.

Hypnosis and the Will-less Automaton: Influence of Puysegur and Bernheim

E. Hilgard (1977a, 1979) argues that the hypnotic state involves a division in the central executive functions such that the usual initiative of the executive is lost and the subject is no longer able to independently undertake new lines of thought or action. Nevertheless, he cites numerous instances in which subjects report having engaged in <u>self-initiated</u> active imagery as a means of producing suggested phenomena (Hilgard, 1977a, 1977b). Similarly, Spanos, Rivers and Ross (1977) note that subjects introduce <u>unsuggested</u> "goal directed fantasy" to achieve specified effects. Moreover, Orne (1959), Sarbin (1950), and White (1941) have long held that the hypnotized person is not passively bound to the directives of the hypnotist, as

evidenced primarily by the occurrence of certain behaviors in the absence of corresponding instructions.

Perhaps most noteworthy is the fact that there is no convincing evidence to support the contention that hypnosis may be used as a coercive agent, i.e., as a tool for manipulating hypersuggestible subjects into performing injurious, antisocial, or otherwise personally objectionable acts. Despite numerous instances of unscrupulous practitioners and controlled studies allegedly illustrating the hypnotically mediated arrogation of an individual's will, such accounts are seriously flawed. More specifically, it is never demonstrated that subjects were truly "hypnotized," that specified acts were indeed objectionable, and that compliance did not simply reflect a desire to please. Furthermore, there is a frequent absence of adequate control groups as well as an inability to convince subjects that their actions were occurring outside of an experimental context (Coe, Kobayashi & Howard, 1972, 1973; Conn, 1972, 1981; Kline, 1972; Levitt, Overly & Rubinstein, 1975; O'Brien & Rabuck, 1976; Orne, 1972; Orne & Evans, 1965; Perry, 1979).

Hypnosis and Spontaneous Posthypnotic Amnesia: Influence of Puysegur

Since Puysegur's discovery of what was interpreted as spontaneous posthypnotic amnesia, this phenomenon has

traditionally been considered an intrinsic characteristic and distinguishing sign of hypnosis (Cooper, 1979; Hilgard & Hommel, 1961). A number of contemporary investigators (Barber, 1979; Barber & Calverley, 1966; Hilgard, 1966; Hilgard & Cooper, 1965; Orne, 1966), however, argue that unless explicitly instructed, very few "entranced" individuals manifest what appears to be posthypnotic amnesia, suggesting that it is neither spontaneous nor intrinsic to hypnosis. In those rare instances when apparent memory disturbances occur in the absence of explicit suggestions, there are several reasons why an interpretation of spontaneous amnesia is seriously questionable.

First, uninstructed recall deficits for suggestibility items occur with relative constancy across groups varying in terms of hypnotic susceptibility and the inferred presence or absence of a hypnotic trance (Evans & Thorn, 1966; Hilgard & Cooper, 1965). This suggests that "spontaneous posthypnotic amnesia" largely conforms to principles of normal (i.e., non-hypnotic) forgetting (Cooper, 1979), rather than warranting investigation as some special trance phenomenon.

Second, hypnotic inductions containing direct suggestions for drowsiness and sleep may include indirect suggestions for amnesia since subjects are aware that people

typically forget their dreams and other events occuring during actual sleep (Barber, 1979; Dittborn & Aristegureta, 1962; Evans, Gustafson, O'Connell, Orne & Shor, 1966, 1969).

Third, in view of the common preconception that a hypnotic trance state is followed by spontaneous forgetting (Dorcus, Brintnall & Case, 1961; London, 1961; Young & Cooper, 1972), individuals receiving suggestions to enter a trance may posthypnotically manifest apparent amnesia in order to be good subjects and conform to the perceived expectations of the hypnotist (Barber, 1979; Cooper, 1979).

Finally, it is possible that subjects ostensibly experiencing uninstructed forgetting received suggestions for amnesia during previous hypnosis sessions and consequently generalized these suggestions to apply to later contexts (Barber, 1979).

Hypnosis and Primary Process Mentation

A number of theorists view the hypnotic trance as an induced state of ego receptivity wherein regressive, primary process modes of mentation (fluid, prelogical imagery) are allowed access to consciousness (Deikman, 1971; Fromm, 1979; Gill & Brenman, 1959; Kubie, 1961). However, it seems that much of the fantasy and imagery occurring in hypnosis results from situational variables other than the hypnotic induction and some extraordinary modification of

consciousness. For instance, studying the incidence of primary process responses (drive-determined content, condensations, fragmentations, loose associations, autistic logic, disregard for reality) to a Rorschach test under hypnotic and non-hypnotic conditions, Gruenewald and Fromm (1967) and Gruenewald, Fromm and Oberlander (1979) found a significantly greater frequency of regressive Rorschach responses in the hypnotic condition only when the test was administered by the hypnotist. Since this difference did not emerge when the Rorschach test was administered by a person other than the hypnotist, the authors concluded that the elicitation of primary process responses was the function of a regression-facilitating hypnotic transference relationship rather than a function of hypnosis per se. Similarly, Sheehan (1979) argues that a hypnotist's proposal of a counterfactual state of affairs constitutes an implicit request for the subject to engage in imaginal activity. The quality of the subject's mentation, in other words, does not reflect a hypnotically induced state of ego receptivity, but is simply determined by the perception of cues to respond in a make-believe fashion.

Aside from the question of etiology, it is doubtful whether much of the fantasy play and imaginal activity occurring in hypnosis may even be classified as "primary process" since consideration is often given to forms of

mentation that are goal-directed and therefore infused with the careful cognitive control representative of secondary process thought (J. Hilgard, 1979; Spanos & Gorassini, 1984; Spanos, Rivers & Ross, 1977).

Hypnosis and Trance Logic

Based on informal observations, Orne (1959) posited the notion of "trance logic" to represent a cognitive peculiarity that is intrinsic and unique to hypnosis. This phenomenon is characterized by the simultaneous cognizance of a hallucination and an incompatible percept in the absence of an attempt to satisfy a need for logical consistency. Subjects who were "deeply hypnotized," for example, claimed to see a suggested person sitting in a chair while attesting to either the visibility of the "hidden" portion of the chair or the presence of the actual person in another part of the room. Insusceptible simulators, however, were apparently dominated by a need for logical consistency since they neither admitted to the complete visibility of the chair nor the presence or recognizability of the actual person.

Studies attempting to experimentally investigate Orne's (1959) informally derived construct (Johnson, Maher & Barber, 1972; McDonald & Smith, 1975; Obstoj & Sheehan, 1977; Perry & Walsh, 1978; Sheehan, 1977) have typically involved a comparison of highly susceptible and

"hypnotically trained" subjects with a group of waking controls, the former receiving a trance induction and suggestions to hallucinate given individuals, the latter receiving instructions to simply imagine, rather than hallucinate, identical effects. The data show that the tolerance of incongruity depicted above was never manifested by all of the "hypnotized" subjects and invariably occurred with equal frequency in both groups. This implies that the phenomenon of trance logic is neither intrinsic nor unique to hypnosis.

Hypnosis as a Phenomenologically Distinct State

Although hypnosis may be characterized as a distinct state on the basis of such vague, phenomenological properties as the feeling of "being in a trance," and experiential variations in "trance depth," it is likely that these properties consist of little more than degrees of readiness to respond and perceived responsiveness to the specifications of the hypnotic role. For example, Gill and Brenman (1959) found that when requested to articulate the subjective conviction of being in a hypnotic trance, subjects invariably discerned a simple readiness and willingness to respond to test suggestions. Barber (1979), in turn, has observed that subjects report the institution of a trance when experiential data are consonant with both immediate suggestions and preexistent beliefs concerning the

nature of hypnosis. Feeling hypnotized, in other words, is not an essential antecedent to such consonance since highly susceptible subjects claim the absence of a trance when hypnotically unresponsive to personal, rather than experimental, specifications.

In contrast to the aforementioned inquiries, in which phenomenological reports were obtained either before (Gill & Brenman, 1959) or after (Barber, 1979) the administration of specific suggestions, Tart (1970, 1979) recorded subjective accounts of trance depth repeatedly throughout the proceedings of the SHSS:C (Weitzenhoffer & Hilgard, 1962). He found that initial depth reports, i.e., those immediately following the hypnotic induction, and mean depth reports correlate significantly and positively with both total behavioral and experiential susceptibility scores. Whereas these and similar findings (Perry & Lawrence, 1980) accord with the traditional assumption that the efficacy of hypnotic suggestions derives from a special hypnotic state, a rival interpretation is that "trance depth" is a misnomer for degree of favorable motivation or perceived responsiveness. This interpretation is supported by the fact that susceptibility evidenced a weaker correlation with initial depth report than mean depth report, thus suggesting that a fraction of ready and willing subjects were hyposuggestible perhaps due to the absence of a certain

aptitude. Moreover, the criteria for the determination of depth reports consisted of the intensity of reactions to susceptibility items and a complex of bodily responses (e.g., relaxation, drowsiness) directly or implicitly suggested during the hypnotic induction.

Hypnosis and the "As-If" Formulation: The Function of Role Playing and Imagination

It is theorized that in the hypnotic experiment a subject engages in an as-if or imaginary situation via the enactment of a specified role. To illustrate, White (1941) conceives of hypnosis as consisting of two fundamental components, one of which is "goal-directed striving," or the effort to behave like a hypnotized person by acting in accordance with the counterfactual directives of the hypnotist. Espousing a role-enactment theory of hypnosis, Coe and Sarbin (Coe & Sarbin, 1977; Sarbin, 1950) argue that the hypnotist's utterance of counterfactual propositions provides a dramaturgical cue for the subject to imagine that these propositions are true and to act accordingly, i.e., to role play. Similar to White (1941), Shor (1959) also conceives of hypnosis as consisting of two fundamental components, one of which is to take the role of a hypnotic subject by constructing a special orientation to reality according to the specifications of the hypnotist. Barber (1979) contends that the successful overt and subjective

responsiveness to hypnotic suggestions is contingent upon conditions which facilitate the subject's willingness to think with and imagine that which is suggested. Sheehan (1979) argues that a hypnotist's redefinition of a given situation constitutes a cue to the subject for imaginational responding.

Consistent with theory, research suggests that hypnotic phenomena may be explained in terms of role enactment and imagination, or the active construction by the subject of an as-if situation. Two sets of data must be considered.

First, it has been repeatedly demonstrated that symbolic stimuli and imaginings can "produce" physiological alterations irrespective of the administration of a hypnotic induction and the inferred presence or absence of a hypnotic trance. Both direct instructions to imagine and verbal stimulation implicating imaginational processes have been reflected organismically by changes in blood volume and skin temperature (Dugan & Sheridan, 1976; Hadfield, 1920; Harano, Ogawa & Naruse, 1965; Menzies, 1941; Sarbin, 1950; Schultz, 1926; Spanos, McNeil & Stam, 1982), electromyographic responses (Arnold, 1946; Damaser, Shor, & Orne, 1963; Hull, 1933; Jacobson, 1932; Schultz, 1932), cardiac irregularities (Damaser, Shor & Orne, 1963; Hepps & Brady, 1967), nausea and the inhibition of hunger contractions (Sarbin, 1950), and an assortment of dermatic blemishes (Ikemi & Nakagawa,

1962).

Second, a series of studies employing same-subjects and independent-groups comparisons (Barber, 1965a, 1965b, 1969, 1979; Barber & Calverley, 1962, 1963, 1968; Salzberg & DePiano, 1980) consistently revealed an unexpectedly high level of behavioral and subjective responsiveness to suggestibility items when subjects were instructed to simply imagine specified effects, and statistically significant increments in this level of responsiveness following task-motivational instructions (i.e., verbal exhortations designed to heighten subjects' willingness to think with and imagine specified effects via the institution or enhancement of favorable attitudes, motivations, and expectancies toward the test situation), a standard hypnotic induction (i.e., explicit requests to focus, or attend exclusively, to an object or body part, the hypnotist's voice and ideas thus conveyed; instructions for relaxed breathing and relaxed musculature; and suggestions for eye closure or some motoric response which is to be followed by a sleep-like state of hypnosis), or a combination of the two. However, differences between the respective increments were invariably nonsignificant. Given the response level with imagination instructions, the significant increment following motivational boosts, and the failure of the hypnotic induction to either significantly surpass or

supplement the effect of task-motivational instructions, the conclusion derived from the present investigations was that hypnotic phenomena may be explained in terms of imaginational processes and without recourse to the notion of a special state of consciousness. Furthermore, it was concluded that task-motivational instructions and a standard hypnotic induction serve the identical function of manipulating subjects' willingness to think with and imagine specified effects.

An obvious objection to the preceding interpretations is that task-motivational instructions do not facilitate the subjective responsiveness to suggestibility items, but instead exert pressure to report specified effects when they are not actually experienced. Bowers (1967) investigated this possibility and found that the changes in the rated subjective reality of visual and auditory imaginings before and after task-motivational instructions were significant and significantly greater than the nonsignificant changes occurring with the same instructions followed by a demand for honesty. Though such data were taken as evidence that task-motivational instructions effect verbal rather than experiential alterations, this conclusion may be overstated for a number of reasons.

First, Bowers (1967) reported average change scores only, consequently masking the possibility that some

subjects did experience an increase in the subjective reality of their imaginings and indicated as such in the presence of a demand for honesty.

Second, it is possible that the demand for honesty caused task-motivated subjects to infer that it was incorrect to report experiential alterations, suggesting that some might have experienced an increase in the subjective reality of their imaginings but failed to indicate as such due to a misinterpretation of the demand.

Third, a percentage of task-motivated subjects in other studies (Barber, 1965a, 1965b, 1969, 1979; Barber & Calverley, 1962, 1963, 1968; Salzberg & DePiano, 1980) responded honestly to suggestibility items by failing to manifest appropriate behaviors and stating postexperimentally that they did not experience specified effects. Therefore, it is both obvious that task-motivational instructions do not invariably lead to false responding and unreasonable to assume that all subjects indicating experiential alterations were dishonest in their reports.

Finally, that attempts to heighten the willingness to imagine may facilitate subjective responding should not be surprising given the evidence concerning the influence of symbolic stimuli and imaginings on physiological processes

(Arnold, 1946; Damaser, Shor & Orne, 1963; Dugan & Sheridan, 1976; Hadfield, 1920; Harano, Ogawa & Naruse, 1965; Hepps & Brady, 1967; Hull, 1933; Ikemi & Nakagawa, 1962; Jacobson, 1932; Menzies, 1941; Sarbin, 1950; Schultz, 1926, 1933; Spanos, McNeil & Stam, 1982).

More important than the issue of report bias is the contention that hypnotic phenomena may be explained strictly in terms of imaginational processes (Barber, 1965a, 1965b, 1969, 1979; Barber & Calverley, 1962, 1963, 1968; Salzberg & DePiano, 1980). This formulation precludes recourse to the notion of a special state of consciousness as a medium for hypnotic suggestion, and considers the level of behavioral and subjective responsiveness to suggestibility items to be a function of the subject's willingness to think with and imagine specified effects. However, what exactly is meant by the implication that high and low susceptibles differ in terms of the "degree of willingness" to imagine that which is suggested? What exactly is meant by the argument that the "degree of willingness" to imagine is increased by task-motivational instructions or a standard hypnotic induction? How, in other words, is this increasing degree of willingness operationalized cognitively? Does it involve greater detail and vividness of imagery, or perhaps greater attentional investment in the imagined state of affairs? The failure of the as-if formulation to answer these

questions signifies the need for additional constructs.

Beyond the As-If Formulation: Influence of (Later) Braid

Consistent with Braid's later conception of hypnosis as a condition of monoideism wherein a single train of ideation attains the intensity of subjective realism due to a highly focused exclusivity of attention (Ellenberger, 1970; Tinterow, 1970), it is theorized that whereas the hypnotic experiment is one in which a subject engages in an as-if situation, hypnosis as an experiential alteration above mere behavioral compliance (Orne, 1959, 1971, 1979) may be understood as an as-if situation which the subject, from a phenomenological standpoint, does not know is only as-if. The convergence of the following perspectives is evident.

While the first of the two fundamental components of hypnosis, as posited by White (1941), is goal-directed striving, or the enactment of a complex of counterfactual directives, the second is a simultaneous "contracted frame of reference," or selective incognizance of disillusive reality considerations. The "success" of hypnosis, i.e., the elicitation of behavioral responses and experiential alterations, is a function of these conjoint processes.

Coe and Sarbin (Coe & Sarbin, 1977; Sarbin, 1950), espouse a role-enactment theory of hypnosis which states that a subject strives to take the role of the hypnotized

person by imagining the counterfactual propositions of the hypnotist to be true and acting accordingly. However, they argue that the extent to which the complex of imaginings and behaviors constituting the role is accompanied by corresponding subjective and physiological alterations is a function of a certain role-taking aptitude, or ability to completely and intensely take a role. The "completeness and intensity" of role taking refers to the degree of participation of the self in the role, or the degree to which self and role are undifferentiated. A rigid and persistent differentiation of self and role, as in technical acting, involves the awareness of one's true identity and the structured complex of reality considerations in which it is embedded such that the as-if nature of ongoing activities is continuously highlighted ("I am Richard Burton the actor, presently playing the role of Hamlet"). When self and role are undifferentiated, as in Stanislavski's (1936, 1969) method acting, there is a focusing of consciousness which excludes identity and other factual data such that the role becomes the only reality ("I am Hamlet").

While the first of the two fundamental components of hypnosis, as posited by Shor (1959, 1979), is to take the role of a hypnotic subject by constructing a special orientation to reality according to the specifications of the hypnotist, the second is the concomitant recession of

the generalized reality orientation (GRO) into nonfunctional unawareness. The GRO, as an abstract, integrative frame of reference, or superordinate complex of interrelationships, provides the interpretative context for all ongoing conscious experiences. When the ongoing experience is a specially constructed orientation to reality, an intact or immediate GRO acts as a constant reminder as to the counterfactual quality of this orientation. The temporary depotentiation of the GRO, however, renders the special orientation isolated from usual contextual data so that the distinction between imagination and reality fades and the as-if situation consequently becomes the only possible reality. Unless the GRO is eliminated from the immediate background of attention, the depiction of hypnosis as an experiential alteration is erroneous, and therefore all "hypnotic" responses must be considered mere simulation (Orne, 1959, 1971, 1979).

Barber (1979) notes that the willingness to think with and imagine suggested effects predicates an unwillingness to negate, or think contrary to, the counterfactual content of such suggestions, or, more simply, a refusal to acknowledge the as-if nature of the situation.

E. R. Hilgard (1979) contends that a crucial feature of hypnosis is the partial fractionation of the monitoring function. This condition is characterized by an absence of

critical scanning and reality testing, and consequently an "uncritical acceptance of distorted reality as though it were undistorted" (p. 51).

J.R. Hilgard (1979a, 1979b) argues that individual differences in hypnotizability, or the ability to respond experientially as well as behaviorally to particular suggestions, may be attributed to the differential capacity to become deeply involved, or absorbed, in one or more imaginative-feeling areas of the mind. Such imaginative involvement is not characterized as mere interest or enjoyment, but rather as a total immersion in an as-if situation with indifference to distracting and disillusive stimuli.

Applications of the "As-If Without Knowing" Formulation

Motoric Effects

As mentioned, via formal research spanning more than half a century (Arnold, 1946; Damaser, Shor & Orne, 1963; Dugan & Sheridan, 1976; Hadfield, 1920; Harano, Ogawa & Naruse, 1963; Hepps & Brady, 1967; Hull, 1933; Ikemi & Nakagawa, 1962; Jacobson, 1932; Menzies, 1941; Sarbin, 1950; Schultz, 1926, 1932; Spanos, McNeil & Stam, 1982) imaginational processes have been reflected somatically by changes in blood volume and skin temperature, electromyographic responses, cardiac irregularities, nausea and the inhibition of hunger contractions, and a host of

dermatic blemishes. Moreover, a common finding has been that such physiological alterations both vary in degree according to the vividness and subjective realism of imagined events, and reportedly occur without the experience of being intended or willed.

The preceding data suggest that imagination is a systemic event varying in degrees of systemic realism. The nonvoluntary quality of physiological alterations mediated by imagination is typical for somatic processes that are not mediated by a conscious act of deliberation and decision. It is thus proposed that unsimulated responses subsumed under what may be termed motoric effects (arm catalepsy, arm levitation, arm lowering, body immobility, hand lock, verbal inhibition) are illustrations of maximal systemic realism, or an organismic belief in a counterfactual state of affairs: a "psychophysical" principle commonly reflected in games of deception such as the endurance test in which a person supporting an object upon extended arms will either tire quickly or manifest remarkable stamina depending upon the amount of time that is believed to have passed since the initiation of the task.

Several studies (Spanos, 1971; Spanos & Barber, 1972; Spanos & Gorassini, 1984; Spanos & McPeake, 1974, 1975; Spanos, Rivers & Ross, 1977) consistently found that when suggested responses were experienced as nonvolitional there

was a coincident absorption in goal-directed fantasy (GDF), or tendency to treat as subjectively real an imagined situation which, if actually to transpire, would result in the nonvoluntary occurrence of the suggested response. Though such data accord with the present thesis concerning the systemic and phenomenological implications of imagination, a rival formulation holds that GDF is a cognitive strategy used to define, rather than mediate, nonvoluntary occurrences. Suggested responses are considered purposive acts which may be interpreted as nonvolitional via attributions to imagined events and in terms of contextual demands (Spanos, 1982; Spanos, Rivers & Ross, 1977). However, the limited applicability of an attributional analysis becomes evident when considering the blushing that accompanies imagined embarassment, the accelerated heartbeat following imagined threat, or the nausea involved in imagined decay (Sarbin, 1950). Clearly, most individuals are incapable of intentionally effecting such physiological alterations without first invoking the imagination as a mediatory tool (Miller, 1978, 1980).

Hallucinations

Supposed perceptual and sensory alterations subsumed under the category of "hypnotic hallucinations" may best be conceptualized as imaginational reinstatements of familiar experiences in the absence of negating or contradictory

cognitions. Aside from the failure to unequivocally demonstrate an identity of process betwen hallucinatory and perceptual or sensory experiences (Sheehan, 1979, 1982), it is found that most subjects, when instructed to see or hear suggested data, report having imagined such data providing these reports are free of categorical constraints imposed by the wording of the experimenter's inquiry (Barber & Calverley, 1964; Hilgard, 1965; Sarbin, 1967; Schneck, 1964; Spanos, Churchill & McPeake, 1976). However, there nevertheless remains a small percentage of "hypnotic virtuosos" who testify to having seen or heard suggested phenomena and who, unlike the rest of the sample population, experience these phenomena with an unusual vividness, clarity, and absence of notions concerning their unreality (Barber & Calverley, 1964; Sheehan, 1967, 1982; Spanos & Barber, 1968; Spanos, Ham & Barber, 1973). This is consistent with the findings that highly susceptible subjects exhibit greater imagery vividness than insusceptibles (Crawford, 1982; Farthing, Venturino & Brown, 1983; Hilgard, Sheehan, Monteiro & MacDonald, 1981; Jennes, 1965; Sarbin, 1950; Shor, Orne & O'Connell, 1966; Singer & Pope, 1981; Sutcliffe, Perry & Sheehan, 1970), that imagery vividness correlates significantly with measures of absorption or subjective realism (Crawford, 1982; Farthing, Venturino & Brown, 1983; Hilgard, Sheehan, Monteiro & MacDonald, 1981), and that vivid imagery has been found, in

nonhypnotic contexts, to rival the literalness of perceptions and sensations (Sheehan, 1966a, 1966b, 1967, 1979). It thus appears that if a subject believes that suggested imaginational content is real, i.e., if the subject is incognizant of the as-if nature of the situation, from a phenomenological standpoint such content must be "seen," "heard," "tasted" etc., since the subjective quality of imagining a particular experience predicates an awareness of its unreality.

Amnesia

The hypnotic amnesia paradigm begins with an acquisition phase wherein hypnotic events, noncategorical word list items, or categorical word list items undergo an incidental or intentional memory consolidation via principles of temporal or semantic organization (as reflected by consistent temporal sequencing or category clustering during criterion recall trials). Following the acquisition phase is an amnesia suggestion emphasizing recall failure for specified memory data, and then a challenge or request to remember this data (Kausler, 1974; Kihlstrom & Wilson, 1984; Radtke-Bodorik, Spanos & Haddad, 1979; Shor & Orne, 1962; Spanos & Bodorik, 1977; Spanos, Radtke-Bodorik & Stam, 1980; Spanos, Stam, D'Eon, Pawlak, & Radtke-Bodorik, 1980; Weitzenhoffer & Hilgard, 1959, 1962).

It is generally found that during the recall period when the amnesia suggestion is in effect, high susceptible hypnotic subjects (or, in a different design, randomly assigned hypnotic subjects), as compared to low susceptible hypnotic subjects (or randomly assigned task motivated subjects), recall significantly fewer target memories with significantly less temporal or semantic organization. Such disorganization is not an artifact of reduced recall or the demand characteristics of the situation. High susceptible hypnotics (or randomly assigned hypnotics), in addition, are more likely to experience effortless forgetting and a loss of strategic control over retrieval processes than their low susceptible (or task motivated) counterparts. Correspondingly, on a subsequent recall task following the cancellation of the amnesia suggestion, high susceptible hypnotic subjects (or randomly assigned hypnotic subjects) recover significantly more new memories than do low susceptible hypnotic subjects (or randomly assigned task motivated subjects). This phenomenon is not an artifact of the relative sizes of remaining item pools. Temporal or semantic organization also reverts to its high baseline level so that comparison groups now recall approximately the same total amount of critical material with usual temporal sequencing or category clustering (Evans & Kihlstrom, 1973; Kihlstrom & Evans, 1976, 1977, 1978, 1979; Kihlstrom & Wilson, 1984; Radtke-Bodorik, Spanos & Haddad, 1979; Spanos

& Bodorik, 1977; Spanos, Radtke-Bodorik & Stam, 1980; Spanos, Stam, D'Eon, Pawlak, & Radtke-Bodorik, 1980). Given the reversibility of hypnotic amnesia as an indispensible and distinguishing characteristic of the phenomenon (Nace, Orne, & Hammer, 1974), and the fact that unrecalled material avails itself to recognition (Kihlstrom & Shor, 1978; Williamsen, Johnson & Eriksen, 1965), shows considerable savings in relearning (Hull, 1933), and retroactively inhibits the recall of previously encoded information (Graham & Patton, 1968; Stewart & Dunlap, 1976), it is apparent that suggested memory deficits implicate retrieval biases rather than failure of acquisition or storage (Evans & Kihlstrom, 1973).

A substantial body of research points to a mechanism of active recall which operates under ordinary circumstances and involves the direction of attention toward organizational retrieval cues that were present during the consolidation of to-be-remembered material. These cues are typically semantic (for categorical data) or temporal (for noncategorical data), and constitute the principle bases for a productive and organized memory search (Kihlstrom & Evans, 1979; Kihlstrom & Wilson, 1984; Mandler, 1979; Spanos & Radtke-Bodorik, 1980; Spanos, Radtke-Bodorik & Stam, 1980; Spanos, Stam, D'Eon, Pawlak & Radtke-Bodorik, 1980; Tulving, 1972, 1974; Tulving & Pearlstone, 1966). Conversely, and

consistent with the contention that any mechanism capable of affecting retrieval could be used psychodynamically in the service of defense (Erdelyi & Goldberg, 1979), it has been demonstrated that individuals may strategically disattend organizational retrieval cues for the purpose of forgetting (Spanos & Radtke-Bodorik, 1980; Spanos, Radtke-Bodorik & Stam, 1980). This phenomenon lends itself to a range of such metaphors as "attenuated attention" (Aborn, 1953), "motivated inattention," "amnesia by neglect" (Cooper, 1979), "selective search" (Epstein, 1972), "response competition" (Holmes, 1972), "active memory suppression" (Kihlstrom, Evans Orne & Orne, 1980), and "blocking" (Rakover, 1975). However, despite this strategic inattention, it is typical for select memory data to be spontaneously recalled to the extent that their individual (i.e., nonorganizational) attributes (e.g., imagery value, meaningfulness, concreteness, familiarity, frequency, serial position) render them overlearned, particularly salient, and consequently too difficult to disattend. In contrast to an active memory search, such passive recall does not involve the utilization of ordinarily expedient organizational cues and is therefore relatively diminished and disorganized (Spanos, Radtke-Bodorik & Stam, 1980; Spanos, Stam, D'Eon, Pawlak & Radtke-Bodorik, 1980; Stam, Radtke-Bodorik & Spanos, 1980).

Given the distinction between active and passive recall, several courses are available following amnesia suggestions emphasizing recall failure for specified memory data. One possibility is that subjects direct attention toward organizational retrieval cues and actively recall specified data easily and systematically (Spanos, Radtke-Bodorik & Stam, 1980). When challenged or requested to remember, these subjects may either report honestly or act as if they are amnesic in the form of an overt pretense by maintaining an unwillingness to report remembered data (Barber, 1969, 1979; Coe & Sarbin, 1977). Although a fraction of subjects admit postexperimentally to having employed deceptive report bias strategies ("I remembered it all along but I didn't want to say it") (Damaser, 1964; Orne, 1966), such a mechanism insufficiently accounts for amnesic effects on the grounds that report inhibition speaks for neither the full range of phenomenological reports (see below) nor an essential criterion implicit in the definition of the amnesic state, i.e., that reportedly nonaccessed target memories must be experienced as outside the boundaries of conscious awareness (Shor, 1979).

A second possibility following amnesia suggestions for specified data is that subjects act as if they are amnesic in the form of a covert pretense by strategically disattending organizational retrieval cues. In this case

relatively few data are likely to be recalled passively and randomly as a function of their individual attributes. When challenged or requested to remember, these subjects may either redirect their attention toward organizational retrieval cues and actively recall specified data easily and systematically, or continue disattending these cues and simply report any target material that randomly "comes to mind." Temporary recall inhibition is presumed to be predicated upon the latter process, whereas the hypermnesia following the cancellation of the amnesia suggestion is presumed to be predicated upon the former (Spanos & Radtke-Bodorik, 1980; Spanos, Radtke-Bodorik & Stam, 1980; Spanos, Stam, D'Eon, Pawlak & Radtke-Bodorik, 1980; Stam, Radtke-Bodorik & Spanos, 1980).

The present "inattention hypothesis" concerning hypnotic amnesia receives support from several studies demonstrating that the relative diminution and disorganization of recall obtained with the usual hypnotic amnesia paradigm may either be a) enhanced by preexperimental instructions to interpret the amnesia suggestion as a request to disattend target material until the suggestion is cancelled, b) eliminated by instructions to attend to target material during the recall period when the amnesia suggestion is in effect, or c) equaled when high or low susceptible control subjects are instructed to engage

in an attention diversion task while orally recalling target material (Spanos & D'Eon, 1980; Spanos, Stam, D'Eon, Pawlak & Radtke-Bodorik, 1980). Also consistent with the inattention hypothesis are postexperimental reports indicating that high as opposed to low susceptible hypnotic subjects are more likely to be engaged in activity that interferes with recall during amnesia testing, and the notation that the hypnotic induction procedure with its emphasis on relaxation and bodily sensations is more likely than task motivational instructions to provide subjects with potential alternative foci required to strategically disattend organizational retrieval cues (Spanos, Radtke-Bodorik & Stam, 1980; Spanos, Stam, D'Eon, Pawlak & Radtke-Bodorik, 1980).

Most important to the present discussion, however, is the fact that high susceptible hypnotic subjects are more likely to experience effortless forgetting and a loss of strategic control over retrieval processes than their low susceptible counterparts. Phenomenological reports indicate that low susceptibles, when disattending target data, typically experience this act as a purposeful distraction which may be voluntarily revoked ("I just kept thinking of other things so I wouldn't remember," " I know that if I really tried to remember I could have") (Barber, 1965; Bowers, 1969; Hilgard, 1965; Spanos & Bodorik, 1977, White,

1941). High susceptibles, in turn, typically experience an absence of deliberation in the avoidance of target data and believe themselves incapable of executing a facile and complete hypermnesia, i.e., they "do nothing" to forget and are "unable" to remember ("The word simply left my mind and I couldn't think of it") (Hilgard, 1965, 1977a, 1977b; Kihlstrom & Evans, 1979; Kihlstrom & Wilson, 1984; Spanos & Bodorik, 1977; Spanos, Stam, D'Eon, Pawlak & Radtke-Bodorik, 1980).

Given the present complex of theory and data, it is proposed that following amnesia suggestions low susceptible hypnotic subjects either direct attention toward organizational retrieval cues or act as if amnesic in the form of a conscious pretense by strategically disattending these cues. In the latter instance, forgetting is represented phenomenally as effortful and reversible. Therefore, a request or challenge to remember will warrant the decision of whether to redirect attention toward retrieval cues and report or not report actively recalled data, or to continue disattending these cues and report or not report passively recalled data. Following the same amnesia suggestions, it is proposed that high susceptible hypnotic subjects act as if amnesic in the form of an unconscious pretense (Shor's [1979] "nonconscious involvement") by strategically disattending both

organizational retrieval cues and the strategic nature of this inattention (a "cover up of the cover up," in Watergate terminology, or an as-if situation which the subject, from a phenomenological standpoint, does not know is only as-if). In this instance, forgetting assumes the phenomenological status of "happening" and lacking in reversibility, and therefore a request or challenge to remember will simply warrant the decision of whether or not to report passively recalled data. It has been noted that high as opposed to low susceptible hypnotic subjects are indeed more likely to be engaged in activity that interferes with recall during amnesia testing, and typically report less data with less temporal or semantic organization.

The present formulation is consistent with Hilgard's (1977a) "neo-dissociation" interpretation of hypnotic amnesia on the grounds that "dissociated" experiences - in this instance target memories and, it might be added, the very quality of intentionality - are descriptively "preconscious" in the Freudian sense (E. Hilgard, 1979), which is simply another way of stating that they are circumvented by a process of selective attention deployment (Freud, 1900/1953; 1915/1957). However, temporary recall inhibition via dissociation is viewed as an automatic rather than strategic process which is somehow engendered and terminated by verbal cues.

The present formulation is also consistent with the "disrupted retrieval" or "disorganized search" hypothesis (Evans & Kihlstrom, 1973; Kihlstrom & Evans, 1979; Kihlstrom & Wilson, 1984) in that the search component of the retrieval process is disrupted, though not automatically, but tendentiously by strategically disattending cues which ordinarily facilitate a productive and organized memory search.

Analgesia

A series of studies conducted by E. Hilgard and associates (Hilgard, 1977b; Hilgard & Hilgard, 1975; Hilgard, Morgan & Donald, 1975) consistently revealed bimodal distributions with relation to pain reports following hypnotic analgesia suggestions (consisting of instructions to vividly imagine a designated limb as numb and insensitive "like a piece of rubber"). High susceptible subjects, in other words, while able to effect a degree of pain reduction (approximately 80% of baseline pain) accomplishable by any cooperative person, deviated markedly from this minimal reduction (to approximately 20% of baseline pain) in a manner unparalleled by the remainder of the sample population. Consistent with current models of pain processing which reject the traditionally conceived isomorphism between sensory stimulation and pain representations by positing a distinction between sensory

and affective components of pain (Clark & Mehl, 1973; McCaul & Malott, 1984; Melzack & Torejerson, 1971), Hilgard (1977a, 1977b, 1979) attempted to account for these bimodal distributions with a two-component theory of pain reduction.

The first component of pain reduction, according to Hilgard's (1977a, 1977b, 1979) schema, involves the presumably ubiquitous capacity to relax. This is facilitated by the instructions comprising the hypnotic induction procedure. Such relaxation attenuates pain-related emotions (e.g., anxiety, fear, worry, anger) which ordinarily accompany and exacerbate pain-as-a-sensation. The second component, however, involves a special "dissociative" or "amnesic-like" process which operates on pain-as-a-sensation and is available only to high susceptible hypnotic subjects.

A number of social-cognitive theorists propose an attention diversion hypothesis concerning hypnotic analgesia. According to this hypothesis, the efficacy of analgesia suggestions derives from the consumption by distracting stimuli of a general-purpose information-processing system of limited capacity (i.e., conscious attention, short-term memory) such that less than optimum capacity is available for processing pain sensations (Barber, 1969; Coe & Sarbin, 1977; Farthing, Venturino & Brown, 1982, 1984; McCaul & Haugtvedt, 1982; McCaul &

Malott, 1984; Spanos, 1982; Spanos & Hewitt, 1980; Turk, 1978). Data show that high or low susceptibles who are instructed to engage in a difficult nonhypnotic distraction task (e.g., shadowing verbally presented words) during analgesia testing report pain reductions significantly greater than those reported by high or low susceptibles who are instructed to attend to pain sensations (McCaul & Haugtvedt, 1982; McCaul & Malott, 1984). Moreover, the reported pain reductions involved in the distraction task are equivalent to those of high susceptibles administered hypnotic analgesia suggestions (Farthing, Venturino & Brown, 1982, 1984; Spanos, McNeil, Gwynn & Stam, 1984). In addition, relatively low pain reports during baseline noxious stimulation and greater pain reductions following hypnotic analgesia suggestions are more likely to be accompanied by cognitive coping strategies (e.g., self-distraction, imagining events inconsistent with pain) and less likely to be accompanied by catastrophizing strategies (e.g., attending to and exaggerating the noxious aspects of the situation) than relatively high baseline reports and smaller post-suggestion reductions (Chaves & Barber, 1974; Farthing, Venturino & Brown, 1982, 1984; Spanos, Brown, Jones & Horner, 1981; Spanos, Radtke-Bodorik, Ferguson & Jones, 1979; Spanos, Stam & Brazil, 1981). Pain reduction following analgesia suggestions, in other words, apparently involves a strategic diversion of attention from

pain sensations to distracting stimuli, in particular the thoughts and images stipulated by these suggestions.

In contrast to the social-cognitive perspective, E. Hilgard's (1977a,1979) neodissociation theory of hypnotic analgesia posits a dissociative or amnesic-like process that is fundamentally different from a mechanism of attention diversion and serves to render pain sensations "preconscious" in Freudian terms. A careful inspection of Freudian theory, however, reveals that the "amnesic barrier" or "censor" between preconsciousness and consciousness operates precisely by a principle of selective attention deployment (Freud, 1900/1953, 1915/1957). Without addressing this paradox, the neodissociation theory proceeds to assert its status as an independent framework by suggesting that pain reduction via dissociation is an automatic process that does not require the strategic or controlled direction of attention away from pain sensations. However, the very same literature (Hilgard, 1977a, 1979) indicates that high susceptible hypnotic subjects who effect maximal pain reductions invariably report having employed suggested and/or nonsuggested imagery typically incompatible with the experience of pain in order to produce analgesic responses. Suggested analgesia, in other words, can be explained within a social-cognitive framework and without recourse to special processes. It can be described in terms

of relative degrees of inattentiveness to pain sensations as data capable of undermining the subjective reality of pain-dissonant imagery.

An important finding is that the capacity to strategically divert attention from pain sensations is not limited to high hypnotizable individuals. Rather, differential pain reduction between high and low susceptibles is a function of the nature of the distracting stimulus. Data show that compared to the pain reductions reported by high susceptible hypnotics who are administered analgesia suggestions (consisting of instructions to imagine a designated limb as numb and insensitive "like a piece of rubber") the reductions reported by low susceptible hypnotics are significantly smaller given the same analgesia suggestions, but equivalent given instructions to either shadow verbally presented words or "do whatever you can to reduce pain" during analgesia testing (Farthing, Venturino & Brown, 1982, 1984; Spanos, Kennedy & Gwynn, 1984; Spanos, McNeil, Gwynn & Stam, 1984). In other words, when available coping strategies are not restricted to the use of imagery as a potential distracter, high and low susceptibles are equally capable of diverting attention from noxious pain sensations. However, consistent with the fact that high susceptibles are superior on measures of imagery vividness (Sheehan, 1979, 1982) and absorption in imaginary activities

(As, 1963; As, O'Hara & Munger, 1962; Baum & Lynn, 1981; J. Hilgard, 1979; Hilgard, Sheehan, Monteiro & McDonald, 1981; Shor, 1960; Shor, Orne & O'Connell, 1962; Spanos & McPeake, 1975; Tellegen & Atkinson, 1974; Yanchar & Johnson, 1981), it seems that these individuals are considerably more proficient specifically in the use of imagery for the purpose of distraction.

Hypnosis and the Mechanism of Selective Attention

It was noted that paradigmatic investigations of hypnosis have traditionally proceeded from three fundamental assumptions: a) A variety of verbal concoctions known as "induction procedures" may facilitate the institution of a special "hypnotic trance state," or help to render an individual "hypnotized," b) this state is a qualitative constant which endures throughout the administration and implementation of subsequent suggestions, as well as the temporal intervals between suggestions, and c) this state is the requisite to an overt and subjective responsiveness to the suggestions of the hypnotist. It was further noted that if the hypnotic induction facilitates the institution of an enduring trance state which is a valid medium for hypnotic suggestion, this state should be identifiable within the hypnotic context by relatively invariant differences between high and low susceptibles <u>in terms other than level of responsiveness</u>.

A wealth of studies have consistently found that the inferred institution of a hypnotic trance does not reliably coincide with special physiological patterns, a loss of volition, subsequent memory deficits, a regression to primary process mentation, a tolerance for logical inconsistencies, or the subjective conviction that one is hypnotized. A substantial body of theory and data, however, strongly suggests that hypnosis as an experiential alteration may be understood as an as-if situation which the subject, from a phenomenological standpoint, does not know is only as-if. This "as-if without knowing" formulation has been applied to such phenomena as motoric effects, hallucinations, amnesia and analgesia. It holds that the subjective responsiveness to the counterfactual specifications of the hypnotist necessarily involves the strategic enactment of these specifications and a concomitant incognizance of disillusive (i.e., negating or contradictory) reality considerations. The inferred institution of a hypnotic trance, in other words, is presumed to reliably coincide with a constriction of the subject's attentional field.

The hypothesis derived from the preceding formulation is that high and low susceptibles within the hypnotic context differ in terms of range of attention deployment. More specifically, it is proposed that following a standard

hypnotic induction consisting of instructions to focus on an object or body part, the hypnotist's voice and ideas thus conveyed, high as opposed to low susceptibles effect a more pronounced constriction of the attentional field and are consequently less aware phenomenally of disillusive contextual data during the implementation of suggestions. An important question that arises is whether this mechanism of purposeful attention deployment is indiscriminate or biased with relation to contextual data. It is obvious that all such data do not negate the content of suggested situations, but that some bear a relationship of consonance or neutrality with this content. For example, given suggestions for arm catalepsy a subject might think "Of course my arm is not rigid" (disillusive datum), evoke an image of the arm in a plaster cast (consonant datum), or spontaneously recall the features of grandmother's face (neutral datum). If the ruling motivation is simply to be a good hypnotic subject by following instructions and attending exclusively to the hypnotist's specifications, it is likely that high susceptibles indiscriminately disattend all (including disillusive) contextual data merely by default. However, if the ruling motivation is to be a good hypnotic subject specifically by believing counterfactual propositions and creating situations of subjective realism, it is likely that high susceptibles disattend disillusive contextual data in particular. Given the popular

conceptions of hypnosis as conveyed by stage and cinema ("Your eyes are heavy," "You are now a rooster"), individuals entering the specially defined hypnotic context probably expect to receive counterfactual communications. Many of these individuals experience absorption in self-initiated imagery that is consonant with hypnotic suggestions (Hilgard, 1977a, 1977b; Spanos, Rivers & Ross, 1977). This indicates that attention is not mechanically fixed on the hypnotist's specifications, but operates discriminately toward contextual data depending upon the content of these suggestions.

If within the hypnotic context high susceptibles are distinguishable from lows by a more pronounced restriction of the attentional field to the specifications of the hypnotist, an important question is whether this state of focused attention is a constant that endures throughout the temporal intervals between suggestions, i.e., the periods during which no explicit and immediate suggestion is in effect. Since the hypnotic induction procedure, in addition to explicitly and repeatedly requesting a limited deployment of attention, contains instructions for relaxed breathing and relaxed musculature, it is likely that when left to their own devices in a context that is still defined as hypnosis, high susceptibles maintain the role of the good hypnotic subject by finding an alternate focus for their

constricted attentional field.

A substantial body of research involving questionnaires (As, 1963; As, O'Hara & Munger, 1962; Crawford, 1982; Farthing, Venturino & Brown, 1983; Fink & McDonald, 1978; Shor, 1960; Shor, Orne & O'Connell, 1962; Spanos & McPeake, 1975; Tellegen & Atkinson, 1974; Yanchar & Johnson, 1981), clinical interviews (J. Hilgard, 1970, 1979), and objective performance tasks (Graham & Evans, 1979; Karlin, 1979; Van Nuys, 1973; Wallace, Knight & Garrett, 1976) demonstrates that within nonhypnotic contexts, high as compared to low hypnotizables evidence more frequent and extensive restrictions of the attentional field. However, the critical factors under consideration are the role of purposeful attention deployment within the hypnotic context, and the question of whether this mechanism operates indiscriminately or with bias toward contextual data.

The vast literature involving cognitive theory and research converges upon a microgenetic model of visual and auditory information processing. A given input, according to this model, is subjected to a sequence of processing stages representing increasing cognitive involvement. The sequence begins with a crude physical analysis of the input (e.g., pitch, loudness, shape, brightness), proceeds with the implementation of more elaborate rules of feature detection and pattern recognition, and ends with a highly

complex analysis of its semantic attributes (Atkinson & Shiffrin, 1968; Broadbent, 1958; Cherry, 1953; Cherry & Taylor, 1954; Craik & Lockhart, 1972; Deutsch & Deutsch, 1963; Lawson, 1966; Mandler, 1975; Neisser, 1967; Sperling, 1963, 1967; Treisman & Riley, 1969; Waugh & Norman, 1965).

Most important to the present context is the notation that a limited capacity attentional system is not required for these analyses, though such a system is required for the conscious processing of the results of these analyses (Bowers, 1984; Corteen & Wood, 1972; Deutsch & Deutsch, 1963; Dixon, 1958, 1971, 1981; Erdelyi, 1974; Fisher, 1957; Keele, 1973; Kihlstrom, 1984; Lazarus & McCleary, 1951; Litwack, 1979; Lundh, 1979; Mackay, 1973; Marcel, 1983; McGinnies, 1949; Miller, 1973; Moray, 1959; Norman, 1968, 1976; Posner & Snyder, 1975; Potzl, 1919/1960; Shevrin, 1958; Silverman, 1966; Silverman, Bronstein & Mendelson, 1976; Silverman, Ross, Adler & Lustig, 1978; Spiro, 1975; Waugh & Norman, 1965; Zajonc, 1980). As each stage of analysis represents increasing cognitive involvement, the conscious processing of the results of each stage requires increasing attentional capacity. Consequently, at any stage of analysis sufficient or insufficient attentional capacity will be available for the conscious processing of the results of the analysis (Cherry, 1953, 1957; Colavita, 1971; Deutsch & Deutsch, 1963; Dixon, 1981; Erdelyi, 1974;

Kahneman, 1973; Lawson, 1966; Lundh, 1979; Moray, 1959; Norman, 1969, 1976; Simonton, 1980; Treisman, 1960, 1969; Treisman & Geffen, 1967; Treisman & Riley, 1969; Underwood & Moray, 1972, Weg, 1971). Moreover, if insufficient attentional capacity is available for the conscious processing of the results of a given analysis, there will or will not be a change in the deployment of attention, and this change or lack of change may represent active processes that are in the service of motivational factors (Deutsch & Deutsch, 1963; Erdelyi, 1974; Kihlstrom, 1984; Moray, 1959; Norman, 1968, 1976; Sackeim, Nordlie & Gur, 1979; Treisman, 1960, 1969).

If high as compared to low susceptibles, following a standard hypnotic induction, effect a more pronounced constriction of the attentional field that endures throughout the implementation of subsequent suggestions and the temporal intervals between suggestions, it follows that less attentional capacity will be available throughout each stage of the hypnotic procedure for the conscious processing of the results of the analyses of simultaneous auditory inputs. Since greater attentional capacity is required for the conscious processing of the results of analyses representing increasing cognitive involvement, the lesser availability of such capacity amongst high as compared to low susceptibles throughout the implementation of

suggestions and the intervals between suggestions should reflect in a lower probability of consciously processing the results of the higher-order semantic analyses of meaningful auditory data presented during these procedural stages. This relative improbability of semantically analyzed data receiving additional processing by a limited capacity attentional system would be expected to result in weaker memory traces and consequently render high susceptibles less accurate in their detection of such data on a subsequent recognition task. It is therefore predicted that high as compared to low susceptibles will evidence inferior posthypnotic recognition of meaningful auditory information presented during the implementation of suggestions and the intervals between suggestions.

If the mechanism of purposeful attention deployment operates discriminately toward contextual data as a function of the relationship between these data and the object of attention, and if the ruling motivation amongst high susceptibles is to be a good hypnotic subject by believing counterfactual propositions and creating situations of subjective realism, it follows that against the background of a constricted attentional field high susceptibles will actively deploy attention for the conscious processing of the results of the semantic analyses of auditory data that are consonant with the theme of a current suggestion, and

actively not deploy attention for such processing when the data are dissonant with the theme of a current suggestion. Given the hypothesis that greater attentional capacity will be available amongst low as compared to high susceptibles throughout each stage of the hypnotic procedure for the conscious processing of the results of the analyses of simultaneous auditory inputs, it follows that low susceptibles are more likely to consciously process the results of the semantic analyses of these inputs prior to the subordination of such processing to any kind of bias. It is therefore predicted that a) in comparison to the posthypnotic recognition of theme-neutral auditory data, high susceptibles will evidence superior recognition of theme-consonant data and inferior recognition of theme-dissonant data, b) low as compared to high susceptibles will be less likely to evidence differential posthypnotic recognition of theme-consonant, theme-dissonant, and theme-neutral auditory data, and c) the inferior posthypnotic recognition by high as compared to low susceptibles of auditory data presented throughout the hypnotic procedure will be at least with relation to theme-neutral and theme-dissonant data.

Chapter Two

Method

Overview

High and low susceptible experimental subjects in the present study were exposed to a standard hypnotic induction procedure consisting of explicit requests to limit attention to a target object, the hypnotist's voice and ideas thus conveyed, instructions for relaxed breathing and relaxed musculature, and a suggestion for a motoric response which will lead to a special hypnotic state. Following the hypnotic induction were additional suggestions, each followed by an interval during which no explicit and immediate suggestion was in effect. Finally, the induction procedure was reversed by instructing subjects to return to their normal state of wakefulness.

During the implementation of suggestions and the intervals between suggestions was the auditory presentation of meaningful phrases in an adjacent experimental cubicle. Both this information and the hypnotic procedure were stereophonically prerecorded. Subjects were told beforehand that another experiment was taking place in the adjacent cubicle, and offered apologies for any noises that might occur.

The auditory information presented during the implementation of each suggestion was tripartite, consisting of phrases that were consonant, dissonant and neutral with relation to the theme of that suggestion. This allowed for the assessment not only of degree of restriction of the attentional field to the specifications of the hypnotist, but of whether this mechanism of purposeful attention deployment operates discriminately toward contextual data as a function of the relationship between these data and the object of attention. The auditory information presented during the intervals between suggestions consisted of randomly selected phrases that were neutral with relation to any of the themes stipulated in the hypnotic context (i.e., relaxed breathing and musculature or derivatives of previous suggestions) and consequently neutral with relation to the theme of any self-selected attentional focus. Following the hypnotic procedure was a test of recognition of the auditory information presented during the implementation of suggestions and the intervals between suggestions.

To insure that differential attention deployment between high and low susceptibles within the hypnotic context is a function of the hypnotic induction, high and low susceptible control subjects were asked to perform nonhypnotic tasks during the presentation of the same auditory information in the adjacent cubicle.

To summarize, the position taken in the present research leads to the predictions that a) high as compared to low susceptibles will evidence inferior posthypnotic recognition of meaningful auditory information presented during the implementation of suggestions and the intervals between suggestions, b) in comparison to the posthypnotic recognition of theme-neutral auditory data, high susceptibles will evidence superior recognition of theme-consonant data and inferior recognition of theme-dissonant data, c) low as compared to high susceptibles will be less likely to evidence differential posthypnotic recognition of theme-consonant, theme-dissonant, and theme-neutral auditory data, and d) the inferior posthypnotic recognition by high as compared to low susceptibles of auditory data presented throughout the hypnotic procedure will be at least with relation to theme-neutral and theme-dissonant data.

Subjects

A total of 40 female and 20 male undergraduates (ages 17-25) at the State University of New York at Purchase were selected from a larger group of 260 students for participation in "a study involving hypnosis" after pretesting on a modified version of the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor & Orne, 1962) in which the hand-lowering suggestion was substituted

by a variant of the hand-levitation suggestion contained in the Revised Stanford Profile Scale of Hypnotic Susceptibility, Form I (RSPSHS:I; Weitzenhoffer & Hilgard, 1967) (see Appendix A for verbatim account). This latter suggestion, along with that for arm rigidity and a variant of the fly-hallucination item, was included in the experimental phase of the study. The scoring criterion for hand levitation was simply the opposite of that for hand lowering. All subjects were volunteers receiving course credit for their participation. Thirty subjects were classified as high susceptible (8-12 on the HGSHS:A with the condition that the hand-levitation, arm-rigidity and fly-hallucination items were among those passed) and 30 as low susceptible (0-4 on the HGSHS:A with the condition that the hand-levitation, arm-rigidity and fly-hallucination items were among those failed).

Materials

An abbreviated hypnotic procedure and a series of intermittent phrase clusters were stereophonically prerecorded. Channel A, the hypnotic procedure, consisted of a standard hypnotic induction, two subsequent suggestions, and finally a reversal of the induction. The induction phase of the procedure was a variant of portions of the hypnotic inductions comprising the HGSHS:A (Shor & Orne, 1962) and the RSPSHS:I (Weitzenhoffer & Hilgard,

1967), and consisted of requests to limit attention to a target object, the hypnotist's voice and ideas thus conveyed, instructions for relaxed breathing and relaxed musculature, and lastly a suggestion for hand levitation which was to lead to a special hypnotic state. The two suggestions following the hypnotic induction were for arm rigidity (adopted from the HGSHS:A) and a mosquito hallucination (a variant of the fly-hallucination item also adopted from the HGSHS:A). Every suggestion included a 15-sec trial period during which the hypnotist was silent. Following the termination of every suggestion was a 15-sec interval during which the hypnotist was silent but no explicit and immediate suggestion was in effect. The reversal of the induction followed the last interval, and consisted of instructions for subjects to return to their normal state of wakefulness (see Appendix B for verbatim accounts of each phase of the hypnotic procedure). Channel B consisted of six intermittent 15-sec phrase clusters, each synchronous with one of six specific stages of the hypnotic procedure. Each cluster consisted of three phrases (three to four words per phrase) presented three times each for a total of nine presentations. The order of presentation for each cluster was randomized. Three of the 15-sec clusters were synchronous with the three 15-sec trial periods occurring during the implementation of suggestions. Each of these clusters was tripartite, consisting of a phrase that

was semantically consonant, a phrase that was semantically dissonant, and a phrase that was semantically neutral with relation to the theme of the corresponding suggestion. Three of the 15-sec clusters were synchronous with the three 15-sec intervals following the termination of suggestions. Each of these clusters consisted of three phrases randomly selected from a larger pool of items that were semantically neutral with relation to any of the themes stipulated in the hypnotic context (i.e., relaxed breathing and musculature or derivatives of previous suggestions). All semantic relations were determined by a group of independent judges (n=125). To prevent any suspicion of contrivance, the six 15-sec phrase clusters were embedded in a context of 115 randomly selected phrases. The contextual phrases (three to four words per phrase) were presented one time each, and the pacing of these phrases was equivalent to that of the phrases constituting the respective clusters (critical phrases) in order to create an appearance of continuity (see Appendix C for listing of critical and contextual phrases). The introduction of Channel B coincided with the initiation of the hand-levitation suggestion, and its termination coincided with the reversal of the hypnotic induction (see Appendix B). Since Channel A was to be presented in the experimental cubicle and Channel B in an adjacent cubicle, pretesting was necessary to insure the audibility of the latter. Each of a group of independent subjects (n=15) was

asked to listen to Channel B and adjust the volume to one that was "soft but easily audible". The variability among these adjustments was minimal, and Channel B was fixed at its mean volume rating. Since critical phrases alone were to be tested for subsequent recognition, pretesting was also necessary to prevent interference with the memory consolidation of these phrases by insuring that contextual phrases were semantically muted. Following the adjustment of Channel B, each of the same group of independent subjects was asked to listen to Channels A and B simultaneously and to adjust the volume on Channel A so that contextual phrases could be "heard but not understood" (critical phrases only coincided with intervals of silence on Channel A). The variability among these adjustments was also minimal, and Channel A was fixed at its mean volume rating.

In addition to the aforementioned materials was a test booklet and another stereophonic prerecording. The test booklet contained three simple paper-and-pencil tasks. The stereophonic prerecording was of Channel B and a nonhypnotic procedure. Channel A', the nonhypnotic procedure, consisted of three sets of task instructions and a brief discourse on the history of hypnosis. Each set of instructions corresponded to a different task in the accompanying booklet, and involved a 15-sec test period during which the instructor was silent and the subject executed the

respective task. Following the termination of each set of instructions was a 15-sec interval during which the instructor was silent but no task was executed. The brief discourse followed the last interval (see Appendix D for verbatim accounts of each phase of the nonhypnotic procedure). Channel A' was temporally structured so that the six 15-sec periods of silence were synchronous with the six 15-sec critical phrase clusters on Channel B. This equated Channels A' and A (the hypnotic procedure) in terms of their structural relations to Channel B. Channels A and A' were recorded in the voice of the experimenter, and Channel B in a dissimilar (female) voice.

Procedure

An equal number of subjects (n=15) at each susceptibility level were randomly assigned to the hypnotic and nonhypnotic conditions. All subjects were received individually by a male experimenter (the same experimenter who administered the modified HGSHS:A during subject selection) and then seated in a comfortable chair behind which was a table and two-channel tape recorder. The experimenter operated the tape recorder from a seat at the table. Depending upon the treatment condition, one of the two stereophonic prerecordings was presented. Channels A (the hypnotic procedure) and A' (the nonhypnotic procedure) emanated from a speaker in the experimental cubicle, and

Channel B (the series of critical and contextual phrases) from a seemingly independent source (speaker) in an adjacent cubicle.

Hypnotic condition. Subjects in this condition were presented with the stereophonic prerecording of Channels A and B. Responsiveness to hypnotic suggestions was scored objectively according to the criteria stipulated in the modified HGSHS:A. This provided a measure of response constancy from subject selection to experiment proper. Prior to the experimenter starting the tape recorder, subjects were told the following:

> I just want to start out by thanking you for showing up and participating in this research. What we're going to be doing today is a hypnosis procedure very similar to the group hypnosis conducted earlier in the semester. Different people responded differently to the group hypnosis session, and we asked some of you to come for individual sessions so that we could learn more about the processes involved in hypnosis.
>
> The hypnotic procedure will be played from this tape recorder over here. This is very important, since it insures that each participant will be exposed to identical conditions and therefore treated in exactly the same way. During the procedure, I'll be sitting

here behind you, operating the tape recorder and making sure everything runs smoothly. Before starting, however, I just want to make a couple of points. First of all, you won't be asked to do anything that will make you look silly or stupid, or that will prove embarrassing to you. We are here for serious scientific purposes. One of the myths about hypnosis that's conveyed in the movies and on stage is that it can be used to make people do things like take off their clothes and cackle like chickens. But anybody with any real knowledge of hypnosis knows that it cannot, and never could be, used to make anybody do anything that they don't really want to do. Second, there will be no probing into your private affairs, so that there will be nothing personal about what you are to do or say during the hypnotic state. As I said, this procedure will be similar to the group hypnosis conducted earlier in the semester, and if you recall, there was nothing embarrassing or personal about it. Do you have any questions or comments before we start? (Questions were answered by paraphrasing the above points.) Oh, one other thing. From what I understand, another experiment is being conducted in the cubicle next door. I want to apologize for any noises and these substandard conditions that we're forced to work under.

Nonhypnotic condition. Subjects in this condition were presented with the test booklet, a pencil, and the stereophonic prerecording of Channels A' and B. Prior to the experimenter starting the tape recorder, subjects were told the following:

> I just want to start out by thanking you for showing up and participating in this research. What I'm going to ask you to do today is to work on a number of simple paper-and-pencil tasks that you'll find in this booklet over here. Different people responded differently to the group hypnosis session conducted earlier in the semester, and we asked some of you to come back for further study. What we're interested in seeing is whether or not people who differ in hypnotizability also differ in their performance on certain tasks when they are not hypnotized. Even though hypnotizability is in no way related to intelligence, we suspect that it may be related to the manner in which people approach tasks. In the same way that athletes and musicians have their own individual styles, we want to see if people who differ in hypnotizability have different styles of working on certain tasks when they are not in the hypnotic state.
>
> The instructions for the tasks in this booklet will be played from this tape recorder over here. This

is very important, since it insures that each participant will be exposed to identical conditions and therefore treated in exactly the same way. During the procedure, I'll be sitting here behind you, operating the tape recorder and making sure everything runs smoothly. Please keep in mind that this is not a test of intelligence. All the tasks that you'll be working on are very simple and can be performed by anybody. Our interest is not in abilities, but in styles. Do you have any questions or comments before we start? (Questions were answered by paraphrasing the above points.) Oh, one other thing. From what I understand, another experiment is being conducted in the cubicle next door. I want to apologize for any noises and these substandard conditions that we're forced to work under.

Recognition task. Following the presentation of the stereophonic prerecording was a test of recognition of the critical phrases on Channel B. Subjects were shown a randomly ordered list of these phrases and an equal number of filler items (as an index of chance responding) in which each phrase was followed by three spaces respectively marked yes, no, and confidence rating. At the top of the list was a 4-point scale consisting of not too confident(1), fairly confident(2), very confident(3), and extremely confident(4)

(see Appendix E for a randomly ordered listing of critical phrases and filler items). Subjects were played the following tape-recorded instructions:

> During the experiment a number of spoken phrases were repeatedly presented in the cubicle next door. These phrases were actually a part of this, and not another, experiment. I'm sorry that it was necessary to pretend that the sounds in the other room were part of another study, and we'll talk about the reasons for this afterwards. You'll also have an opportunity to express any thoughts or feelings you might have on this matter once the experiment is completed. Before you right now is a list of phrases. It's possible that all of the phrases on this list were among those presented in the other room. However, it's also possible that only some or even none of these phrases were among those presented. What I'd like you to do is to look at each phrase, and then by placing a check in the space marked yes, or the space marked no, indicate whether or not you recognize that phrase as one that was presented in the other room. After indicating yes, that you recognize the phrase, or no, that you don't recognize the phrase, use the scale at the top of the list to indicate how confident you are in your judgement by placing the appropriate number in the space marked

confidence rating. In other words, if you're not too confident in your judgement, indicate as such with a 1; if you're fairly confident in your judgement, indicate as such with a 2, and so on. Please be sure to respond honestly and not give the responses that you think might be correct. The reason I emphasize this is because you may think that there's a certain way you're supposed to respond to these phrases. But this is not so. If you really do, or do not, recognize any given phrase, indicate as such. But don't give these responses simply because you think it's what I want to see. The only way that your contribution to this research will be significant is if I'm sure that your responses are totally honest. Therefore, the only way you're supposed to respond is honestly. Once again, for each phrase, indicate whether or not you recognize it as having come from the cubicle next door, and also indicate how confident you are in your judgement.

Pretesting was necessary to insure that significantly imperfect recognition is a function of attentional factors. Each of a group of independent subjects (n=10) was instructed to listen to Channels A and B simultaneously and to attend specifically to the critical phrases on Channel B. These subjects were then tested for recognition of critical phrases and filler items in the manner described above (with

the exception, of course, of the disclosure of the pretense).

Following the recognition test proper was a debriefing session which included an informal inquiry concerning suspicions of contrivance that might have arisen during the course of the experiment. Subjects were thanked for their participation, and then dismissed.

Chapter Three

Results

The fact that the suggestions constituting the hypnotic procedure were for hand levitation, arm rigidity, and a mosquito hallucination necessitated that the criteria for the classification of high and low susceptibles include, respectively, the passing and failing of these items during pretesting. Responsiveness to suggestions was again assessed during the hypnotic procedure to avoid undetected fluctuations which might result from the change of setting. All participants evidenced perfect response constancy from subject selection to experiment proper.

Responses to phrases on the recognition test were scored positive (+) for yes and negative (-) for no, and then assigned numerical values corresponding to the respective confidence ratings. The resulting recognition indices ranged from +4 (yes/extremely confident) to -4 (no/extremely confident).

Pilot subjects who were instructed to listen to Channels A and B simultaneously and to attend specifically to the critical phrases on Channel B showed mean recognition indices of +3.89 for the critical phrases and -3.91 for the filler items. The fact that recognition accuracy under these conditions was nearly perfect insures that

significantly imperfect recognition is a function of attentional factors.

The fundamental prediction in the present study was that high as compared to low susceptibles would evidence inferior posthypnotic recognition of meaningful auditory information which had been presented during the implementation of suggestions and the intervals between suggestions. High and low susceptible control subjects were asked to perform nonhypnotic tasks during the presentation of the same auditory information to assess whether any observed differences in attention deployment are specific to the hypnotic situation.

Recognition indices for critical phrases were analyzed initially with a 2 Conditions (hypnotic/nonhypnotic) X 2 Susceptibility Levels (high/low) X 2 Stages (suggestion or task period/interval) repeated-measures analysis of variance (ANOVA). Condition and susceptibility were the between-subject factors and stage the within-subject factor. The means and standard deviations are presented in Table 1.

Neither the main effect for condition, $F(1,56)=1.80, p > .10$, nor the main effect for susceptibility, $F(1,56)<1$, approached significance. The interactions between condition and susceptibility, $F(1,56)=1.90, p>.10$; condition and stage, $F(1,56)<1$; susceptibility and stage, $F(1,56)=2.40, p>.10$; and

the three-way interaction, $F(1,56)<1$, also failed to approach significance. However, a significant main effect was found for stage, $F(1,56)=4.70$, $p<.05$. Thus, as Table 1 indicates, high and low susceptibles do not differ in terms of posthypnotic recognition of critical phrases in either condition or during any procedural stage, although there is a general increase in recognition accuracy when shifting from suggestion/task period to interval. Moreover, the fact that the indices are negative indicates that subjects generally reported not having recognized the phrases. In short, the fundamental prediction in the present study failed to receive support.

It was further predicted that in comparison to the posthypnotic recognition of theme-neutral phrases, high susceptibles would evidence superior recognition of theme-consonant phrases and inferior recognition of theme-dissonant phrases, whereas low susceptibles would be less likely to evidence differential posthypnotic recognition.

Recognition indices for critical phrases were reanalyzed with a 2 Conditions (hypnotic/nonhypnotic) X 2 Susceptibility Levels (high/low) X 3 Phrase Types (consonant/neutral/dissonant) repeated-measures ANOVA. Condition and susceptibility were the between-subject factors and phrase-type the within-subject factor.

Recognition indices pertaining to intervals were omitted from this analysis, while those pertaining to suggestion periods (hypnotic condition) and task periods (nonhypnotic condition) were coded according to thematic relationship with hypnotic suggestions. The means and standard deviations are presented in Table 2.

Neither the main effect for condition, $F(1,56)=92.70, p > .10$, nor the main effect for susceptibility, $F(1,56)<1$, approached significance. The interactions between condition and susceptibility, $F(1,56)<1$; condition and phrase type, $F(2,112)=1.30, p>.10$; susceptibility and phrase type, $F(2,112)=1.00, p>.10$; and the three-way interaction, $F(2,112)=1.50, p>.10$, also failed to approach significance. However, a significant main effect was found for phrase type, $F(2,112)=10.20, p<.001$. Despite this main effect, the lack of a significant interaction between phrase type and condition clearly indicates that differential recognition is not a function of thematic relationship between phrase and suggestion, and therefore obviates the necessity for any post hoc analyses. Thus, the second prediction in the present study also failed to receive support.

To insure that overall "recognition" of critical phrases was not a function of chance responding during testing but of actual processing during stimulus exposure, the mean recognition index for critical phrases was compared

with that for filler items. A t-test revealed a significant difference between the means, $t(59)=5.77, p<.001$, with critical phrases and filler items showing respective values of -1.74 and -2.39. A parallel analysis involved a signal detection approach (Swets, Tanner & Birdsall, 1961) to the data via the computation of "hits" and "false alarms" for each subject. Given the paucity of "yes" responses on the recognition test, a hit was designated as any score ranging from -1 (no/not too confident) to +4 (yes/extremely confident) for the critical phrases, and a false alarm as any score ranging from -1 to +4 for the filler items. The data fell into a bimodal distribution, with half of the subjects showing a hits/false alarms ratio approximating a value of 1, and half of the subjects showing a hits/false alarms ratio substantially greater than a value of 1. A comparison of the total number of hits and false alarms revealed a significant difference between the means, $t(59)=5.20, p<.001$, with values of 7.27 and 5.43, respectively. Thus, subjects were more likely to deny recognition of phrases that were not presented during stimulus exposure than phrases that were presented, indicating that recognition indices for critical phrases were not simply a function of chance responding.

Given the bimodal distribution of the hits/false alarms ratios, the uniformity of recognition indices for critical

phrases across conditions and susceptibility levels might have obscured factorial differences in processing during stimulus exposure, or sensitivity (d'). According to the specifications of signal detection theory (Swets, Tanner & Birdsall, 1961), a d' value was computed for each subject, and these values were then analyzed with a 2 Conditions (hypnotic/nonhypnotic) X 2 Susceptibility Levels (high/low) ANOVA. The means and standard deviations are presented in Table 3.

Neither the main effect for condition, $F(1,56)=1.01, p>.10$, nor the main effect for susceptibility, $F(1,56)<1$, approached significance. The interaction between condition and susceptibility, $F(1,56)<1$, also failed to approach significance. Thus, as Table 3 indicates, the degree to which recognition indices for critical phrases reflect actual processing during stimulus exposure is constant across conditions and susceptibility levels.

Chapter Four

Discussion

This study failed to provide support for the hypothesis that following a standard hypnotic induction high as opposed to low susceptibles effect a more pronounced constriction of the attentional field that endures throughout the implementation of suggestions and the intervals between suggestions. More specifically, the two groups showed equal posthypnotic recognition of ostensibly extraneous auditory information presented during these procedural stages. Also failing to receive support was the hypothesis that among high susceptibles in the hypnotic condition the mechanism of purposeful attention deployment operates discriminately toward contextual data as a function of the thematic relationship between these data and the object of attention. Although a pattern of differential phrase recognition emerged, the fact that this pattern was uniform across conditions and susceptibility levels precludes biased processing and thematic value as its organizing factors.

As noted, the axiomatic underpinning to the traditional hypnosis paradigm is that the hypnotic induction facilitates the institution of an enduring trance state which constitutes a valid medium for hypnotic suggestion. Consonant with the traditional paradigm is the as-if without

knowing formulation, which holds that this trance state is identifiable by a pronounced restriction of the attentional field to the counterfactual specifications of the hypnotist, and simultaneous cognitive activity aimed at enhancing the subjective reality of these specifications. Subjects in the hypnotic condition evidenced such a pronounced attentional constriction, as reflected by recognition indices for critical phrases that were substantially inferior to those of pilot subjects who were instructed to attend to these phrases. However, this constriction fails to conform to the conjoint notion of the trance state outlined above for a number of reasons.

First, the attentional constriction shown by subjects in the hypnotic condition appears not to have been facilitated by the hypnotic induction, but rather by experimental instructions and the provision of attentional foci. On purely logical grounds, apologetically informing subjects prior to stimulus exposure that another study was being conducted in an adjacent cubicle should have constituted an implicit cue to ignore extraneous noises. Phenomenological data substantiated this conclusion with a unanimous conviction among participants that such information was an unequivocal message to "tune everything else out". Moreover, there was a clear consumption of attentional resources by the content of hypnotic

suggestions. Recognition indices for critical phrases presented during the implementation of these suggestions were significantly less accurate than those for phrases presented during the intervals between suggestions when no attentional foci were specified. The reason for denying the hypnotic induction an agentic role with relation to attentional constriction is that it failed to augment the effects of the aforementioned factors. Subjects in the nonhypnotic condition received the same implicit cue to ignore extraneous noises, and also voiced a unanimity of conviction concerning the meaning of this cue. These subjects were also provided with attentional foci in the form of paper-and-pencil tasks, and showed significantly inferior recognition for phrases presented during the execution of these tasks than for phrases presented when no such foci were provided. Yet despite the absence of the induction, recognition indices for critical phrases were equivalent to those in the hypnotic condition. Were the induction anything more than a superfluous factor, hypnotic as opposed to nonhypnotic subjects would have shown a more pronounced constriction of the attentional field.

Second, the attentional constriction shown by subjects in the hypnotic condition was not accompanied by cognitive activity aimed at enhancing the subjective reality of the counterfactual specifications of the hypnotist. It was

thought that against a background of nonconscious information processing, high susceptibles would actively deploy attention for the conscious processing of the results of the semantic analyses of phrases that were consonant with the theme of a current suggestion, and actively not deploy attention for such processing when the phrases were dissonant with the theme of a current suggestion. Such biased processing was expected to produce memory traces of varying strength, and consequently result in a pattern of differential phrase recognition. Although such a pattern emerged amongst high and low susceptibles in the hypnotic condition, it also emerged amongst high and low susceptibles in the nonhypnotic condition where phrases were not characterized by thematic relationships with current attentional foci. This finding obviously precludes thematic value as a regnant factor, and renders highly unlikely the operation of an active (i.e., biased) processing mode.

Alternate explanations for this emergent pattern of differential phrase recognition proceed from the consideration of whether or not this pattern was actually predicated upon memory traces of varying strength. Assuming such variability, one possibility is that all critical phrases were passively processed to full semantic depth nonconsciously and/or by a limited capacity attentional system, and that known memory parameters (e.g., imagery

value, meaningfulness, concreteness, familiarity, frequency) inadvertently accounted for differential trace strength. Another possibility is that critical phrases were differentially processed nonconsciously and/or by a limited capacity attentional system according to a passive mode whereby the attributes of respective stimuli differentially monopolized either or both processors as a function of intrinsic economy in requisite processing time, "space," or other such parameters. However, it is also possible that memory traces were not of varying strength, but that attributes of critical phrases as visual stimuli were responsible for differential responding during recognition testing.

The third and most obvious reason why the attentional constriction shown by subjects in the hypnotic condition fails to conform to the conjoint notion of the trance state outlined above is that it was equally pronounced for high and low susceptibles. To avoid the tautologous snare of employing the same data as both the basis and the validation of an inference, any specification of a trance state as medium for hypnotic suggestion should be identifiable within the hypnotic context as an invariant difference between high and low susceptibles in terms other than level of responsiveness. The fact that high and low susceptibles showed an equal and pronounced attentional constriction is a

clear indication that such a constriction, while at most necessary, is not a sufficient requisite to hypnotic responsiveness. In addition, the perfect response constancy from subject selection to experiment proper precludes any possibility that undetected fluctuations in hypnotic susceptibility confounded the results.

The fact that the attentional constriction shown by subjects in the hypnotic condition was not facilitated by the hypnotic induction does not disconfirm the as-if without knowing formulation. Although this formulation holds that the hypnotic induction is responsible for changes in the deployment of attention, it does not preclude the possibility that such changes may be facilitated by other means. Studies were cited in which baseline levels of hypnotic responsiveness following simple imagination instructions were significantly and equally augmented by task-motivational instructions and a standard hypnotic induction, presumably because both procedures heighten the degree of willingness to imagine that which is suggested (Barber, 1965a, 1965b, 1969, 1979; Barber & Calverley, 1962, 1963, 1968; Salzberg & De Piano, 1980). It was argued that "heightened degree of willingness" was unnecessarily vague, and may very well be operationalized cognitively as greater attentional investment in the imagined state of affairs. What disconfirms the as-if without knowing formulation is

that among high as opposed to low susceptibles the attentional constriction was neither more pronounced nor accompanied by cognitive activity aimed at enhancing the subjective reality of the counterfactual specifications of the hypnotist.

That the hypnotic induction was inconsequential with relation to attentional processes is possibly because the implicit cue to ignore extraneous noises produced a constrictive ceiling effect in both high and low susceptibles. Although the provision of foci also contributed to the attentional constriction (as evidenced by the significant main effect for stage), changes in attention mediated as such are passive and consumptive. The proposed ceiling effect is therefore specific to the active, instructed changes in attention as mediated by cue and induction. Given the absence of the implicit cue, the hypnotic induction may have been responsible for predicted attentional patterns, i.e., a more pronounced constriction amongst high susceptibles. However, since cue and induction are both constituted by instructions to attend only to the hypnotist's voice and ideas thus conveyed, it is unlikely that subjects would respond uniformly to one and differentially to the other. Although this issue is easily resolved via a modification of experimental design (i.e., by eliminating the cue), it is no longer important since the

data show that attentional constriction is not the critical factor underlying hypnotic responsiveness.

The literature on hypnosis and attention demonstrates, via questionnaires (As, 1963; As, O'Hara & Munger, 1962; Crawford, 1982; Farthing, Venturino & Brown, 1983; Fink & MacDonald, 1978; Shor, 1960; Shor, Orne & O'Connell, 1962; Spanos & McPeake, 1974; Tellegen & Atkinson, 1974; Yanchar & Johnson, 1981), clinical interviews (J. Hilgard, 1970, 1979), and objective performance tasks (Graham & Evans, 1979; Karlin, 1979; Van Nuys, 1973; Wallace, Knight & Garrett, 1976), significant though moderate correlations between hypnotic susceptibility and the frequency or intensity of attentional constrictions within nonhypnotic contexts. The questionnaires and interviews typically assess absorption in imaginative and perceptual activities, while the objective performance tasks involve selectively disattending cognitive structures or verbal stimuli. Despite these correlations, attentional constriction in the present experiment failed to account for any of the variance involved in hypnotic responsiveness. This discrepancy may be explained by the fact that the changes in attention deployment investigated in the literature are predominantly spontaneous or self-initiated, whereas those in the experiment were instructed. High and low susceptibles may very well differ in terms of the frequency or intensity of

spontaneous or self-initiated attentional constrictions, and yet respond uniformly in the presence of an experimental demand. Given a hypnotic situation in which instructions for a change in the deployment of attention are absent, attentional constriction may indeed account for a portion of the hypnotic variance. It has been shown that a fraction of subjects evidence unusually high levels of hypnotic responsiveness when told to simply imagine specified effects (Barber, 1965a, 1965b, 1969, 1979; Barber & Calverley, 1962, 1963, 1968), and it is possible that these subjects are distinguished by spontaneous or self-initiated changes in attention. However, given the results of the present experiment, it should be noted that any such change, while at most necessary, is not a sufficient basis for successful hypnotic responding.

The fact that a constriction of the attentional field is an insufficient requisite to hypnotic responsiveness necessitates a multivariate approach to hypnosis. Hypnotic susceptibility has also been shown to correlate with imagery vividness (Farthing, Venturino & Brown, 1983; Sheehan, Monteiro & MacDonald, 1981; Sarbin, 1950; Shor, Orne & O'Connell, 1966; Singer & Pope, 1981; Sutcliffe, Perry & Sheehan, 1970) and daydreaming styles (Crawford, 1982), and it is possible that further variables await formal identification. What is incumbent upon research is to

isolate the critical factor or factors underlying hypnotic responsiveness, and to render an interactional analysis of all relevant variables as a theoretical account for such responsiveness.

Given the need for a multivariate approach to hypnosis, the question arises as to whether the hypnotic induction has any effect in addition to that of attentional constriction which distinguishes high from low susceptibles and was operative in the present experiment as an undetected supplement to the effect of the implicit cue to ignore extraneous noises. The affirmation of such an effect would, of course, provide support for the axiom that the hypnotic induction facilitates the institution of a trance state which constitutes a valid medium for hypnotic suggestion. It was noted that cue and induction are both constituted by instructions to attend only to the hypnotist's voice and ideas thus conveyed. The induction, however, also contains instructions for relaxed breathing and relaxed musculature. This immediately suggests the possibility of greater alpha production in high susceptibles as the potential hypnotic medium. It has been shown, in this regard, that comparable levels of hypnotic responsiveness may be obtained with inductions emphasizing strenuous, physical activity as with those emphasizing relaxation (Hilgard, 1977). This indicates that alpha activity is not a relevant parameter,

and thereby renders unlikely any potentially significant induction effect other than that of attentional constriction.

In contrast to the notion of relevant hypnotic variables as sequelae to an induction procedure, a viable conclusion is that whatever is responsible for hypnotic responsiveness is elicited without instruction by the nature of the ongoing task. Hypnotic subjects are typically requested to imagine a specified state of affairs. This request may either be direct ("Imagine that your arm is feeling very heavy") or indirect ("Your arm is feeling very heavy"), though the imaginational nature of the task is the same. The implementation of imaginational processes may, in and of itself, involve variables that differentiate high from low susceptibles. This has been shown to be true in nonhypnotic contexts with relation to attentional constriction and imagery vividness (see above), and it is likely that these and other variables are implicated as such in hypnotic contexts. However, there are instances in which the nature of the ongoing task is not decidedly imaginational (e.g., the processes following amnesia suggestions). What thus requires delineation is a multidimensional model of hypnosis involving a variety of tasks and uninstructed task-specific variables.

Table 1

Mean Recognition Indices by Condition, Susceptibility, and Stage

	Stage	
Condition	Suggestion/Task Periods	Intervals
Hypnotic		
High Susceptible		
M	-1.76	-1.03
SD	1.76	1.70
Low Susceptible		
M	-1.36	-.72
SD	1.44	2.02
Nonhypnotic		
High Susceptible		
M	-2.02	-1.64
SD	1.52	1.68
Low Susceptible		
M	-2.39	-1.80
SD	1.36	1.38

Table 2

Mean Recognition Indices by Condition, Susceptibility, and Phrase Type

	Phrase Type		
Condition	Consonant	Neutral	Dissonant
Hypnotic			
High Susceptible			
M	-1.17	-1.66	-2.44
SD	2.22	2.13	1.48
Low Susceptible			
M	-.89	-1.24	-1.95
SD	1.45	2.03	1.60
Nonhypnotic			
High Susceptible			
M	-2.00	-1.73	-2.33
SD	1.47	2.04	1.63
Low Susceptible			
M	-1.80	-2.78	-2.63
SD	2.05	1.29	1.24

Table 3

Mean d' Values by Condition and Susceptibility

	Susceptibility	
Condition	High	Low
Hypnotic		
M	.39	.44
SD	.51	.69
Nonhypnotic		
M	.28	.27
SD	.44	.40

Appendix A

Hand Levitation (Right Hand)

Introduction. Now that you are very relaxed and sleepy, listening without effort to my voice, I am going to help you to learn more about how your thoughts affect your actions in this state. Not all people experience just the same things in this state, and perhaps you will not have all the experiences I will describe to you. That will be all right. But you will have at least some of the experiences and you will find these interesting. Just experience whatever you can. Pay close attention to what I tell you and watch what happens. Just let happen whatever you find is happening, even if it is not what you expect.

Instructions Proper. I would like you to now direct your attention to the feelings and sensations in your right hand. Simply notice any feelings, any sensations you might have in this hand as it rests comfortably on your lap. There are many sensations in your body that you normally do not notice because you are not paying attention to them, but when you concentrate as you are now doing, on some part of your body, such as your right hand, then you become aware of many different things which were there all along. Perhaps right now, or even earlier, you became aware of the presence of your lap against your hand, and you noticed the texture of the cloth under your hand. As you continue to pay close

attention to your hand and the sensations in it, perhaps you begin to experience a sort of tingling, or perhaps a feeling of warmth. Most people sooner or later experience a feeling of lightness in their hand...as if it were ready to float up and away...I wonder if you will have this sensation...that your hand is getting lighter and lighter... more and more light..Even now the tendency to move and rise up in the air is growing...the pressure between your hand and your lap is decreasing, getting less and less...very soon your hand <u>is</u> going to move...it <u>is</u> going to rise. Your hand is rising, slowly rising, lifting, slowly lifting up in the air...That's right, it is lifting up, slowly lifting up...slowly lifting up. It is lifting up...lighter and lighter...slowly rising...and as I count it gets lighter and lighter and rises more and more...one, rising...two, rising...three, rising...four, lighter and lighter...five, rising...six, rising...seven...eight...lighter and lighter, rising more and more...nine, rising...ten...lighter and lighter...Rising more and more. (<u>Allow 15 sec</u>)

That's fine. You can now let your hand slowly come back down and once again rest comfortably on your lap. Just continue to relax...very comfortable, very relaxed. There...just relax. Relax.

Appendix B

Hypnotic Procedure

Induction by Hand Levitation. Please find a comfortable position in your seat, and place your hands in your lap, palms down. A nice, comfortable position, your hands palms down on your lap. Allow your eyes to close freely and easily as you relax and make yourself comfortable. All feelings of tension disappearing as you allow your eyes to close and your body to relax.

I would like you to now direct your attention to the feelings and sensations in your left hand. Simply notice any feelings, any sensations you might have in this hand as it rests comfortably on your lap. I am about to give you some instructions that will help you to relax even further and gradually enter a state of hypnosis. What is important is that you continue to focus on your hand and listen to what I say. Your ability to be hypnotized depends on your willingness to concentrate upon your hand and upon my words. You can be hypnotized only if you are willing. I assume that you are willing and that you are doing your best to cooperate by concentrating on the feelings and sensations in your hand, and by listening to my voice. If you pay close attention to what I tell you and think only of the things I tell you to think about, you can experience what it is like to be hypnotized. There is nothing fearful or mysterious

about hypnosis. It is merely a state of strong interest in some particular thing. In a sense you are hypnotized whenever you see a good show and forget you are part of the audience, but instead feel that you are part of the story. All I ask of you is that you keep up your attention and interest and continue to cooperate as you have been cooperating.

Now just allow yourself to relax completely. Relax every muscle of your body. Relax the muscles of your feet...Relax the muscles of your legs... Relax the muscles of your chest...Relax the muscles of your neck...Relax the muscles of your arms...Relax all the muscles of your body...Let yourself be limp, limp, limp. Relax more and more, more and more. As you relax more and more your breathing is becoming slow and regular, slow and regular. You relax completely...completely and totally...your breathing becoming slower and more regular...slower and more regular.

Continue to concentrate upon the feelings and sensations in your left hand, and upon my words. It is important that you pay attention to nothing else but my voice, and think only of the things I tell you to think about. There are many sensations in your body that you normally do not notice because you are not paying attention to them; but when you concentrate as you are now doing, on

some part of your body, such as your left hand, you then become aware of many different things which were there all along. Perhaps right now, or even earlier, you became aware of the presence of your lap against your hand, and you noticed the texture of the cloth under your hand. And as you continue to pay close attention to your hand and the sensations in it, perhaps you begin to experience a sort of tingling, or perhaps a feeling of warmth. Perhaps you will not have these feelings but will have others about which you do not know and I do not know. I will be very interested in finding out what sort of sensations you may have in your hand and you can be interested in finding out. (Channel B begins here) Most people sooner or later experience a feeling of lightness in their hand...as if it were ready to float up and away...I wonder if you will have this sensation...that your hand is getting lighter and lighter...more and more light...Even now the tendency to move and rise up in the air is growing...the pressure between your hand and your lap is decreasing...getting less and less...very soon your hand <u>is</u> going to move... it <u>is</u> going to rise. Your hand is rising, slowly rising, lifting, slowly lifting up in the air...That's right...it is lifting up, slowly lifting up... slowly lifting up. While your hand rises you go deeper into a hypnotic state...deeper into a hypnotic state. It is lifting up...lighter and lighter...slowly rising. While your hand rises and

continues to rise you will continue to go deeper and deeper into a hypnotic state. You will keep on going deeper and deeper into hypnosis. (Allow 15 sec)

That's fine. You can now let your hand slowly come back down and once again rest comfortably on your lap. You are now deeply hypnotized. You will remain deeply hypnotized until I tell you otherwise. If needed, you will be able to shift your position in your seat and make yourself more comfortable. But your eyes will remain closed and you will remain deeply hypnotized. Your eyes will remain closed and you will remain deeply hypnotized until I tell you otherwise.

15-sec interval

Arm Rigidity. Please extend your right arm straight out in front of you, up in the air, and make a fist. Arm straight out in front of you. That's right. Straight out, and make a fist. Arm straight out, a tight fist...make a fist. I want you to pay attention to this arm and imagine that it is becoming stiff...stiffer and stiffer...very stiff...and now you notice that something is happening to your arm...you notice a feeling of stiffness coming into

it...It is becoming stiff...more and more stiff...rigid...like a bar of iron...and you know how difficult...how impossible it is to bend a bar of iron like your arm...See how much your arm is like a bar of iron... test how stiff and rigid it is...try to bend it...try. (Allow 15 sec)

That's good. Now just stop trying to bend your arm and relax. Stop trying to bend your arm and relax. I want you to experience many things. You felt the creeping stiffness, you had to exert a good deal of effort to do something that would usually be very easy. But your arm is not stiff any longer. Just place your arm back in resting position...back in resting position.

15-sec interval

Mosquito Hallucination. I am sure that you have paid so close attention to what we have been doing that you have not noticed the mosquito which has been buzzing about you...But now that I call your attention to it you become increasingly aware of this mosquito which is flying round and round about your head...nearer and nearer to you...buzzing annoyingly...hear the buzz getting louder and

louder as it keeps darting at you...You don't care much for this mosquito...You would like to shoo it away...get rid of it...It annoys you. Go ahead and get rid of it if you want to. (Allow 15 sec)

There, it's going away...it's gone...and you are no longer annoyed... no more mosquito. The mosquito is gone and you can stop shooing it away now. Just place your arm back in resting position...back in resting position.

15-sec interval

Reversal of Hypnotic Induction. Remain deeply relaxed and pay close attention to what I am going to tell you next. In a moment I shall begin counting backwards from twenty to one. (Channel B ends here) As I count backwards from twenty to one you will gradually wake up. By the time I reach "five" you will open your eyes, but you will not be fully aroused. When I get to "one" you will be fully alert, in your normal state of wakefulness. You will feel fine. You will have no headache or other after-effects. I shall now count backwards from twenty, and at "five", not sooner, you will open your eyes but not be fully aroused until I say "one". At "one" you will be fully awake. Ready now:

20-19-18-17-16-15-14-13-12-11-10, half way-9-8-7-6-5, open your eyes-4-3-2-1. Wake up! Wide awake! Any remaining drowsiness which you may feel will quickly pass.

Appendix C

Critical and Contextual Phrases

Critical Phrases for Hand-Levitation Suggestion

like a helium balloon

a big steel anchor

too cool for words

Critical Phrases for Interval Following Hand-Levitation Suggestion

eating a burger

a tasty red apple

an expensive cigar

Critical Phrases for Arm-Rigidity Suggestion

like hardened cement

hot melting taffy

southern fried chicken

Critical Phrases for Interval Following Arm-Rigidity Suggestion

a shaggy dog

people with hats

black coffee beans

Critical Phrases for Mosquito-Hallucination Suggestion

an irritating noise

like peaceful butterflies

black leather shoes

Critical Phrases for Interval Following Mosquito-Hallucination Suggestion

playing a guitar

new tennis sneakers

three white horses

Contextual Phrases

a ballpoint pen

cold winter winds

knitting a sweater

mowing the lawn

too restless to sleep

a trip to the zoo

a worm in hot ashes

cowboys and indians

watching a movie

the show must go on

like stuffing a turkey

a pain in his chest

like sand on a beach

playing a game

like digging for gold

a carpenter's dream

like painting a house

a prisoner of war

life in the forest

paying a debt

winning the series

a vacation in Spain

dancing to music
like fixing a phone
a drive in the country
a breath of fresh air
growing a mustache
life in the future
a mole on his arm
like tasting fine wine
a bad attitude
like recording a song
aches in her heart
learning to trust
in need of a shave
nothing in common
like suds on the sea
like shooting an arrow
like drilling for oil
a shortage of water
like wax on a floor
dying in vain
rushing the job
like losing a race
begging the issue
like slipping on ice
going cold turkey
returning a favor

bringing up children

a new bowling alley

removing a splinter

protecting one's honor

like polishing copper

a trip into space

cleaning the house

dust in the wind

lighting a candle

hitting the bottle

controlling her temper

like living a lie

staying up late

a bargain for time

fishing for compliments

like sewing a button

checking the mail

a blue laundary bag

reading a poem

building up muscles

smog in her lungs

glue on a stamp

buying a token

runs in her stockings

heir to the throne

crossing the border

like fighting the flu

a knot in her hair

like disengaged gears

loosely tied knots

like siamese twins

forever in love

sealed with glue

an algebra test

enslaved with handcuffs

united as one

unlocking the door

crime never pays

attracting like magnets

a parting of ways

divided in two

slip sliding away

just like a divorce

the honking of horns

like a punk rocker

rose tinted glasses

a wooden table

a heavy snowfall

turning the channel

writing a program

like rust on a nail

a nice looking boy

hair on his head
sanity and madness
the meaning of life
like a little doll
freedom and dignity
war and peace
a mental escape
in search of a soul
a comedy of error
a silk lined jacket
walking in moonlight
the freedom of speech
a lost contact lens
and justice for all
the music goes on

Appendix D

Nonhypnotic Procedure

Resting on the table before you is a pencil and small booklet. These are the materials that we'll be working with today. Please do not open this booklet until so instructed. As you already know, the booklet contains a number of simple paper-and-pencil tasks, and I'll be asking you to work on these tasks in a short while. It was mentioned that what we're interested in seeing is whether or not people who differ in hypnotizability have different styles of working on certain tasks when they are not in the hypnotic state, and therefore there will be no hypnosis in this experiment today. When we speak in terms of "styles", that is, styles of working on certain tasks, we are not referring to such things as speed and accuracy. Speed and accuracy usually refer to "abilities", as when we say that Person A is better able at performing a certain task than Person B. The notion of a style, however, refers to the way in which a person performs a task, the manner in which a person performs a task, rather than how well, how quickly, or how accurately the task is performed. Two people may be equally capable of performing a certain task - they may perform it at equal speeds and with equal accuracy - and yet have very different ways of going about it. These different ways of approaching the task are stylistic differences. For example, consider

the famous pianist Liberace. Liberace is undoubtedly brilliant in terms of his ability to play the piano. His concerts are always sold out, and people travel far to see him. But Liberace's appeal does not rest solely on his ability. There are other pianists who have achieved higher levels of discipline and mastery with relation to the piano, but who have not achieved the same level of popularity. This is principally due to the fact that Liberace has a unique style in his approach to the piano. He plays with a certain flair, a certain exaggeration, for which he alone is known. Or consider Muhammed Ali in his fighting days. Ali was probably the greatest fighter in the history of boxing, but his popularity was based on a lot more than his tremendous ability. Ali had a certain style, a certain grace, that made him stand out amongst his peers. Since our interest is in styles rather than abilities, the paper-and-pencil tasks that you'll find in the booklet in front of you will be quite simple. In fact, they are easy enough for just about anybody to perform, and therefore it should be obvious that they do not constitute a test of intellectual ability. However, even though the tasks are very simple, you'll only have a limited amount of time to work on them. There are other people who will be participating in this experiment, and time is a luxury that we simply don't have. All of the tasks are too long to be completed in the time that will be allotted to you, so

please don't feel that you've been unsuccessful in any way. What is important is that you pick up your pencil and start working on the task only when I instruct you to start, and that you stop working on the task and put your pencil down as soon as I instruct you to stop. Please do not begin until instructed to begin, and please do not continue to work after you've been instructed to stop. This is very important.

There are three tasks contained in the booklet in front of you. The first is a typical connect-the-dots task that you've probably seen many times before. This task consists of a random scattering of numbered dots ranging from 1 to 80. Your job is simply to connect the dots in numerical order, beginning with 1, and then to 2, and then to 3, and so on. The second is a letter-circling task. (Channel B begins here) This task consists of a page of randomly ordered letters of the alphabet. Your job is to scan each line and put a circle around the letter "E" every time it appears on the page. The third and final task consists of a series of very easy math problems: some addition, subtraction, and multiplication. Your job is simply to solve these problems by writing the answers in the spaces provided. Please do not talk to the experimenter during any stage of the procedure. His function is simply to operate the tape recorder and make sure everything runs smoothly,

and therefore his presence is not a formal component of the experiment. Once again, it is very important that you pick up your pencil and start working on each task only when I instruct you to start, and that you stop working on each task and put your pencil down as soon as I instruct you to stop. Please open the booklet now to page 1. Just open the booklet to page 1 and nothing else. As mentioned, the first task is a connect-the-dots task, and your job is to connect the dots in numerical order, beginning with 1, and then to 2, and so on. Please start now. (Allow 15 sec)

Please stop. Please put your pencil down and stop working on the task. Do not continue. You must have noticed that there are many more dots on this paper than can be connected in the time allotted. You must have also noticed that the task is quite easy, and that were you given sufficient time, you would have had no difficulty whatsoever in completing it. This type of task is often found in newspapers and magazines, and can be a lot of fun.

15-sec interval

Please turn now to page 2. Just turn to page 2 and nothing else. As mentioned, the second task is a

letter-circling task. The sheet of paper in front of you consists of a random ordering of all the letters of the alphabet. When we speak in terms of a "random ordering", we mean that there's no set pattern to the way the letters are arranged. It's as though all the letters of the alphabet were thrown into a barrell, and then somebody reached in, blindly pulled out a letter, threw the letter back, blindly pulled out a second letter, and so on. Or better yet, it's like the product that would be derived from having a monkey sit down at a typewriter. There is simply no meaningful arrangement. The target letter for today is the letter "E". Your job is to scan each line and put a circle around the letter "E" every time it appears on the page. Please start now. (Allow 15 sec)

Please stop. Please put your pencil down and stop working on the task. Do not continue. As with the previous task, you must have noticed that there are many more letters than can be scanned in the time allotted. You must have also noticed that the task is quite easy, and that were you given sufficient time, you would have had no difficulty completing it. This type of task is less popular than connect-the-dots, and is rarely found in newspapers and magazines.

15-sec interval

Turn now to page 3 of the booklet. Just turn to page 3. This last task consists of a series of very easy math problems: some addition, some subtraction, and some multiplication. You may even see the same problem show up more than once. The problems in this task are so simple that they could be on a mathematics test for second-grade students. When you were a child, you probably spent a lot of time working on problems such as these, even if you don't remember. As an adult, you compute the solutions to these problems more often than you are aware. This is probably because it is done so rapidly and so easily that you don't even notice it happening. The present task requires that you simply solve the problems on the sheet of paper in front of you by writing the answers in the spaces provided. Please start now. (Allow 15 sec)

Please stop. Please put your pencil down and stop working on the task. Do not continue. Once again, you must have noticed that there are many more problems than can be solved in the time allotted. Please close the booklet now and remain in your seat until the experiment is completed. Just close the booklet and remain comfortably seated.

15-sec interval

Thank you for your participation in the present experiment. As mentioned earlier, the purpose of this research is to see whether or not people who differ in terms of hypnotizability have different styles of working on certain tasks when they are not in the hypnotic state. Hypnosis is a very interesting phenomenon, and to this day it remains something of a mystery. In the eighteenth century a fellow named Franz Mesmer used hypnotic-like techniques to cure a variety of ailments in willing patients. (Channel B ends here) Mesmer believed that illness is due to an imbalance of special cosmic fluids that exist in every person, and that his healing techniques worked by correcting this imbalance. Mesmer's ideas were eventually discredited, and other concepts were proposed to help explain hypnotic effects. Some researchers were physiologically oriented, claiming that hypnosis has a direct effect on the brain and nervous system somewhat like a drug. Other researchers were psychologically oriented, claiming that the most important factors in hypnosis are such things as beliefs, attitudes, and expectancies. Even though these kinds of debates continue to the present and seem like they'll go on forever, the fact remains that

hypnosis has proven to be a very effective tool for the treatment of a wide variety of human problems. Once again, thank you for your participation. This completes the present phase of the study.

Appendix E

Recognition-Task Items

like peaceful butterflies (*)

a big steel anchor (*)

playing a guitar (*)

a popular guy

like skinning a rabbit

southern fried chicken (*)

a needless disguise

hot melting taffy (*)

an irritating noise (*)

stepping on roaches

carving a figure

like a helium balloon (*)

people with hats (*)

three white horses (*)

an orange soda

salt on a wound

s shaggy dog (*)

a solar eclipse

a letter to congress

new tennis sneakers (*)

a new television

adopting a pet

eating a burger (*)

black coffee beans (*)

a tasty red apple (*)

sweeping the floor

like hardened cement (*)

too cool for words (*)

black leather shoes (*)

riding a skateboard

calling for pizza

sitting in Church

cooking a fish

an expensive cigar (*)

becoming a doctor

building a castle

Asterisk (*) denotes critical phrase

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