A SAGA OF HYPNOSIS:

Two Decades of the Stanford Laboratory of Hypnosis Research

1957-1979

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PREFACE

Hypnotic phenomena have risen to heights of interest before, as in the decade of 1885 to 1895, but serious research interest lagged until experimental psychology was better prepared to deal with the problems of individual differences in personality and social interactions as well as problems posed by responses that could be placed under experimental control in the laboratory. Since 1950 there has been an accelerating interest in hypnosis research, and the Laboratory of Hypnosis Research at Stanford has been an active participant since 1957. In the initial period the Laboratory was established by a grant from the Ford Foundation. Although some other agencies have given periodic support, the primary sustaining grant from 1961 on has been that from the National Institute of Mental Health, Grant MH-03859, of which this is the terminal report.

The title of the grant, "Developmental and interactive aspects of hypnosis" arose because of the dual interest in how the abilities related to hypnotic performance develop in the individual, and how the social interactions with someone in the role of hypnotist capitalize on these abilities in eliciting the behaviors and experiences associated with hypnotic performance. While this has occasionally been described as a theory, it is essentially a framework within which a theory might be proposed to account for the empirical data. The gathering of the data has been relatively free of theory, except for the context in which the experiments were conducted. Within the framework of the developmental-interactive formulation, experiments in great variety have been performed to elucidate the relationships within the observations. This final report is essentially a guide to the published studies that have appeared over the two decades of investigation. Two major reference lists are presented in the Appendix. One (Appendix 4) refers by author and date to the published journal articles, chapters, and books arising from the

work of the laboratory. The other list (Appendix 5) is of unpublished Research Memoranda, often prepared in the course of data analysis preparatory to later publication, but occasionally considered as pretests of topics to be folllowed up later. Because some of these were never followed up, reference is made to them by number and date, so that their existence will be a matter of record.

A by-product of the research has been the acceleration of interest in hypnosis as a legitimate area of research. This has come about through the many students who have worked within the Laboratory, a number of whom received advanced degrees based on their research in hypnosis. In addition a substantial number of professional visitors have spent time in the Laboratory as postdoctoral fellows or as professors on sabbatical leave, including many from countries in Europe, the Middle East, and Asia. Lists of professional staff, those receiving degrees, and of the visiting scholars are also presented in the Appendix.

It goes without saying that in a research enterprise in which so many have participated, the Principal Investigator plays primarily a coordinating role, and the ideas -- some of which may be presented in his name -- come from the compounding of suggestions from many people, as refined in the weekly discussions held in the laboratory, so that the end result of both experiment and theory is largely a group product. As the responsible Principal Investigator, I can but express my thanks to my professional colleagues, the students who came to work with us, and the many visiting scholars, all of whom contributed to whatever success the research enterprise achieved. Their participation would not have been possible without the assistance of the research grant, and the generous provisions for the research by Stanford University and the Department of Psychology.

Ernest R. Hilgard

CONTENTS

CONTENTS (continued)

Chapter 1

ORIGINS AND BRIEF HISTORY OF THE LABORATORY

The germ of the idea of a laboratory seriously concerned with uniting experimental methods with the insights and methods of developmental, clinical and social psychology -- in the form of a proposed Laboratory of Psychodynamics -- appears in my presidential address before the American Psychological Association.[1] Hypnosis is given slight mention, chiefly as a method whereby it might be possible to study the circumstances under which a person can freely report private experiences with a minimum of distortion. A few years later, however, I participated with Merton Gill and David Shakow, along with an Advisory Committee, in preparing a report to the Ford Foundation recommending the directions that their research funding in mental health might take.[2] Four major areas of research support were proposed: clinical research in the therapeutic process, a research program in psychodynamics, research in personality development, and a program of research in social and community aspects of mental health. Studies of hypnosis were included both as studies of methods of investigating mental health, and as among the tools of psychodynamic investigation. The Ford Foundation, through its Behavioral Sciences division, funded the program along the lines of the submitted proposal, and research at Stanford received grants in several of the areas. It was within this program that the Laboratory of Hypnosis Research was originally supported financially.

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1. Hilgard, E. R. Human motives and the concept of the self. American Psychologist, 1949, 4, 374-382. (Please note: Citations to reports that are not derived from the work of the Laboratory of Hypnosis Research are cited in footnotes, and are not accumulated at the end of this report.)

2. The unpublished report was entitled A Planning Proposal for Research in Emotional Growth and Mental Health. New York: Social Science Research Council, November, 1953.

The physical site of the original Laboratory was in Hawthorne House, a converted residence on the Stanford campus. When that was torn down to make way for a new undergraduate library, a new "Hawthorne House" was established, again in a remodelled residence. It was larger, but even so the University built an additional two-room laboratory on the grounds for its use as the staff and student group overflowed the laboratory and office spaces. The final move was to the newly reconstructed Psychology Building, in Jordan Hall, on the central quadrangle of the university. The Laboratory occupied one of the three wings on the second floor, and some laboratory space in the central corridor devoted to laboratory rooms. This generous assignment of space continued during the 10 years following the formal retirement of the Principal Investigator, that is, after he became an Emeritus Professor in 1969.

Equipment was gradually acquired appropriate to the tasks undertaken, including EEG recorders and supplementary devices, a three-field tachistoscope, devices for sensory measurement of pain and hearing, and adequate computational facilities.

The early stages of the investigations in the Laboratory were very largely dependent on the rich experience with hypnosis brought by the presence on the staff of André M. Weitzenhoffer. He had earlier prepared a summary of the experimental literature,[3] and during the year 1956-1957, while both of us were Fellows at the Center for Advanced Study in the Behavioral Sciences, he and I made plans for the Laboratory to begin the following year, while he completed the standard book on hypnotic techniques.[4]

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3. Weitzenhoffer, A. M. Hypnotism: An objective study in suggestibility. New York: Wiley, 1953.

4. Weitzenhoffer, A. M. General techniques of hypnotism. New York: Grune and Stratton, 1957.

Rather than describe the work of the Laboratory in chronological order, it is summarized topically, corresponding only roughly to the times at which the various studies were undertaken. This method has been facilitated by an earlier report giving the history of the laboratory to 1972 (Harano and Hilgard, 1973).[5] The topical summaries can serve as a guide to the published investigations and to some unpublished ones available through the Research Memoranda.

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5. References cited in this form are all to publications from the Laboratory as listed with complete citations in Appendix 4.

Chapter 2

THE MEASUREMENT OF HYPNOTIZABILITY

It has long been known that people differ widely in their responsiveness to hypnotic procedures. The results vary from those who appear totally refractory to those who are highly responsive. Historically these very highly hypnotizable persons have been known as somnambulists or somnambules, by analogy with sleep walkers who carry on sensible activities while asleep but do not recall afterwards what they have done. Hypnosis is not sleep, but some of the earlier interpretations persist in the terms, as, indeed, in the word hypnosis itself.

Because comparability from one laboratory to another with respect to results was so obviously dependent upon subject selection, much of the early effort of the Laboratory went into the construction and validation of appropriate instruments of measurement. More lately, a number of studies have compared the results of the Stanford scales with others that have been developed in the meantime, and some effort has gone into preparing modified forms of the original scales to enhance their convenience for special purposes, such as their clinical use with children and adults. Because details are available in the published reports, only brief characterizations are given here, with references to the major reports.

The Original Stanford Scales

The original Stanford Hypnotic Susceptibility Scales, Forms A, B, and C, appeared in the years 1959 and 1962, soon followed by the Stanford Profile Scales of Hypnotic Susceptibility, Forms I and II, originally in 1963.

The early Forms A and B, known as SHSS:A and SHSS:B, were alternate forms of a 12-item scale, essentially a revision of an earlier scale.[6] Forms A and B reflected much of the original content, but the earlier scale was

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6. Friedlander, J. W., and Sarbin, T. R. The depth of hypnosis. Journal of Abnormal and Social Psychology, 1938, 33, 453-475.

revised in order to satisfy some additional psychometric requirements (Weitzenhoffer and Hilgard, 1959; Hilgard, Weitzenhoffer, Landes, and Moore, 1961).

These early scales have been widely used, and translated into a number of languages. An adaptation for group use was prepared by a group at Harvard, and known as the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A).[7] Because of its convenience, this group form has become one of the most widely used instruments in hypnotic research. The relationship between the individual SHSS:A and the group form HGSHS:A, was studied by Bentler and Roberts (1963). Another adaptation was prepared by London as the Children's Hypnotic Susceptibility Scale.[8]

It was early recognized that SHSS:A and B were oriented very much toward motor responses. The highest loadings, in a factor analysis, were represented by motor inhibition items, the so-called challenge items, in which the subject is told that he or she cannot perform some ordinarily simple act, such as opening closed eyes or saying his or her name, and then is "challenged" to try hard to perform the hypnotically inhibited act (Hilgard, 1965b; 1965c). Passing the item consists in the inability to contradict the command. There were only three items representative of a more purely cognitive distortion, an item of posthypnotic amnesia, one of response to posthypnotic suggestion without recall that the suggestion had been given, and the experience of a hallucinated fly. These produced a weak third factor in the scale. Hence it was decided to produce a form with richer cognitive content, including age regression, a dream within hypnosis, and several hallucination items. This became SHSS:C (Weitzenhoffer and Hilgard, 1962). Some of the items were also more difficult than those in

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7. Shor, R. E., and Orne, E. C. Harvard Group Scale of Hypnotic Susceptibility. Palo Alto, Calif.: Consulting Psychologists Press, 1962.

8. London, P. The Children's Hypnotic Susceptibility Scale. Palo Alto, Calif.: Consulting Psychologists Press, 1962.

SHSS:A and B, as indicated by fewer subjects "passing" them. The scale was arranged also in ascending order of difficulty, a feature not included in the earlier forms. A high common factor again emerged, representing after rotation 44 percent of the variance, or two-thirds of the cumulative variance of 66 percent accounted for in the first three factors.

Examination of the individual results on Forms A, B, and C indicated that there were different patterns of scores for those who achieved the same general level of measured hypnotizability, despite the common factor that resulted in positive intercorrelations of the item scores. Hence a scale designed to be more diagnostic of these individual differences was designed and tested in two forms, known as the Stanford Profile Scales of Hypnotic Susceptibility, Forms I and II (Weitzenhoffer and Hilgard, 1962; Hilgard, Lauer, and Morgan, 1963). The two forms contain quite different items, so that they are designed to be used together and not simply as alternates. The items have been assembled into subscales on the basis of both their intended functions and the validation through factor analysis, as reported in detail in a dissertation by Lillian Lauer[9] and summarized in Hilgard (1965). Because of some difficulties noted in the first standardization, a revision with new norms was published later (Weitzenhoffer and Hilgard, 1967). The content of the various subscales is indicated in Table 1, reproduced from the revision.

Later Adaptations of the Stanford Scales

In later years some adaptations of the scales were made, largely as a matter of convenience. The Profile Scales, because of the time required, along with some special equipment, served their original analytical purposes but were not widely used, except as advanced scales with more "top" than

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9. Lauer, L. W. Factorial components of hypnotic susceptibility. Unpublished Ph.D. dissertation, Stanford University, 1966.

Table 1. Intended Objectives and Test Item Content of Subscales of Hypnotic Susceptibility (Revised Profile Scales)

Adopted Name and Initials of Subscale	Functions Intended to be Tested	Item Content of Tests in Subscale
AG: Agnosia and Cognitive Distortion	Distortion of meaning and value, rather than of sense-perception	I:7 Agnosia I: House I:8 Arithmetic impairment II:7 Agnosia II: Scissors II:8 Personality alteration (reduced intelligence)
HP: Hallucinations: Positive	The experiencing of sensory and perceptual phenomena in the absence of appropriate stimuli	I:2 Music hallucination I:5 Hallucinated light II:1 Heat hallucination II:3 Hallucinated ammonia
HN: Hallucinations: Negative	Lack of awareness of stimulation that would normally be perceived	I:1 Hand analgesia to shock I:3 Anosmia to ammonia II:2 Selective deafness II:5 Missing watch hand (visual)
DR: Dreams and Regressions	Memory revival and fantasy production, including fantasied "reliving" of events in the past	I:4 Recall of meal I:6 Dream I: General II:4 Regression to birthday II:6 Dream II: About hypnosis
AM: Amnesia and Posthypnotic Compulsions	Behavior suggested during hypnosis but carried out after arousal from hypnosis, usually with forgetting of the instructions	Amnesia: Rescored from Form A I:9 Posthypnotic verbal compulsion II:9 Posthypnotic automatic writing
MC: Loss of Motor Control	Motor responses carried out automatically as a result of direct suggestion; loss of volitional control over movement as a result of suggestion	Motor Pool (a) from Form A: 1. Postural sway 2. Eye closure 4. Arm immobilization 5. Finger lock Motor Pool (b) from Form A: 6. Arm rigidity 7. Hands moving together 8. Verbal inhibition 10. Eye catalepsy

the other available scales. Because of the general usefulness of SHSS:C, which included some items overlapping with those of the Profile Scales, it was found possible to substitute a Profile Scale item (such as those in Table 1) or a similar item, for one of the Form C items without destroying the normative value of SHSS:C. For some purposes, especially the selection of hypnotic subjects for their high level of responsiveness to some particular item, such as hallucinations to be given in response to a posthypnotic signal, such an item can be inserted as an alternate to one of the standard items of SHSS:C. Such a new scale, permitting item substitution, has been described as a "Tailored SHSS:C" (Hilgard, Crawford, Bowers, and Kihlstrom, 1979).

Two shorter forms of SHSS:C have been prepared and tested, one the Stanford Hypnotic Clinical Scale for Adults (Morgan and Hilgard, 1979a; also in Hilgard and Hilgard, 1975), and the Stanford Hypnotic Clinical Scale for Children (Morgan and Hilgard, 1979b).

An extremely short scale, requiring only six minutes, has been offered as a scale for the crude sorting of those more and less responsive to hypnotic procedures as a simpler alternative to other existing very brief scales that lack fully satisfactory psychometric properties. It is known as the Stanford Hypnotic Arm Levitation Induction and Test (SHALIT) (Hilgard, Crawford, and Wert, 1979). It is not recommended for widespread use because the qualitative information that is yielded is much less useful than that given by the only slightly longer (20-minute) clinical scales.

The Stanford Scales Compared with other Existing Scales

The purpose of this report is to give access to the existing publications produced by the Stanford Laboratory of Hypnosis Research, rather than to give a substantive report of findings. Despite some appropriate criticisms of details of the Stanford scales, they have continued to hold up very well against the others.

For a comparison of the SHSS:A with the Friedlander-Sarbin scale from which it was derived,[10] see Hilgard, Weitzenhoffer, Landes, and Moore (1961).

The Barber Suggestibility Scale (BSS)[11] has been compared with the Stanford scales by Ruch, Morgan, and Hilgard (1973)(1974).

The Barber/Wilson Creative Imagination Scale (CIS)[12] has been compared empirically by Monteiro, Macdonald, Hilgard, and Sheehan (in preparation).

The Hypnotic Induction Profile of Herbert Spiegel and David Spiegel, commonly known as the Eye Roll Test,[13] has been compared by Orne, Hilgard, Spiegel, Spiegel, Crawford, Evans, Orne, and Frischholz (1979), in a cooperative study between the Stanford Laboratory and the Unit for Experimental Psychiatry at the Institute of the Pennsylvania Hospital. The Eye Roll component was found unrelated to scores on the Stanford scales; the arm levitation component was moderately correlated (a representative value .34) with the Stanford scales, Forms A and C combined.

Self-Report Scales

The scales that have been discussed are all designed to measure hypnotizability, or hypnotic talent (called hypnotic susceptibility in the Stanford scales). The contrasting measure that is often desired is some estimate of hypnotic depth, which represents the degree of hypnotic involvement of the subject or patient at any given time. Potential hypnotizability

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10. Friedlander, J. W., and Sarbin. T. R. The depth of hypnosis. Journal of Abnormal and Social Psychology, 1938, 33, 453-475.

11. Barber, T. X. Hypnosis: A scientific approach. New York: Van Nostrand-Reinhold, 1969.

12. Barber, T. X., and Wilson, S. C. The Barber Suggestibility Scale and the Creative Imagination Scale: Experimental and clinical applications. American Journal of Clinical Hypnosis, 1979, 21, 84-102.

13. Spiegel, H. An eye-roll test for hypnotizability. American Journal of Clinical Hypnosis, 1972, 15, 25-28; Spiegel, H., and Spiegel, D. Trance and treatment: Clinical uses of hypnosis. New York: Basic Books, 1978.

and actual hypnotic depth are not alike, any more than a person with a generally good appetite is always equally hungry. The best measure of momentary hypnotic depth is a subjective report scale, commonly a simple numerical scale, similar to magnitude estimation in psychophysics. Ideally such a scale begins at zero (totally uninfluenced by hypnotic procedures, or totally uninvolved in self-hypnosis) and is open at the top, so that depth can be reported with higher numbers as long as it expresses greater and greater involvement in hypnosis. An early form of such a self-report of depth was that proposed by LeCron in 1953.[14] The subject assigns a number from 1 to 100 as the hypnotic depth achieved. In an early experiment from the Stanford Laboratory by Elaine Hatfield (1962) the method was found inexact, correlating only .32 with SHSS:B. "Conscious" and "unconscious" reports (the latter preferred by LeCron) correlated .84, so that Hatfield questioned that they were independent. Later Tart and I used a method more similar to estimation in a study employing SHSS:C (Hilgard and Tart, 1962; Tart and Hilgard, 1966), and Tart (1966) related hypnotic dreams to self-reported depth. Tart found a correlation of .73 between the average of the depths as reported for each item of SHSS:C and the total score. When used in that manner, self-report scales can be very useful, as well as in the study of experiences at extreme depths not usually met in ordinary hypnosis experiments.

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14. LeCron, L. M. A method of measuring the depth of hypnosis. Journal of Clinical and Experimental Hypnosis, 1953, 1, 4-7.

Chapter 3

HYPNOTIZABILITY: ITS CONCOMITANTS AND NATURE

Having determined that hypnotizability can be measured, as it expresses itself at any one time, many questions remain to be answered. How stable is the talent or trait represented by hypnotizability? How is this talent related to other abilities or aspects of personality? What do these relationships tell us about the changes that are taking place within hypnosis?

Stability and Modifiability of Hypnotic Talent

Retest after Ten Years. The reliabilities of the Stanford scales on retests over short periods of time, with alternate forms of the tests, proved quite satisfactory. However, it was important to do a test over longer intervals in order to determine how stable the talent for hypnosis might be. Such a test was conducted by Morgan, Johnson, and Hilgard (1974), by retesting at an average of 10 years later a sample of those who had been tested as undergraduates at Stanford. There were no significant mean changes over this period, and the earlier scores correlated .60 with the later ones, representing at the least the stability expected for personality and interest measures.

Efforts to Modify Hypnotizability. Over the years a number of studies from our laboratory have been directed to the modification of hypnotizability, as reflected by scores on the standardized tests (e.g., Ås, Hilgard, and Weitzenhoffer, 1963; Cooper, Banford, Schubot, and Tart, 1967; Sachs and Anderson, 1967, Diamond, 1972, Kinney and Sachs, 1974). The results, in agreement with those found by others, are generally that small changes can be produced, statistically significant if samples are large enough, but there is no convincing evidence for the production of truly highly responsive subjects from those who are originally only moderately responsive. There is a strong tendency in most of the studies from which the information is available for

the final scores to correlate positively with the original ones, even though some changes take place.

Demographic Variables and Hypnotizability

It is of some interest to know how different fractions of the population respond to hypnotic procedures. Most of the information is incomplete, but a number of studies have been conducted.

Age. The general findings that go back to the early nineteenth century are that very young children are difficult to test for hypnotizability, but by the age of 6 or 7 are very responsive to procedures similar to those used with adults. A peak of hypnotizability is reached in the preadolescent years (9 to 12) and there is a gradual mean decline thereafter through the life span. In a study assembling data gained for other purposes, Morgan and Hilgard (1973) located scores for 1,232 subjects ranging in age from 5 to 78 years, with results supporting the generalizations from earlier studies.

Sex. The older lore that women were more hypnotizable than men gained credence because of the association (in Charcot's day) of hypnosis with hysteria, and hysteria with women. Our research results, in general, find no sex differences in average scores between men and women as tested in large samples of college students (e.g., Weitzenhoffer and Weitzenhoffer, 1968b; Cooper, Research Memorandum #35, 1965, Research Memorandum #36, 1965). In a related investigation, Cooper and London (1966) found no sex differences in a large sample of children.

The generalization that there are no sex differences may have to be tempered when specific hypnotic abilities are under investigation. Stevenson (Research Memorandum #137, 1974) made a careful analysis item-by-item of the 24 items on the Stanford Profile Scales (extended form), and found significant sex differences favoring women, only on dream and

age regression. However, in seeking replication by examining the dream and regression items on another sample of 206 men and 165 women who had been tested on SHSS:C, he replicated only the regression item. Hence the final result was that there appeared to be a greater tendency for women than men to have the experience of age regression within hypnosis. On the whole, however, it is evident that the sex differences found were minimal even with highly differentiated hypnotic items. More remains to be done.

Ethnic and National Backgrounds. The translation of the Stanford scales into other languages has permitted their testing on populations with varied backgrounds. On the whole, the results have been found quite similar to results for those who are English-speaking.[15]

There have been few comparative studies of groups with different ethnic or racial backgrounds living within the same national setting.

Delores Mack in 1966 conducted a study on the effect of race of the experimenter on hypnotizability, using both Black and Caucasian experimenters with Black and Caucasian subjects. The differences that were found were not striking, and the study was not reported.

The Nature of Hypnotizability

With scales of measurement available, it was desirable to pursue the study of the individual differences responsible for the scores that were obtained.

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15. The Stanford scales were translated into Japanese by T. Umemoto, T. Saito, and H. Osawa, who published their findings in 1964. Both Drs. Umemoto and Saito had spent time in the Stanford Laboratory. German translations of the Stanford Profile Scales formed the basis of doctoral dissertations by Christiane Bülge and Cornelia Muchow at the University of Freiburg in 1974. Dr. Bülge had spent six months at Stanford, primarily in the Laboratory of Hypnosis Research, in 1973.

Correlations with Available Personality Measures. A number of studies were conducted to explore the relationship between the Hypnotic Susceptibility scores, and scores or ratings on the various personality tests or inventories. The major ones of these are summarized in Table 2. Although, as so often occurs in investigations of this kind, there are some tantalizing positive findings, on the whole the relationships were too disappointing to encourage further research along these lines.

Life-Experience Inventories. The failure of the familiar personality inventories to predict hypnotizability turned attention of investigators to seek kinds of personal experiences not well represented in the existing scales. An investigator of hypnosis cannot but be impressed how readily the highly hypnotizable person responds to hypnotic procedures -- in a matter of a very few minutes. Because that is the case, hypnotic responsiveness must be readily available, and probably in contexts not ordinarily thought of as hypnotic. Conjectures along these lines led researchers to question subjects about life experiences that were hypnotic-like. The first of these Experience Inventories, as they came to be called, was developed elsewhere by Ronald Shor.[16] A number of studies from the Stanford laboratory extended this kind of investigation (Ås, 1962; Ås and Lauer, 1962; Ås, O'Hara, and Munger, 1962; Ås, 1963; Lee-Teng, 1965).

In general, significant correlations were found between hypnotic-like experiences in everyday life and later measured hypnotizability. The study by Evelyn Lee Teng, the last in this series, clarified some of the issues by showing that three factors in the experience inventories led to positive

16. Shor, R. E. The frequency of naturally occurring 'hypnotic-like' experiences in the normal college population. International Journal of Clinical and Experimental Hypnosis, 1960, 8, 151-163; Shor, R. E., Orne, M. T., and O'Connell, D. N. Validation and cross-validation of a scale of self-reported personal experiences which predicts hypnotizability. Journal of Psychology, 1962, 53, 55-75.

Table 2

Correlational Studies of Hypnotizability versus Personality Measures

Personality Test or Scale	Report from Laboratory of Hypnosis Research	Number of Subjects	Findings
California Psychological Inventory (CPI)	Hilgard and Lauer (1962)	110 males; 106 females	None significant for both males and females; highest .26
	Moore (1964)	80 males	Ac, Sc, Py scales nonsignificant
Cattell 16 PF	Weitzenhoffer and Weitzenhoffer (1958)	100 males 100 females	None significant
Guilford-Zimmerman Temperament Survey	Weitzenhoffer and Weitzenhoffer (1958)	100 males 100 females	None significant
Leary's Interpersonal Check List (ICL)	Bentler (1963)	43 males 84 females	Quandrant LM (Affiliation) significant for females (r=.29, .34), not for males (r= .22)
Maudsley Personality Inventory (MPI)	Hilgard and Bentler (1963)	124 males 18 females	Some significant relationships, but opposite to those reported from London
Minnesota Multiphasic Personality Inventory	Hilgard, Lauer, and Cuca (1965)	149 males 152 females	Only the Sum-True score (acquiescence) significant for both sexes (r=.22) for females, .17 for males
	Moore (1964)	80 males	Welsh anxiety, Welsh repression, not significant
Motoric-ideational scale, Stein and Craik	Mudd and Melei (Research Memorandum #24, 1963) Hilgemann (Research Memorandum #28, 2964)	29 males 35 females	Competitive recreation negatively related to hypnosis (-.43); tendency for excess of ideational interests over motor interests to relate positively (.32, .39 with Profile scores)
Myers-Briggs Type Indicator	Roberts (Research Memorandum #9, 1963; Roberts (Research Memorandum #30, 1964)	44 males 44 females 31 males 39 females	Slight positive correlation (.23) for Thinking - Feeling dimension only. Nothing significant; no significance when combined with prior sample
Persuasibility (Janis)	Moore (1964)	80 males	Not significant

correlations with hypnotizability: acquiescence or the "yes"-saying tendency among the more hypnotizable, exaggerated because most experience inventories have all items keyed for positive answers; trance-like experiences (which correlate high both with acquiescence and the hypnotizability test items), and a third factor, uncorrelated with acquiescence, also correlated with the hypnotizability scores. Because this final factor is most clearly something associated with the hypnotic procedures, she named the factor induction-susceptibility. Her study clarified the meaning of the correlations, but the correlations were not high enough for the experience inventory to solve the problem of the nature of hypnotizability.

Imaginative Involvements Discovered through Interviews. Before the experience inventory studies began, and while they were being separately investigated, Josephine Hilgard and a staff of trained social workers assisting her began a longterm interview study with students both prior to and subsequent to their experience with hypnosis. The results were published later in her book, Personality and Hypnosis: A Study of Imaginative Involvement (Hilgard, J. R., 1970; revised, 1979). In brief, her finding was that the most prominent characteristic of the highly hypnotizable person was a capacity for involvement in and enjoyment of imagination or fantasy, in which ordinary reality ties were temporarily set aside. Many areas of involvement could serve, such as reading, especially fiction and science fiction, drama (participation and viewing), creative expression, religion, childhood imagination (expressed sometimes in imaginary companions), the savoring of sensory experiences (including the esthetic appreciation of nature), and some forms of venturesomeness. Early case reports were published in J. R. Hilgard and E. R. Hilgard (1962), and the announcement of the importance of imaginative involvements was reported in her chapter in E. R. Hilgard's book (1965b). After Personality and Hypnosis appeared, its results were confirmed through additional interviews,

J. R. Hilgard (1972) (1974a).

The Tellegen-Atkinson Resolution of the Personality Inventory Problem. The reasons why hypnotizability could be a recognizable and relatively stable personality characteristic, and yet not correlate with the standardized personality interviews, was resolved by an important study by Tellegen and Atkinson, done at the University of Minnesota.[17] Although not a product of the Stanford research, it is so closely related that it deserves mention here. Tellegen and Atkinson converted the information available from the experience inventories and from the interviews that led to the conception of imaginative involvements into statement form similar to the items of the MMPI. A scale, to become known as an Absorption Scale, was then constructed by imbedding these items in others selected from the original MMPI. The other items represented the two main factors of the MMPI (Stability-instability, extroversion-introversion). Using appropriate factor-analytic methods it was found that absorption was a third factor, uncorrelated with the two factors of the MMPI. When the three factors were represented in a single test, it was found that only the absorption factor correlated positively and significantly with measured hypnotizability. These findings explain the empirical reason why standardized tests failed to correlate with hypnosis, despite the presence of identifiable personality characteristics related to hypnosis. What was shown is that with all the hundreds of items on personality inventories, they have failed to represent items that measure what Tellegen and Atkinson called "openness to absorbing and self-altering experiences." Finke and Macdonald (1978) confirmed the positive correlation between the Tellegen-Atkinson absorption scale and measured hypnotizability.

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17. Tellegen, A., and Atkinson, G. Openness to absorbing and self-altering experiences ("absorption"), a trait related to hypnotizability. Journal of Abnormal Psychology, 1974, 83, 268-277.

A Possible Genetic Component to Hypnotizability. At the time that there appeared to be no correlation between hypnotizability and personality inventories, it occurred to some of us that hypnotizability might be a very specific trait, perhaps a capacity for dissociative experiences, possibly with a genetic basis. The analogy would be with something like diabetes, in which there is a strong hereditary component, but no universal personality characteristics associated with the condition. With such considerations in mind, a study was done on the hypnotizability of twins and their families (Morgan, Hilgard, and Davert, 1970; Morgan, 1973). The intraclass correlation for 58 pairs of monozygotic twins was .52, and for 82 pairs of dizygotic twins was .17. Nontwin pairs of siblings correlated .19 (N=132). The heritability index, h^2, computed in the usual way, was .64 for like-sexed twins, significant at $p < .01$. These findings, subject to all the difficulties that are found in twin studies, point at least to the possibility of a genetic component to hypnotizability. Other relationships reported in the study supported parental influences upon the child beyond what could be attributed to heredity. A heredity-environment interaction is to be expected in many psychological characteristics.

Additional Considerations Bearing on the Nature of Hypnotizability. While a great deal more is now known about hypnotic talent than was known before these investigations began, the correlations predictive of hypnotizability on the basis of nonhypnotic measures are never high, so that much remains to be discovered. In a later section of this report, some of the anatomical-physiological correlates, particularly brain lateralization, will be considered.

One of the puzzling findings that came out of Josephine Hilgard's interview studies was the significance of strict discipline in childhood, often involving punishment. The strict discipline or punishment were positively related to high hypnotizability. The hypothesis that this produced high conformity,

hence prompt responsiveness to the suggestions of the hypnotist, was denied by the relative ineffectiveness of the punishment in producing conformity -- it was its ineffectiveness that led to its severity and its long-continuance. A possible relation to imaginal involvement was indicated by the techniques developed by the child to mitigate the effectiveness of the punishment through practiced dissociation. Sometimes this was evidenced by the fantasies evoked when the child was "sent to his(or her)room" to think it over. What the child did was to engage in satisfying fantasies, seldom in reflective remorse over wrongdoing.

A later factor-analytic study compared the scores on the HGSHS:A, SHSS:C, and CIS, with both the Tellegen-Atkinson Absorption scale, and a form of the Betts Mental Imagery Scale (Monteiro, Macdonald, Hilgard, and Sheehan, in preparation). The study led to the conclusion that Absorption and Imagery represent a second factor in hypnotizability that accounts for a significant fraction of what is measured in the Stanford scales, and a larger fraction of what is measured in the Creative Imagination Scale (CIS). However, the larger first factor of the Stanford Scales, and a smaller fraction of the CIS, represent aspects of hypnotic responsiveness and dissociation not fully accounted for by the absorption-imagination self-reports as measured. Whether the self-report measures lack sufficient subtlety, or something important is being overlooked, remains to be found out.

The Effects of Hypnotic Induction

It has long been taken for granted that the preliminaries in hypnotic procedures, initiating the person into hypnosis, and known as the process of induction, result in a condition historically described as a hypnotic trance or, to use a neutral word, a hypnotic condition. The trance or condition can be described in various ways, most commonly as one of heightened suggestibility. It has long been known, however, that people are responsive to suggestions without a formal hypnotic induction. In fact, many forms of hypnotic induction employ response to suggestion as a means of induction. For example, eye closure and arm levitation are common induction procedures: not the voluntary closing of the eyes or the voluntary raising of the arm, but the experience of involuntary eye closure or involuntary arm levitation, as a result of the hypnotist's suggestions. Because the more hypnotizable close their eyes more promptly and raise their arms higher and more rapidly, it is evident that there is no sharp distinction between response to "waking" suggestions and "hypnotic" suggestions.[18] Because of this lack of a sharp distinction, the issue as to the effectiveness of induction has become a source of mild controversy, although the resolution should be an empirical one, and not a matter of preference.

Responses to Waking Suggestion and to Suggestion After Induced Hypnosis

The studies addressed to this issue in the Stanford Laboratory have uniformly produced two conclusions. (1) Response to waking suggestions, that is, to suggestions given in the nonhypnotic state, are correlated with those given after the attempted induction of hypnosis. Hence hypnotic talent is reflected in waking suggestibility as well. (2) Response to suggestions is increased following a prior induction of hypnosis. The pertinent studies are those by Weitzenhoffer and Sjoberg (1961), Hilgard and Tart (1966), Tart and Hilgard (1966), Ruch, Morgan, and Hilgard (1973), Ruch, Morgan, and Hilgard (1974).

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18. The expression "waking" suggestions is a term of convenience to describe suggestions given prior to an induction. It does not imply that hypnosis is a "sleeping" condition, which it is not.

Self- or Autohypnosis. The type of study described does not exhaust the questions that can be asked about induction. An interesting set of questions arises over self-hypnosis. If induction is a result of rapport with an external hypnotist, how is selfhypnosis possible? One possibility is that selfhypnosis occurs only after a person has been hypnotized by someone else, hence has experienced heterohypnosis. Then selfhypnosis or autohypnosis may be thought of as a consequence of internalizing the hypnotist, perhaps hearing the hypnotist's voice giving the suggestions to become hypnotized. Another conception is that the selfhypnosis is a form of response to posthypnotic suggestion, in which the hypnotist has told the subject that when he or she engages in a certain routine the hypnotic condition will develop.

These conjectures, plausible as they are, are not necessary, for a person can hypnotize hemself, given only the most rudimentary instructions as to how to go about it (Ruch, 1975). In fact, there is some indication in this study that a person who has first attempted selfhypnosis becomes a more responsive subject with an external hypnotist present.

Expectation of Hypnosis. In one of the first studies from our laboratory, a test was made of the Braid effect, that is, the experience of staring at a small target until the eyes become tired, and close out of fatigue. Presumably the subject is then hypnotized. The study compared this effect with the consequences when the subject was informed that the staring at the target would produce hypnosis (Weitzenhoffer, Gough, and Landes, 1959). It was found that the visual fixation alone did not produce a hypnotic result; the result was found only when the subject expected to have something happen. Of course this does not deny the role of induction, for hypnotic induction represents a kind of contract between subject and hynotist that if certain procedures are followed hypnotic consequences will result. It is not all a matter of expectancy, or there would not be the large individual differences that are consistently found after attempted induction, despite the expectation of hypnosis.

Muscular Relaxation Not Essential. Relaxation is a common aspect of most conventional hypnotic inductions. Relaxation is encouraged by lying on a couch or sitting in a comfortably upholstered chair; movements are restricted, and the hypnotist, commonly in a monotonous tone, repeats suggestions of progressive relaxation. That these suggestions, conducive

to hypnosis, are not necessarily what they seem, and not essential, is indicated in two studies.

If muscular relaxation is essential, there ought to be a difference in hypnotic responsiveness when the subject is standing up, seated, or lying horizontally. Presumably the lying down position is most relaxing. When tested, however, no differences were found (Ruch and Morgan, 1971).

A more extreme test that relaxation was not necessary was provided by a study in which the usual suggestions of relaxation were all replaced by suggestions of alertness and effort (Banyai and Hilgard, 1976). The consequence for responsiveness to hypnotic suggestions was alike under alert and relaxation induction, in the sense that the two correlated highly, even though, as expected, some subjective differences were found.

Deep Hypnosis

As noted earlier, it is important to distinguish between hypnotic potential or hypnotic talent and the depth of hypnosis at any given time. One dramatic demonstration of this is the extreme depths of involvement that highly responsive subjects can achieve if encouraged to do so. One reason that scales of self-reported depth have to be kept open at the top (that is, not limited to scales with fixed upper points, such as a 0-10 scale) is that a scale which under usual practice of hypnosis seldom reaches more than 10 will under special conditions of depth hypnosis go as far as 100 or more. This was shown in one unpublished Stanford PhD. dissertation (Sherman, 1971). Beyond this there have been no formal studies from the Stanford laboratory, although exploratory studies have confirmed the general findings.

Chapter 4

BRAIN LATERALIZATION AND HYPNOTIZABILITY

Efforts to define the hypnotic condition physiologically have not proven successful. There are good reasons why this might be the case. Within hypnosis subjects can be largely passive and relaxed, or engaged in strenuous exercise. They may be experiencing little emotion, or may be emotionally aroused with pleasant moods or experiences, or unpleasant moods and experiences. Physiological indicators are more likely to reflect these behaviors and experiences than anything specific to hypnosis. In order to define hypnosis by its indicators it is necessary to characterize some condition as "heutral hypnosis," and this has not been successfully accomplished.

These strictures do not apply to hypnotic potential or talent, for there is no reason why the more hypnotizable person may not be distinguishable in some manner from the less hypnotizable. The previously described study indicating a possible genetic component to hypnotizability makes this all the more plausible.

A Correlation between EEG-Alpha and Hypnotizability?

An early possibility was that EEG-Alpha might correlate with measured hypnotic susceptibility. An experiment by Nowlis and Rhead (1968) supported the findings of others that there was a low positive correlation. Later studies did not universally replicate this finding, however. Instead, it appears that the correlation is related in some unexplained manner to subject self-selection. Only studies using volunteers have found the correlations, while studies based on selected subjects invited back for experiments have not found the correlations (Dumas, 1977).

However, the lack of such a general correlation does not preclude the use of EEG-Alpha to indicate some differences between high and low hypnotizables. For example, in his doctoral dissertation, Dumas (1976) showed that highly hypnotizable subjects were significantly less successful than low hypnotizables in biofeedback control of EEG-Alpha. A possible interpretation is that their ability to distort sensory information (e.g., positive and negative hallucinations), makes the feedback less effective for the highly hypnotizable.

Hypnotizability and Right Hemisphere Function

It turns out that a preference for right hemisphere function is the best lead at present for a positive correlation with hypnotizability (in right-handed persons). Our laboratory has contributed several studies in support of this conjecture. These began with a study of lateral conjugate eye movememts by Paul Bakan (1969), done while a sabbatical-leave visitor in the Laboratory. This was the first study of its kind done anywhere relating these responses to hypnotizability. The finding was that hypnotizability correlated positively with a tendency for right-handed subjects to move their eyes to the left when given mental problems to solve. There appeared to be some relationship to EEG -Alpha (Bakan and Svorad, 1969). Svorad was a visiting psychophysiologist from Czechoslovakia. The work on lateral eye movements was followed up later by Gur and Gur (1974), while they were postdoctoral visitors, with consonant findings.

It should be pointed out that the use of the right hemisphere in the highly hypnotizable may be a correlate of a preference to use that hemisphere in some situations, rather than having anything particularly to do with the degree of lateralization of the hemispheres. The argument cannot be entered into here.

Support for the relationship of right hemisphere function to hypnotizability has been found in a study of cognitive tasks by Helen Joan Crawford (Research Memorandum #144, 1976). Tasks similar to the Street Gestalt Completion Test[19] require the synthesis of separate fragments of a picture into a whole. Because analytic methods are inappropriate, this is a "right hemisphere" task. She found the ability to identify these pictures in fixed periods of allowed time correlated a significant .56 with measured hypnotizability.

There may still be some relationship between hypnotizability and lateralization of EEG-Alpha as a function of task, but not as a function of being hypnotized, although results are not conclusive (Morgan, McDonald, and Macdonald, 1971; Morgan, Macdonald and Hilgard, 1974; Dumas and Morgan, 1975).

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19. Street, R. F. A Gestalt completion test. Teachers College Contributions to Education, 1931, No. 481.

Chapter 5
PAIN AND HYPNOSIS

Analgesia to mild electrical shock on the hand had been included as one of the items on the Stanford Profile Scales (Form I, Item 1). We therefore had some indication that the ability to reduce pain would be correlated with hypnotic susceptibility, for the hand analgesia item loaded .60 on the negative hallucination factor of the profile scales. A more extended and better controlled study of the relationship between hypnotizability and pain reduction was undertaken in 1966, and continued for more than a decade.

Because the details have been published in a number of summary papers, chapters, and a book, in what follows the main studies will be listed by topic, with a minimum of substantive discussion.

Summary Reports

The major summary reports in journals are Hilgard (1969b)(1971d) (1975b), plus reports based on attendance at international meetings or participation in international symposia (Hilgard, 1969e, 1971e, 1972b, 1977c). Most of these latter reports include additional data analyses of studies published earlier.

A major review of the literature on the hypnotic reduction of pain, based largely on clinical findings, but reflecting the findings in our laboratory, was published as a book Hypnosis in the Relief of Pain (Hilgard and Hilgard, 1975).

Summary chapters on hypnosis and pain have been written upon invitation of the editors to be included in their multiauthor books, Hilgard (1978a), (1978b), Hilgard and Hilgard, (in press).

Methodological Studies

In order to proceed quantitatively it was necessary to find stimulation devices that would serve for repeated investigations, in which postsurgical pain might be simulated in the laboratory, and to develop and test appropriate measures of physiological accompaniments of these

suprathreshold pains, particular systolic blood pressure and heart rate. Furthermore, and probably most important, was the need to validate magnitude estimates of pain by the subjects on a numerical scale. These included studies in which circulating ice water was studied at precisely controlled temperatures of 0°, 5°, 10°, and 15° C, in order to compare the course of pain reports at these different temperatures with physiological changes over the same time.[20]

The methodological studies, in chronological order, were Voevodsky, Cooper, Morgan and Hilgard (1967), Lenox and Lange (1969), Sachs (1970), and Hilgard, Ruch, Lange, Lenox, Morgan, and Sachs (1974). Two later methodological problems were related to an issue that is discussed later -- the "hidden observer" in hypnotic analgesia -- but the references are included here because they also contain substantive material on the hypnotic reduction of pain in waking suggestion and in hypnosis (Hilgard, Hilgard, Macdonald, Morgan and Johnson, 1978; Hilgard, Macdonald, Morgan and Johnson, 1978).

Cold Pressor Pain and Its Hypnotic Reduction

Cold pressor pain, the pain of circulating ice water, was the original laboratory pain studied (Hilgard, 1967; Hilgard, Cooper, Lenox, Morgan, and Hilgard, 1967; Hilgard, 1969b; Morgan, Lezard, Prytulak, and Hilgard, 1970).

If the study is limited to the first 20 or 30 secs in which the hand and forearm are immersed in circulating ice water, the pain rises regularly according to a power function of time in the water. This is demonstrated when pain is plotted as the log of magnitude estimates against the log of time, for it then yields a straight-line function. The effect of hypnotic suggestion is to reduce the intercept on the pain axis, while the exponent of the power function remains essentially constant. This may be interpreted as if hypnotic analgesia were a kind of filter, reducing the pain by a common fraction throughout the time that it is mounting. The amount of

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20. The somewhat complex apparatus that was required to circulate an appreciable amount of water through the apparatus at these precise temperatures was built to a design prepared by John Voevodsky with the aid of a grant from the U. S. Air Force Office of Research (Contract AF 49/638 - 1436).

this reduction (that is, the size of the fraction) is a function of measured hypnotizability, yielding a correlation with hypnotizability of approximately .50.

Ischemic Pain and Its Hypnotic Reduction

When a muscle is deprived of blood, and then exercised for a short period, after the exercise stops the pain mounts slowly and reaches a maximum intensity several minutes later, sometimes as long as 20 minutes later. Cold pressor pain is to some extent an ischemic pain also, but our studies referred to as ischemic pain were conducted by occluding one arm above the elbow with a tourniquet, and then exercising the hand and forearm of the occluded arm by successive rhythmic squeezes of a dynamometer. This laboratory pain has some advantages over the cold pressor pain in that it is more like postsurgical pain, and, because it rises more slowly, allows more variations of conditions while the pain is mounting. The major studies have been those of Lenox (1970), and Knox, Morgan, and Hilgard (1974).

Except for the slower rise of ischemic pain than cold pressor pain, the results led to comparable generalizations. One disadvantage of the ischemic pain is that the rate of rise varies greatly from one subject to another in the normal waking condition, so that if a very high end-point is desired, different amounts of time are required, and, instead of measuring time in minutes, it is sometimes desirable to measure time of ischemia in fifths of time to some criterion (Lenox, 1970), Then the results can be averaged over subjects. However, there is ordinarily sufficient pain in 8 or 10 minutes that if less severe criteria of pain are acceptable, a simple time scale can be used as in the cold pressor test. The differences are primarily that cold pressor pain is measured in seconds, ischemic pain in minutes.

Because of peculiar fluctuations in felt pain after either the ice water or the tourniquet are long endured, it is not good practice to use pain tolerance (total time to demand for cessation), as a measure of pain. It is more a measure of heroism than of felt pain.

Physiological Concomitants of Pain and Reduced Pain

The physiological concomitants (blood pressure and heart rate) were studied by Hilgard (1967), Hilgard, Macdonald, Marshall, and Morgan (1974),

Hilgard, Morgan, Lange, Lenox, Macdonald, Marshall, and Sachs (1974), Goldstein and Hilgard (1975), with some literature summaries in Hilgard (1978b).

In general, physiological indicators of felt pain are unsatisfactory. They are too much influenced by anticipatory expectations, anxiety, and other subjective reactions that confuse the measurement of sensory pain. Under restricted and specified circumstances correlates of pain may of course be found. For example, in the cold pressor test, the rise in blood pressure associated with pain was correlated with the water temperature, just as the magnitude estimates were, but the verbal reports were more consistent and reliable.

Lenox (1970) appeared to find a reduction in blood pressure associated with hypnotic analgesia when compared with normal ischemic pain. However, later studies have shown so much anticipatory rise in blood pressure prior to the onset of pain (Hilgard, Macdonald, Marshall, and Morgan, 1974; Hilgard and Morgan, 1975), especially on the part of those whose hypnotic analgesia is successful, that there is reason to doubt the generalizability of Lenox's findings. A generalization that is better supported is that there is no consistent sign of physiological change associated with pain reduction through hypnosis, although the subjective reduction in pain is irrefutable.

Failure to Reverse Hypnotic Analgesia by Naloxone

An increasing interest in the role of endorphins (opiate-like substances produced within body) led to the possibility that endorphins might be activated in the hypnotic reduction of pain. In a carefully controlled study with three highly hypnotizable subjects, Goldstein and Hilgard (1975) demonstrated that naloxone, a morphine anatagonist (hence an endorphin antagonist), did not reverse hypnotic analgesia as measured either by the reduced sensory pain or the accompanying subjective distress.

Chapter 6

DISSOCIATION AND THE NEODISSOCIATION INTERPRETATION OF HYPNOSIS

In the latter part of the 19th Century, Pierre Janet in France proposed that hypnosis could be understood as a form of dissociation of the personality. The word dissociation implied that it was a condition opposite to association, because things were kept apart rather than related together. This interpretation was popular for a time, particular in reference to multiple personalities, but it went out of vogue, except in its occasional descriptive use. However, there are so many phenomena of hypnosis that fit a characterization as dissociative, that the term has been reintroduced and defended (Hilgard, 1973a, 1973b, 1974b, 1976, 1977). In reexamining the term it is not necessary to return entirely to Janet's conceptions. For example, he believed hypnosis to be limited to hysterics, a view no longer held. Hence I have preferred the expression neodissociation interpretation, to indicate that it is a fresh look at phenomena, many of which have been long familiar, without any strong reliance on past theories.

Hypnotic Phenomena as Dissociative

Given a broad enough interpretation of dissociation as implying a loss of familiar associations, both of sensory systems and of motor control systems, most phenomena of hypnosis can be described as dissociative. If this were merely a change in vocabularly, it would be uninteresting. However, by viewing hypnotic events as dissociative, if some common properties of general psychological interest are discovered, with their own lawful characteristics, then the change is not trivial.

Motor phenomena. The shift from voluntary to involuntary control in hypnosis, and the loss of voluntary control, are perhaps the most familiar of hypnotic performances. These shifts in control can be viewed as a dissociation of the usual control systems. Our studies directed to these phenomena, in addition to their inclusion in the Stanford Hypnotic Susceptibility Scales, include Hilgard (1963), Slotnick, Liebert, and Hilgard (1965), Slotnick and London (1965). In addition there was one unpublished Master's thesis (McCleave, 1968) and one research memorandum (Mulligan, Research Memorandum #90, 1968).

Much remains to be done in the control of movement as a research area, particularly as modified voluntary-involuntary controls are viewed as aspects of dissociation.

Posthypnotic amnesia. Responsiveness to suggested posthypnotic amnesia for what happened during hypnosis is such a prominent feature of hypnosis that it is almost a defining phenomenon, as indeed it once was when a somnambulist was defined as a person who had spontaneous posthypnotic amnesia. The usual memory retrieval processes are set aside ("dissociated") and the person is unable to remember what just happened. The memory has not been lost, for amnesia can be reversed according to a prearranged signal, so that storage is not seriously interfered with.

The studies from the Laboratory devoted to amnesia include Hilgard and Hommel (1961), Clemes (1964), Hilgard and Cooper (1965), Cooper (1966), Hilgard (1966), Kihlstrom (in press). The relationship between amnesia induced by thiopental and that induced by hypnosis was studied by Osborn, Bunker, Cooper, Frank, and Hilgard (1967), with the finding of only moderate recovery from the physiologically induced amnesia by hypnotic techniques. Graham and Patton (1968) showed that learned material for which the subject is amnesic still operates to produce retroactive interference with recall in the same manner as openly learned and remembered intervening learning does. Hence, concordant with other evidence, unavailable memories may still show signs of interaction with other cognitive processes not involved in the dissociation.

Age regression. Hypnotic age regression, in which the hypnotized person returns to some degree to an earlier experience, and relives it, often with great vividness, illustrates dissociation in a number of ways. One is, of course, the recovery of unavailable memories, shared with amnesia. Another is the common experience of the presence at once, or in alternation, of the adult personality and the child personality. In one form of age regression the person is told to view a childhood scene as a (hallucinated) motion picture, say of an early birthday party. Because the scene is viewed as an adult, to the extent that the experience is a valid regression there is clearly dissociation between the childhood memories projected on the screen, and the experiencing adult.

Although evidences for age regression are included in the hypnotizability scales, and in occasional case studies (e.g., Ås, 1962c), only one thorough study was conducted to establish some of its paramenters.

This was an unpublished doctoral dissertation by Suzanne Troffer (Banford) (1965), of which the only available document, other than the dissertation, is a research memorandum (Troffer, Research Memorandum #39, 1965). Another investigation refuted exaggerated claims for the accuracy of recall in age regression (Cooper and Morgan, Research Memorandum #44, 1966).

In other instances age regression was used in connection with studies designed for other purposes, as in a study of implanted personality conflicts in an unpublished doctoral dissertation by Charles Imm (1965), reported briefly in a research memorandum (Imm, Research Memorandum #31, 1964). Suzanne Larsen (Horowitz) used age regression in her doctoral study of phobias (1965), later published (Horowitz, 1970).

Dreams and Sleep. Dreams are not always thought of as dissociated phenomena, because the dream is remembered as a conscious experience. However, when it is kept in mind that control processes can be dissociated, dreams do qualify, because the person himself or herself is the playwright and the director of the drama that unfolds in the dream. It is this "dream work" that resulted in the dream that is indeed cognitive activity that goes on out of awareness. Because dreams can readily be produced within hypnosis, additional studies could fruitfully be addressed to the recovery of the "dream work" more directly, and not only by inference.

The work on dreams in the laboratory was not guided by the dissociation interpretation, but it provides a background for further investigations. The first reports were by Charles Tart, based primarily on work done before coming to Stanford (Tart, 1964a, 1964b, 1964c, 1965, 1966a). His later report (Tart, 1966b) was based on Stanford data. A content analysis of hypnotic dreams compared with night dreams was reported by Hilgard and Nowlis (1972). Related work was reported in several laboratory memoranda (Osborn, Research Memorandum #10, 1963; Tart, Research Memoranda #22, 1963; #29, 1964; #42, 1965; #43, 1965).

Several studies bear on the relationship between hypnosis and sleep, including the possibility of learning during sleep (Kratochvil, 1970a; Cooper and Hoskovec, 1972, Kratochvil and Macdonald, 1972).

Automatic writing; doing two things at once. Another clear indication of what is meant by dissociation is provided by automatic writing within hypnosis. The person is told that he or she will be unaware of the hand and arm, or what they are doing. This is often done posthypnotically,

that is, the hand and arm, of which the subject is not aware will start to perform a task after the subject is no longer in hypnosis. The task may be to write a letter, or to perform some simple arithmetic. At the same time, the person is engaged in some conscious task, such as reading a book aloud, or naming colors presented on a chart. The dissociation is evidenced by the subjective report that there has been no awareness of what the "subconscious" performance was, and surprise is expressed when the writing is shown to the subject after the experiment is over. Two experiments dealt with this problem, Knox, Crutchfield, and Hilgard (1975) and Stevenson (1976). The conflicting tasks were arithmetic and color naming in the Stevenson experiment (which was done first, although reported second), and a pattern of key-pressing and color naming in the Knox and others experiment. Both were successful in demonstrating automatic writing under these circumstances (or the automatic key-pressing as an equivalent). Both found that there was interference between the tasks. That is, both color naming (as the conscious task), and the arithmetic or key-pressing (as the subconscious task) suffered interference when done simultaneously, even though the subject was unaware of the subconscious task. This is not surprising, in view of the earlier demonstration that amnesic material in a memory experiment also interferes with conscious memory performances.

These illustrations of motor phenomena, posthypnotic amnesia, age regression, dreams, and automatic writing suffice to indicate the relevance of hypnosis to a study of dissociation.

Hidden Observer Studies

The dissociation studies entered a new phase with the discovery that by a special procedure some access could be had to otherwise dissociated experiences. This came about originally in an investigation of hypnotic deafness, in which it was found that the hypnotically deaf subject, when questioned by a method described as automatic talking (by analogy with automatic writing) could report what happened, including what had been said, during the period of hypnotic deafness (Hilgard, 1973b, 1974b). The metaphor of a hidden observer was proposed as a way of describing the cognitive apparatus that was recording experiences of which the subject was unaware at a time, in a form that could later be recovered.

Because the studies of automatic writing had been going on at the time, it was a simple matter to adapt them to the study of pain, to

determine to what extent the subject, analgesic within hypnosis, at some level was experiencing the pain. It turned out that pain at a hidden level could be reported by some (but not all) successful pain reducers. The pain usually was somewhat below that normally experienced, but well above the pain reported in hypnotic analgesia. Furthermore, the reports were more cognitive, that is, a report of the sensory aspect of pain, and less affective, less troubled by the pain.

The cold pressor pain was first studied, in the reports already cited, and in greater quantitative detail in Hilgard, Morgan, and Macdonald (1975). Two later control studies compared the results of genuinely hypnotizable subjects with subjects low in hypnotizability who were instructed to simulate hypnosis. The experimenter was blind to the group to which the subject belonged (Hilgard, Hilgard, Macdonald, Morgan, and Johnson, 1978; Hilgard, Macdonald, Morgan, and Johnson, 1978). The findings were that simulators were very successful in imitating the overt responses of hypnotizable subjects, but an "honesty inquiry" by a third party showed conclusively that the experiences of the "reals" were very different from those of the simulators.

A companion study to the original cold pressor investigation was carried out with ischemic pain by Knox, Morgan, and Hilgard (1974). The hidden observer was demonstrated there as well, but not for all subjects.

The method has since been extended to the study of hypnotic deafness by Crawford, Macdonald, and Hilgard (1979).

There are a number of theoretical implications of the discovery of the hidden observer and the circumstances of its appearance. These have been explored in several theoretical papers, making use of the experimental findings as starting points. In addition to the papers already cited these include Hilgard (1976), (1977d), (1979, in press) and a book, Divided consciousness: Multiple controls in human thought and action (Hilgard, 1977a).

Chapter 7
PSYCHODYNAMICS AND CLINICAL APPLICATIONS

Through the years the laboratory lacked any continuing relationship to a clinic, so that those who wished to offer themselves as patients for hypnotherapy were usually referred elsewhere. In the final years, however, there was a clinical investigation of the reduction of anxiety and pain of children with cancer, carried on in hospital settings.[21] Earlier, however, a number of studies of clinical relevance were conducted.

Clemes (1964) compared repression and amnesia in a study designed to test whether partial amnesia for a list of memorized words would select as its targets words that were emotionally troublesome to the subject. The results confirmed the hypothesis, thus indicating at least a conceptual overlap between amnesia and repression. Imm, in his dissertation (1965; Research Memorandum #31, 1964), studied repression by suggesting conflicts over sex and aggression within an age regression paradigm, and then studying the influence of these conflicts on the distorted representation of the experiences in dreams. The results gave some support to the psychoanalytic theory of dream symbolism as self-deceptive, particularly in the area of sexual conflicts.

Two doctoral dissertations addressed the problem of therapy of phobias, Larsen (Horowitz)(1965) and Schubot (1966). Only the first of these was published (Horowitz, 1970). Horowitz found that in the desensitization to earlier experiences there was a therapeutic advantage if the subject recalled the early experience without emotion (that is, keeping a distance from it), rather than reliving the experience with revival of the original emotion. Schubot studied the advantage of hypnosis over simple relaxation therapy. A third, somewhat related unpublished dissertation study demonstrated the usefulness of hypnosis in reducing public speaking

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21. Some of the measurement aspects were supported by this grant, but the major costs of the clinical study were supported by a grant from the National Cancer Institute, Grant CA 18325.

anxiety (Sanders, 1967).

The study of children with cancer provided an illustration that what was learned in the laboratory could be applied in practice. The children suffered primarily from leukemia, treated by procedures causing a good deal of anxiety and pain. Two of the laboratory findings were demonstrated: first, that hypnotizability can be measured in children who are ill, as well as in normal children; second, that the success of pain reduction in the clinic is correlated with measured hypnotizability, as it is in the laboratory. Many ancillary problems, other than those of pain, met with in these children (anxiety, nausea, sleeplessness) were also found to be amenable to hypnotic treatment (J. R. Hilgard, 1979a; J. R. Hilgard and Morgan, 1979).

An important observation was that many children, little hypnotizable, found some relief through the relaxation that hypnotic procedures produced. This result may be responsible for the illusion shared by many practicing hypnotists that all children are hypnotizable. It is believed that relaxation could have been induced by nonhypnotic methods with equally good results. For the highly hypnotizable, something else is added, for they can reduce the felt pain beyond the pain reduction achieved through relaxation alone.

The Stanford Hypnotic Clinical Scales, to which reference was previously made, have utility in clinical practice beyond the measurement of hypnotic potential. They permit a sampling of special hypnotic abilities useful in treatment, abilities such as age regression, dreaming within hypnosis, and amnesia. A wise therapist using hypnosis will capitalize on those experiences within hypnosis that the patient finds congenial and real.

Chapter 8

CONTRIBUTIONS OF HYPNOSIS RESEARCH TO GENERAL PSYCHOLOGY

It is a mistake to think of hypnosis as belonging only to abnormal psychology, and of research in hypnosis contributing only to an understanding of hypnosis. The understanding of consciousness, of voluntary and involuntary action, of control systems affecting sensory, affective, and motor processes, of reality distortion in perception -- these are all problems that belong to a complete psychology, independent of hypnosis, but to the resolution of which hypnosis contributes. In addition, hypnosis provides a methodolgy useful in studying many problems not originating through the investigator's interest in hypnosis.

The Laboratory of Hypnosis Research did not set out to explore this role of hypnosis systematically, but as the research progressed the evidence of this usefulness became clearer. To some extent all the information about hypnosis makes a contribution to the understanding of psychological problems. Some of the work, such as the construction of convenient measurement scales, is closely related both to the technology of hypnosis and to the study of the personality and physiological correlates of hypnotizability. It may be pointed out that the new dimension of self-rated personality, described as absorption by Tellegen and Atkinson, goes beyond hypnosis, although it was discovered in the context of hypnosis(J. R. Hilgard, 1979b). Some of the correlates of brain laterality including a distinction between lateralization and preference for hemispheric specific tasks, have been demonstrated by way of hypnotic research.

In what follows some of the studies, not related to the larger topics treated in Chapters 2 to 6, are cited as they bear on problems of perception, learning, and a few other topics of concern to the cognitive experimental psychologist.

Registration without Perception

The later studies of the hidden observer were preceded in the early years of the laboratory by several studies bearing on the problem commonly called subliminal perception, in which there is evidence of registration of presented stimuli even though they (or some features) have not been

fully perceived. The word subliminal is somewhat unfortunate, because the stimulus need not be subliminal in any physiological sense in order to be unperceived through inattention or other causes. However, the usual practice has been to give brief exposure in a tachistoscope, followed by a report of what is perceived. If the perception is minimal or grossly inaccurate, later "recovery" methods are used to see if there are some conscious cognitive residues. Some early work along these lines was described by Hilgard (1958)(1962), with the general hypothesis that unperceived material persisted in poorly processed form as vague information until it attached itself to some cognitive structure. The distortion that incorporated the material was not necessarily a disguise. These processes are familiar in what was formally called preperception, in which someone unfamiliar looks like someone familiar when that later someone is expected. The incorporation of day-residues in dreams that are differently motivated is an illustration from psychoanalytic interpretation. Studies by Giddan (1966)(1967) and Strassburger (1966) were based on some of these aspects whereby briefly exposed stimuli were assimilated to expectations or subjective biases. Later studies by Landes (Research Memorandum #124, 1971), and Morgan (Research Memorandum #111, 1970) used the paradigm of backward masking to conceal an A-stimulus that was incongruent with a B-stimulus. What both found was that the recognition of the A-stimulus was enhanced when the A-stimulus was congruent with the B-stimulus. Although there were some technical difficulties with the studies, the direction of inquiry appears to be a useful one.

Attention and Cognitive Control Tests

Concentration of attention is often thought to characterize hypnosis. The evidence has not been as clear as might be expected, in part because the extensive relaxation induced by hypnosis may in some preclude sustained attention. The only study devoted specifically to attention in the laboratory was a dissertation by Mary Roberts (1964), prepared later as a research memorandum (#131, 1972). The sustained attention tests that she employed (number ordering, letter and number ordering, crossing out 2's and 5's, and crossing out 3's and 7's)all failed to correlate with hypnotizability.

Cognitive control tests included the rod-and-frame test, a perceptual isolation test, and a perceptual reversals test. The only significant

correlation was that between the rod-and-frame test and hypnotizability, a positive relationship between hypnotizability and field independence for female subjects.

Morgan (1972) further explored cognitive styles in relation to hypnotizability. She followed up on Roberts' study of field dependence-independence, and added leveling-sharpening, repression-sensitization, and augmentation-reduction. The only positive correlations with hypnosis replicated Roberts' finding of a positive relationship between field independence and hypnotizability whether measured by the rod-and-frame test or the embedded figures test. Except for the field dependence-independence tests, the other cognitive style measures did not correlate significantly with each other or with hypnotizability. Crawford (Research Memorandum #144, 1976) included some cognitive abilities in her laterality study.

Imagination and Imagery

Some of this work has been previously cited in connection with imaginative involvements and hypnotizability. However, some later studies were devoted in part to the validation of Marks' Vividnesses of Imagery Questionnaire (Gur and Hilgard, 1975; 't Hoen, 1978; Crawford, Research Memorandum #157, 1978). Crawford also found some relationships between self-reported daydreaming styles and hypnotizability (Crawford, Research Memorandum #152, 1978).

Illusions and Hallucinations, including Conditioned Hallucinations

Illusion and hallucination overlap, because an illusion is a misinterpretation of an otherwise adequate sensory presentation, as when, because of context, circles of equal size are seen as of unequal size. A hallucination is commonly thought of as a perception-like experience in the absence of appropriate sensory presentation, but what if the sensory input is minimal, as when the alcoholic is influenced to see snakes by the distended blood-vessels of his eyes? The context that provides distortion in illusion is usually present in the stimulus (as in the arrow-heads of the Müller-Lyer illusion), while in hallucination subjectivity plays a larger part in determining the context that leads to distortion.

Graham (1969) used an illusion to prove the validity of hypnotic hallucination. He produced by hypnotic suggestion the visual hallucination

of two gray circles mounted on white cardboard. When now the card was divided so that one of the hallucinated circles was seen against a black background, the other against a white background, the usual contrast was reported, the circle against the black lighter than the one against the white. The influence of hypnosis on the Zöllner illusion, which distorts the parallelism of lines when these are superimposed against a background of slanted lines, was tested by Weitzenhoffer and Moore (1960). They found, in a preliminary study, that the negative hallucination of the background (seeing the background card as white) destroyed the illusion. Because this contradicts other findings, the results require replication.

In the study by Graham, cited above, the method of conditioned hallucination was used, as introduced to our laboratory during a visit by Dr. Gosaku Naruse from Japan. According to this method, the perceived circles of gray were observed while a buzzer was sounding, and later when the buzzer was sounded the circles would appear against the background as hallucinations. The hallucination can be achieved posthypnotically. Two studies were devoted to discovering parameters for conditioned hallucinations (Conant, Research Memorandum #34, 1964; Reuter, Research Memorandum #52, 1966). There was no difficulty in producing conditioned hallucinations by Naruse's method, but the detailed relationships to the number of reinforced presentations and to the number of nonreinforced presentations seemed somewhat unstable. A notable feature is that once the unreinforced presentations begin there is a kind of recruitment, with the best hallucinations coming after several trials. This differs from the expectation of progressive extinction with nonreinforcement.

The accuracy with which eye movements correspond to those in perception of a moving target when the moving target is hallucinated was studied by Graham (1970) and Lenox, Lange, and Graham (1970). While the eye movements of the hallucinated target simulate those of perception they differ in detail, and are not accurate pursuit movements.

Time Distortion

Another frequent claim for hypnosis is that subjective time can be distorted. The first experiment from the laboratory was that of Weitzenhoffer (1964). He showed that a new time reference could be obtained under hypnosis by suggested misinterpretation of the rate at which a metronome was beating. When the metronome was turned off, restoration of the normal

time frame took some minutes. Stevenson (Research Memorandum #126, 1971) showed that, with practice, highly hypnotizable subjects, when hypnotized, reported that they could see the whole of a 2-hour motion picture in one minute. After this practice, they were taught to distort the perception of a beating metronome, as in Weitzenhoffer's study. For example, when a metronome beating at one second between beats was said to be beating at 5 seconds, it took two or three minutes for the subject to be satisfied that this was true. Then told that the metronome would continue at this rate, the subject was presented with clicks two seconds apart and asked to judge their interval. The interval was reported as 10 to 15 seconds. A tachistoscopic recognition test was then used, consisting of three random consonants. The initial exposure was at 20 msec, increased periodically by 2 msec until all three letters were recognized. The hypnotic condition, with appropriate time distortion, appeared to improve the performance by about 4 msec, nothing approximating the 5:1 time distortion ratio. Later studies involving time estimation and time distortion are those by Bowers, Research Memorandum #150, 1978; St. Jean, Research Memorandum #156, 1978; Bowers and Quan, Research Memorandum #158, 1978.

Memory

Amnesia was earlier discussed as a component of hypnosis, but the findings bear also upon memory as studied in the context of information processing. The familiar paradigms of retroactive inhibition and proactive inhibition have both been studied with amnesia for the interfering material, the former by Graham and Patton (1968), the latter by Thomas (Research Memorandum #159, 1978). Thomas' work represented an attempt to teach the interfering material to the "hidden observer," where it might be lost to the waking part. The interference, as in the Graham and Patton experiment, persisted despite the subjective feelings that the two learnings were more separate.

Arthur Yablonky, who had been familiar with Gerald Blum's work at Michigan, summarized Blum's methods in Research Memorandum #81, 1968. He then proceeded to demonstrate that Blum's theory that cognitive arousal early in the course of learning would improve the subsequent retention scores for the single subject studied, whereas the use of arousal cues late in the process had no such effect (Yablonky, Research Memorandum #82, 1968). Yablonky died tragically by drowning before he was able to carry on this work which started with great promise.

Another approach was adopted much later by Kihlstrom (Research Memorandum #153, 1978). In an experiment on what happens to the words of a learned list for which the subject has become hypnotically amnesic, two contrasting findings bear importantly on Tulving's distinction between semantic and episodic memory. The episodic component of memory is represented by the long prior learning associated with the words, as revealed in word association tests. Those most hypnotizable had the most profound amnesias, and demonstrated a breakdown of episodic memory by not recalling the words just learned. However, the amnesia did not interfere with normal word associations when the words were presented while the list was still amnesic. Hence the hypnotic amnesia had not affected the semantic memory. Following the word association procedure amnesia was somewhat weakened, but scarcely at all for the very highly hypnotizable. When amnesia was reversed by a prearranged signal, all subjects scored essentially alike, so that the interference was not with memory storage.

In another experiment on memory, Monteiro and Bower (Research Memorandum #155, 1979) showed that a hypnotically induced mood could affect learning and retention by favoring the recall of material consonant with the mood selected by the hypnotized subject from a story providing alternate material.

Linguistic Analysis

Despite the contention that much of hypnotizability is associated with the right, non-verbal hemisphere, the power of words represented within hypnosis makes many interpretations incomplete. Of course words may evoke images, but the fact that a prearranged verbal signal may reinstate the hypnotic condition very promptly is a fact to be recognized in hypnotic theorizing. We had hoped to move closer to this problem, but it is in fact left for later investigators to pursue.

A preliminary analysis was made by Prytulak (Research Memorandum #112, 1970). He proposed six hypotheses to account for the probability of a successful response to the hypnotic commands in the Stanford Hypnotic Susceptibility Scale, Form A, and tested the 'power' of the commands in a simple nonhypnotic button-pressing experiment. For example, when conflicting commands are given, the added word "Now" tends to favor the performance of the last-mentioned command, even though a previous command was being executed. His line of approach appeared promising, but other major commitments at the time led to a failure to follow up his leads.

A related study was performed and reported by Morgan (Research Memorandum #120, 1971). She gave several different prior instructions to subjects before offering some suggestions. In none of the conditions was any typical induction of hypnosis employed, except for a very brief version in the final condition. Each instructional set represented the semantic component in different theories about hypnosis. The first set, in essence, was "I'd like you to listen to my words, decide what it is that I want you to do, and then try to do it." The second was "Try to feel like a hypnotized person, and it will be easy to respond as a hypnotized person does." The third (abbreviated): "This time we will be measuring your response to suggestion -- your degree of waking suggestibility." The fourth was: "If you really try, you can easily imagine the things I suggest to you. I want you to try your best to do what I suggest." The final set resembled a very brief hypnotic induction "Relax completely. You will find that if you let yourself go and relax completely, you can easily experience a state of hypnosis. Now close your eyes, relax completely, and drift easily into hypnosis." What she found was, first of all, that when the subjects were later hypnotized, the more hypnotizable had uniformly responded at a higher rate than the less hypnotizable, whatever the instructional condition. All of the sets produced a higher level of response than the last set, which was most characteristic of hypnosis, and distinguished most sharply between the more highly and less highly hypnotizable. Although this at first seems counter-intuitive, it is plausible if it is recognized that there is less demand for compliance in the hypnotic version than in any of the others. In other words, there is more to hypnosis than the semantics of commands, even though commands have significant semantic differences.

Creativity

In her interview studies, Josephine Hilgard (1970) noted that a serious interest in creative activities "such as painting, writing, designing, and the like" was positively associated with hypnotizability. More recently, Patricia Bowers (Research Memorandum #151, 1978) reported on her prior work, including calling attention to effortlessness in creativity as related to hypnotizability. She also conducted a small study with creative writers. The more hypnotizable ones who were willing to do some of the writing on their fiction while hypnotized reported

that while hypnotized they felt much as they did when doing their best work. Absorption in the work was particularly marked, and the new ideas or the development of older ones proceeded easily, even in a psychological laboratory.

Additional Physiological Studies

The physiological studies were not limited to the accompaniments of pain, or to brain lateralization, as previously discussed.

One study on the effects of drugs, conducted as a doctoral dissertation by Sjoberg, was reported by Sjoberg and Hollister (1965). The gain between waking suggestion and hypnosis was about the same as that which Weitzenhoffer and Sjoberg (1961) had shown. Two drugs (mescaline and LSD-25) produced about the same increase in suggestibility that hypnotic induction had done. Psilocybin has no appreciable effect on suggestibility. Combinations of drugs had no more effect than that of the stronger component alone.

Several efforts to control heart rate by suggestion led to confusing results (Gilula, Research Memorandum #58, 1966; Hilgard and Boucher, Research Memorandum #59, 1967; Marshall, Research Memorandum #113, 1970).

A study of attempted modification of skin reaction led to essentially negative results (Beahrs, Harris, and Hilgard (1970).

Greater success was shown in the unilateral control of skin temperature (Zimbardo, Maslach, and Marshall, 1972; Roberts, Kewman, and Macdonald, 1973). The specific contribution of hypnosis versus biofeedback is difficult to differentiate in these studies.

Theoretical Discussions and Literature Reviews

The theoretical issues that gave rise to many of the experiments conducted within the laboratory cannot be discussed very well in a report of this kind, which, because of the large amount of material originating in the laboratory, forbids the citation of relevant studies on the same topics by others, in agreement or in contradiction to our findings. This does not mean that the laboratory has avoided controversial issues. Rather than go into the issues here, a brief summarization will be attempted of the main reviews and theoretical discussions bearing on issues beyond the special topics investigated.

The earliest theoretical discussions from the laboratory were those by Weitzenhoffer (1960a, 1960b, 1960e, 1962a, 1962b, 1963a, 1963b, 1963c). The later ones were primarily by E. R. Hilgard, in collaboration with others, and, even when published by him as a single author, he was of course deeply indebted to other members of the laboratory.

Some of the first of the theoretical papers and chapters reflected an initial interest in using hypnosis to study psychodynamic problems, as reflected in the relationship between amnesia and repression, the distinction between primary and secondary processes in thought, the motivational relevance of hypnosis, and problems of unconscious perception (Hilgard, 1958, 1961, 1962b, 1962c, 1964b).

Attention became directed to more general theories bearing on hypnosis itself, beginning with the developmental-interactive model, which gave the research grant its title (J. R. Hilgard, and E. R. Hilgard, 1962). The plausibility of the approach was there based on a series of case reports. The developmental-interactive viewpoint was later formalized in a series of propositions in the first book from the laboratory (Hilgard, 1965). Additional evidence on the developmental-interactive model and its interpretation was given by E. R. Hilgard (1971a), and by J.R. Hilgard (1972).

After more data were gathered, and some conceptual controversies had developed, the issue of states of awareness or altered states of consciousness became addressed more directly (Hilgard, 1969a). The importance of imaginative involvements was more fully represented in the book by J. R. Hilgard (1970, revised 1979), and the pain studies were integrated with physiological knowledge about pain and with clinical findings in the book on pain (Hilgard and Hilgard, 1975). Because of the manner in which some critics of the state concept of hypnosis were confusing the nonparticipating readers, attempts to clarify the points of controversy and to adjudicate the issues followed (Hilgard, 1971b, 1971e, 1973c).

Finally, the hidden observer phenomenon led to proposing the re-examination of dissociation theory from a neodissociation viewpoint (Hilgard, 1973b, 1974b, 1976, and the book, 1977a). The book stressed the integration of hypnotic findings into cognitive psychology. It made use of the hidden observer data as a demonstration of parallel processing as contrasted with serial (or intermittent) processing.

Two major literature reviews covering the current literature of hypnosis appeared in the Annual Review of Psychology, each covering a 10-year period (Hilgard, 1965a, 1975a). The contribution of hypnosis to a return of the interest in consciousness in contemporary psychology is to appear as part of a more general review of the history of consciousness in the Annual Review of Psychology (Hilgard, 1980).

Conclusion

Many of the studies in this chapter have explored new directions in which serious and continued exploration did not prove possible in a small laboratory with a limited number of workers. The reports indicate, however, that hypnosis is likely to prove a useful adjunct to the psychological laboratory, and, if kept in competent hands, will make its contribution to the advancement of psychology generally.

Chapter 9
PROBLEMS WITHIN HYPNOSIS RESEARCH

Now that most of the studies from the laboratory have been accounted for, there are still a few more that deserve mention because of their bearing on hypnosis research -- its hazards, if any, and some biases that have to be avoided.

Are There Any Hazards in Hypnosis Research?

Because of the unfamiliarity with hypnosis, and the exaggerations in some of its fictional portrayals, those who might be interested in hypnosis research on intellectual grounds are sometimes frightened by it. Timidity about entering upon hypnosis research may arise because of the assumption that it takes special qualities of voice, appearance, and manner to become a skilled hypnotist. Studies of the results obtained in our laboratory by people most diverse in nationality, color, size, voice and manner have shown very little of the measured effects as owing to the qualities of the hypnotist, providing that he or she is known to be sponsored by a reputable educational institution. The clearest evidence is that the sex of the hypnotist is unimportant, and produces no sex differences in hypnotizability scores. Only one hypnotist of each sex was used in the study Weitzenhoffer and Weitzenhoffer (1958) but a large number of hypnotists were involved in a later study, with comparable findings (Cooper, Research Memorandum #35, 1965). Differences in hypnotizability reside far more in the subject than in the hypnotist.

A second source of timidity is the fear of a technique that is reality distorting, and might therefore in some way injure a subject with a somewhat fragile hold on reality. This source of uneasiness is not to be dismissed lightly, for hypnosis should be kept in professional hands, when it is essentially as safe as any other form of psychological experimentation. The numbers of students and others with whom hypnosis has been attempted in our laboratory (and in large group demonstrations in psychology classes at Stanford) approaches 15,000, and we have had no serious problems. At the same time, there have been minor after-effects of hypnosis, and three studies have been devoted to such sequelae.

The first of these was reported by J. R. Hilgard, E. R. Hilgard, and Newman (1961). In our first 1,000 subjects, not more than 4 or 5 cases showed emotional disturbance during the induction period. One sobbed audibly during induction, but cleared up and there was no explanation of what happened. Another had a panic reaction, which disappeared when he was aroused from hypnosis. Subsequent interviewing brought out the association that he felt "cornered" by the hypnotist in a redintegration of childhood experiences in which his parents "cornered" him and beat him. In another case a disturbing hallucination occurred, which was related through association to a hypodermic syringe which had been employed at the age of thirteen in relation to a leg fracture. There were mild symptoms in response to specific suggestions within hypnosis that followed the induction, such as age regression or a dream within hypnosis. Following hypnosis there were occasionally some mild changes that endured for a time, such as fatigue, or feelings of unreality. None of these persisted. We made it a practice of inviting subjects to come back to the laboratory to report any interesting or untoward experiences that they attributed to hypnosis. Many of the sequelae were related to experiences with chemical anesthesia in childhood.

A study along the same lines was repeated later (J. R. Hilgard, 1974). In interviews with a representative sample of 120 university students who had been tested with SHSS:C, it was found that 15% had a mild reaction of some sort that endured an hour or longer following the hypnotic session. A number more had briefer experiences outlasting the session. Many of the persistent reactions had begun within the hypnotic session, such as headaches, anxiety, or confusion. Despite the suggestion within the scale that the subject when dehypnotized will feel refreshed, of those who reported no sequelae, 30 percent did not feel refreshed by the experience. These results suggest that care should always be exercised in the termination of a hypnotic session to ascertain that the subject is not prolonging the experience in an undesirable way. Of course, most subjects enjoy the experience, and some of them prolong the good feelings engendered within hypnosis.

In order to discover proper advice to give inexperienced hypnotists regarding the termination of hypnosis, a study was performed in which special procedures were followed <u>after</u> the time that the subject would ordinarily be dismissed from the laboratory (J. R. Hilgard, Crawford,

and Macdonald, in preparation). Exercises involving large muscles were included in order to overcome the effects of prolonged quiescence during the hypnosis session. These were given to half the subjects, while the others were dismissed as usual, so that the effectiveness of the supplement could be studied through interviews with all of them. The supplementary procedures were not uniformly successful in overcoming some perseveration of things that happened within hypnosis. One finding of some importance was that the two most used Stanford scales, SHSS:A and SHSS:C, differed in the number of sequelae. SHSS:A was, in fact, designed for use in laboratory experiments by beginners, and depended heavily on motor items. SHSS:C was designed as a more advanced scale, requiring more acquaintance with the psychology of personality by its users, because it included items such as age regression, hallucination, and hypnotic dreaming, in which the person is more likely to become involved in personal experiences. The types of items in Form C produced clearly more sequelae than those in Form A, validating the intuition of those who constructed the scales in the first place.

In a clinical setting sequelae to hypnosis will ordinarily be self-correcting, because the patient is typically seen more than once. In a laboratory setting, the appropriate arrangement is for the hypnotist-experimenter to be alert to the importance of the termination of the experience, and not to permit the subject to leave unless confident that normal alertness and reality orientation have been satisfactorily restored. It is a wise precaution to add a communication that the hypnotist-experimenter is interested in any reflections upon the hypnotic experience that may occur to the subject after leaving the laboratory session. Under these circumstances, the experience with thousands of subjects has indicated that difficulties are minimal.

Biases To Be Guarded Against

Two forms of bias have been noted in the studies conducted in the laboratory. The first is a bias owing to subject selection. It is generally convenient in psychological laboratories in colleges and universities to use experiments to acquaint students with the substantive phenomena and with experimental methods, so that a large fraction of the subjects commonly comes from introductory psychology classes. Nyberg (Research Memorandum #51, 1966) studied the composition of the introductory psychology

class ("Psychology 1") to determine how representative it was of Stanford students in general. The findings may be summarized briefly. Psychology students were slightly higher, but not significantly so, on mean grade point average, although significantly more of them made the dean's list as a sub-group of high achievers. Natural and social sciences (including engineering) are better represented (significantly so) in the psychology class than humanities, history, and political science majors. On the California Personality Inventory the female students who took psychology showed a slightly higher degree of socialization but a significantly lower capacity for status, social presence, achievement via independence, and flexibility. However, because such scale values do not correlate with hypnotizability any meaning for hypnosis research is somewhat ambiguous.

Because subjects are selected from Psychology 1 does not mean that they necessarily constitute a representative sample of the class, so that a second selection bias may occur. This has been reasonably overcome by having a group test, such as HGSHS:A, given to the entire class before selecting subsamples for experiments. In some cases, however, after class requirements have been met, subjects have been asked to volunteer for further experiments, with a small stipend for the participation. In that case it was found in an early study (Boucher and Hilgard, 1962) that those who volunteered tended to have a mean hypnotizability above those called "coerced volunteers" because they were fulfilling class requirements by participating. Cooper and Pederson (1965) failed to find personality differences between volunteers and nonvolunteers on a number of personality scales.

Although some differences between the hypnotizable and nonhypnotizable were eventually demonstrated, as reported earlier, a difference occasionally found has been somewhat overgeneralized. That is a difference between the less-hypnotizable and the more hypnotizable on skilled tasks in a baseline condition. In general, the nonhypnotizables are asserted to do better than the hypnotizables in the baseline condition, so that, when gains attributed to hypnosis are studied, the hypnotizables start from a lower baseline and have an artificial advantage. The empirical difference has been given two explanations, first, that the hypnotizable subjects "hold back," so that they can please the hypnotist later by their improved performances, second, that the nonhypnotizable are more compulsive than the hypnotizable, and try harder in the baseline condition, irrespective

of what they expect to follow. The first of these conditions can be overcome by not using a subject as his own control, although using separate groups would not control the second objection, that is, if baseline conditions are a matter of hypnotizability rather than experimental expectation. The issue raised has not been fully resolved, and has to be studied in the context of specific performances. The question was examined in a study of the baseline pain reports from 122 subjects participating in three pain experiments, in which the subjects served as their own controls. The hypothesis to be investigated was whether or not the highly hypnotizable subjects would report more pain in their baselines, in order to show more pain reduction through hypnotic analgesia. Were that the case, the same-subjects design would have given misleading results. A comparison of those high, medium, and low in measured hypnotizability showed no differences by analysis of variance or individual t-tests (Hilgard, and Morgan, Research Memorandum #80, 1968). Hence the criticism of the same-subjects design on this basis is inappropriate, unless the baseline differences in a given experiment can be shown to exist.

Another problem was noted when comparisons between two methods are made by having the same investigator use both methods. Troffer and Tart (1964) found that independent judges could tell from the recorded voice of the experimenter whether, in giving the suggestions, the experimenter was talking to a subject who had received a hypnotic induction or had merely been asked to exercise imagination. The control that has been commonly adopted is to record all such suggestions on tape, so that the experimenter bias cannot be exercised through the voice.

The question of demand-characteristics within hypnosis can be controlled in part by the use of the real-simulator design as proposed by Orne.[22] He does not imply that simulation is the danger to be avoided, because it is very infrequent in the laboratory; what he has proposed is that instructed simulators can detect what subtle influences there might be to influence honest subjects.

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22. Orne, M. T. The simulation of hypnosis: Why, how, and what it means. International Journal of Clinical and Experimental Hypnosis, 1971, 19, 183-210.

Our own studies have shown that the method has severe limitations, unless it is followed by the "honesty inquiry" proposed by Bowers.[23] After a hypnosis experiment is completed, the subjects can be interviewed by someone (not the hypnotist-experimenter) in order to detect whether or not the experiences were genuine or were warped in some manner to meet what the subject thought was expected. When this procedure is followed after the real-simulator model is used, it is commonly found that the "honest" experience has been very different for the two groups, even though the simulation of objective performance is very similar to what is observed in hypnosis (Hilgard, Hilgard, Macdonald, Morgan, and Johnson, 1978; Hilgard, Macdonald, Morgan, and Johnson, 1978). The fact that hypnotic performance responds to demand characteristics follows naturally from the fact that hypnotic procedures imply suggestions or commands. Consider, for example, how easy it is to simulate posthypnotic amnesia. When the hypnotized person is told that there will be no recall of what happened during hypnosis, the demand is both evident and part of the hypnotic procedure. What happens, however, is that only a very small fraction of hypnotized subjects forget everything. Simulators, however, tend to overreact, and they report that they remember nothing, until the honesty inquiry, when they report remembering everything, or nearly everything. The truly hypnotized during the honesty inquiry confirm what they did, perhaps expressing their surprise at remembering some of the things and forgetting many others, until the memory was restored.

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23. Bowers, K. S. The effect of demand for honesty on reports of visual and auditory hallucinations. International Journal of Clinical and Experimental Psychology, 1967, 15, 31-36.

APPENDIXES

*Note regarding offprints and copies of Research Memoranda

A limited supply of copies of the published articles and research memoranda is available at the time of preparation of this report. For those who have professional uses to be made of them, single copies may be requested. It is not feasible to supply them in sets. Requests may be made to E. R. Hilgard, Department of Psychology, Stanford University, Stanford, California, 94305, U.S.A.

Appendix 1

Professional Staff

H. Joan Crawford, PhD

Ernest R. Hilgard, PhD

Josephine R. Hilgard, PhD., M.D.

Leah Kaplan, MSW

Nancy Kautz, MSW

Samuel LeBaron, PhD

Arlene H. Morgan, PhD

Martha Newman, MSW

André M. Weitzenhoffer, PhD

Philip Zimbardo, PhD

Technical Staff

Hugh Macdonald, MA

Arthur F. Lange,E.E., PhD

Visiting Scholars (Postdoctoral; on sabbatical leave; foreign visitors temporarily in residence)

Arvid Ås, PhD (Norway)

Paul Bakan, PhD

Éva Bányai, PhD (Hungary)

Henk Barendregt, PhD (Netherlands)

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Kenneth M. Colby, M.D.

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Raquel E. Gur, PhD

Ruben C. Gur, PhD

Kotaro Harano, PhD (Japan)

Jiri Hoskovec, PhD (Czechoslovakia)

John P. Hostetler, PhD

Charles Imm, PhD

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Lynn S. Johnson, PhD

Jean Jones, PhD (Australia)

John F. Kihlstrom, PhD

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Stanislav Kratochvil, PhD (Czechoslovakia)

Perry London, PhD

Didier Michaux, PhD (France)

Hélène Minaire, MA (France)

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Domin Svorad, PhD (Czechoslovakia)

Oleg K. Tikhomirov, PhD (USSR)

Takao Umemoto, PhD (Japan)

Richard St. Jean, PhD (Canada)

Charles T. Tart, PhD

Mark Thomas, PhD (Canada)

Appendix 3

GRADUATE DEGREES EARNED WITHIN THE LABORATORY PROGRAM

Doctor of Philosophy

1960

Stanley R. Clemes. Repression and hypnotic amnesia.

1961

Rosemarie K. Moore. Susceptibility to hypnosis and susceptibility to social influence.

1962

Norman S. Giddan. Fantasy recovery of marginal stimuli.

1963

Evelyn M. Lee (Teng). A questionnaire measure of hypnotic characteristics and their relationship to hypnotizability.

Fred Strassburger. Perception and fantasy: A study of sex differences and personality correlates.

1964

Mary R. Roberts. Attention and related abilities as affecting hypnotic susceptibility.

1965

Charles Imm. An exploration of repression through hypnotically implanted conflicts.

Suzanne Larsen (Horowitz). Strategies for reducing phobic behavior.

Bernard M. Sjoberg. The effects of lysergic acid diethylamide (LSD-25), mescaline, and psilocybin, and a combination of the three drugs on primary suggestibility.

Suzanne Troffer (Banford). Hypnotic age regression and cognitive functioning.

1966

Judah Landes. The influence of visual backward masking on the perception of meaningful congruent and incongruent stimulus pictures.

Lillian W. Lauer. Factorial components of hypnotic susceptibility.

Errol Schubot. The influence of hypnosis and muscular relaxation in systematic desensitization of phobias.

1967

Bruce D. Sanders. Behavioral rehearsal and imaginal desensitization in reducing public speaking anxiety.

1969

Kenneth R. Graham. Eye movements during waking imagery and hypnotic hallucinations.

Jill McCleave Kinney. Modification of hypnotic susceptibility.

1970

John R. Lenox. A failure of hypnotic state to affect numerical task performance. (Chaired by Lee J. Cronbach.)

Michael J. Diamond. The use of observationally presented information to modify hypnotic susceptibility.

1971

John R. Rhead. Some physiological and cognitive aspects of hypnotic susceptibility.

Spencer Sherman. Very deep hypnosis: An experiential and electroencephalographic investigation. (Chaired by Philip Zimbardo.)

1972

Arlene H. Morgan. The heritability of hypnotic susceptibility in twins.

John C. Ruch. A study of self-hypnosis under alternative procedures.

James H. Stevenson. The effect of hypnotic and posthypnotic dissociation on the performance of interfering tasks.

1976

Roland A. Dumas. Operant control of EEG Alpha and hypnotizability.

Gary D. Marshall. The affective consequences of "inadequately explained" physiological arousal. (Chaired by Philip Zimbardo.)

Master of Arts

1960

Evelyn M. Lee (Teng). Some factors influencing the perception of ambiguous pictures.

1961

Margaret deRivera. Hypnotic susceptibility in siblings.

1965

Bruce Mussell. Hypnosis and rates of adaptation to repetitive stimuli.

1968

Fay Lezard. An attempted verification of Petrie's perceptual styles in relation to pain and hypnosis.

Jill C. McCleave (Kinney). Advantage of repetition in achieving the maximally effective suggestion in a motor task.

Toshimasu Saito. The influence upon memory of posthypnotic suggestions of amnesia and facilitation.

1976

Hugh Macdonald. The effect of amplitude on the hemispheric symmetry of EEG Alpha.

Appendix 4

PUBLISHED JOURNAL ARTICLES AND BOOKS FROM THE LABORATORY, BY YEAR OF PUBLICATION

1958

Hilgard, E. R. Unconscious processes and man's rationality. Fiftieth Anniversary Lecture Series, University of Illinois Graduate College. Urbana, Ill.: University of Illinois Press.

Hilgard, E.R., Weitzenhoffer, A.M., & Gough, P. Individual differences in susceptibility to hypnosis. Nat. Aca. Sci., 1958, 44, 1255-59.

Weitzenhoffer, A.M. Personality and hypnotic susceptibility. Am. J. clin. Hyp., 1958, 1, 79-82.

Weitzenhoffer, A.M. & Weitzenhoffer, Geneva B. A note concerning hypnotic susceptibility and maladjustment. J. clin. exp. Hyp., 1958a, 6, 182-84.

Weitzenhoffer, A.M. & Weitzenhoffer, Geneva B. Sex, transference, and susceptibility to hypnosis. Am. J. clin. Hyp., 1958b, 1, 15-24.

1959

Hilgard, E.R. Review of Kline's "Freud and Hypnosis." Am. J. clin. Hyp., 1959, 1, 174-75.

Weitzenhoffer, A.M. Review of Chertok, L. "Les Methodes Psychosomatiques d'Accouchement sans Douleur." Am. J. clin. Hyp., 1959, 2, 42-44.

Weitzenhoffer, A.M., Gough, P., & Landes, J. A study of the Braid effect; hypnosis and visual fixation. J. of Psych., 1959, 47, 67-80.

Weitzenhoffer, A.M. & Hilgard, E.R. Stanford Hypnotic Susceptibility Scale: Forms A and B. Palo Alto, Calif.: Consulting Psychologists Press, Inc., 1959.

1960

Hilgard, E.R. Discussion of the papers of Drs. Barber, Leuba, and Estabrooks. Am. J. clin. Hyp., 1960a, 3, 55-58.

Hilgard, E.R. Review of six films on hypnotism. 1, Behavior in hypnotic regression; 2, Demonstration of negative and post-hypnotic suggestion; 3, Hypnotic behavior; 4, Unconscious motivation; 5, Hypnosis; 6, Retreat from reality. Cont. Psych., 1960b, 172-173.

Weitzenhoffer, A. M. Review of Reiter, P. J. Antisocial or criminal acts and hypnosis. A case study. American Journal of Clinical Hypnosis, 1960, 2, 160-165.

Weitzenhoffer, A.M. Reflections upon certain specific and current uses of the "unconscious" in clinical hypnosis. Int. J. clin. exp. Hyp., 1960a, 8, 165-77.

Weitzenhoffer, A.M. Unconscious or co-conscious? Am. J. clin. Hyp., 1960b, 2, 177-96.

Weitzenhoffer, A.M. & Moore, R.K. The influence of certain hypnotic suggestions upon a type of visual illusion. A preliminary report. Percept. Motor Skills, 1960, 11, 137.

1961

Hatfield, E.C. The validity of the LeCron method of evaluating hypnotic depth. Int. J. clin. exp. Hyp., 1961, 9, 215-21.

Hilgard, E.R. Hypnosis and experimental psychodynamics. In H. Brosin (Ed.) Lectures on experimental psychodynamics. Pittsburgh: Univ. of Pittsburgh Press, 1961, 193-212.

Hilgard, E.R. & Hommel, L.S. Selective amnesia for events within hypnosis in relation to repression. J. of Pers.,1961, 29, , 205-16.

Hilgard, E.R., Weitzenhoffer, A.M., Landes, J. & Moore, R.K. The distribution of susceptibility to hypnosis in a student population. Psych. Monographs: General & Applied, 1961, 75, 8, (Whole No. 512).

Hilgard, J.R., Hilgard, E.R., & Newman, M. Sequelae to hypnotic induction with special reference to earlier chemical anesthesia. J. Nerv. Ment. Disease, 1961, 133, 461-78.

Weitzenhoffer, A.M. Sex, transference, and susceptibility to hypnosis: A postscript. Am. J. clin. Hyp., 1961a, 3, 244-49.

Weitzenhoffer, A.M. Review of Aboulker, P., Chertok, L., and Sapir, M. "La Relaxation. Aspects, Theoriques, Et Practiques." Am. J. clin. Hyp., 1961b, 3, 206-207.

Weitzenhoffer, A.M. Review of Kohn, T.C., and Giffen, M.B. Psychological techniques in diagnosis and evaluation. Am. J. clin. Hyp., 1961c, 4, 125.

Weitzenhoffer, A.M. Review of Belo, J.; Trance in Bali. Am. J. clin. Hyp., 1961d, 4, 57-58.

Weitzenhoffer, A.M. Some speculations regarding the nature and origins of hypnotic behavior. Am. J. clin. Hyp., 1961e, 4, 69-89.

Weitzenhoffer, A.M. Signal injection and objectification of hallucinatory experiences: A methodological note. Percept. Motor Skills, 1961f, 13, 115-8.

Weitzenhoffer A.M. & Sjoberg, B.M. Suggestibility with and without "induction of hypnosis." J. Nerv. Ment. Disease, 1961, 132, 204-19.

1962

Åss, Arvid. Non-hypnotic experience related to hypnotizability in male and female college students. Scand. J. Psych., 1962a, 3, 112-121.

Åss, A. A note on distractibility and hypnosis. Amer. J. clin. Hyp., 1962b, 5, 135-137.

Åss, A. The recovery of a forgotten language through hypnotic age regression. Amer. J. clin. Hyp., 1962c, 5, 24-29.

Åss, A. & Lauer, L.W. A factor-analytic study of hypnotizability and related personal experience. Int. J. clin. exp. Hyp., 1962, 10, 169-81.

Åss, A., O'Hara, J.W. & Munger, M.P. The measurement of subjective experiences presumably related to hypnotic susceptibility. Scand. J. Psych., 1962, 3, 47-64.

Boucher, R.G. & Hilgard, E.R. Volunteer bias in hypnotic experimentation. Am. J. clin. Hyp., 1962, 5, 49-51.

Hilgard, E.R. Lawfulness within hypnotic phenomena. In Estabrooks, G.H. (Ed.) Hypnosis: Current problems. New York: Harper and Row, 1962a, 1-29.

Hilgard, E.R. Impulsive versus realistic thinking: An examination of the distinction between primary and secondary processes in thought. Psych. Bull., 1962b, 59, 477-88.

Hilgard, E. R. What becomes of the input from the stimulus? In C. W. Erickson (Ed.) Behavior and awareness: A symposium of research and interpretation. Durham, N. C.: Duke University Press, 1962c, 46-72.

Hilgard, E.R. & Lauer, L.W. Lack of correlation between the California Psychological Inventory and hypnotic susceptibility. J. Consulting Psych., 1962, 26, 4, 331-35.

Hilgard, J.R. & Hilgard, E.R. Developmental-interactive aspects of hypnosis: Some illustrative cases. Genetic Psych. Mono., 1962, 66, 143-78.

Weitzenhoffer, A.M. Some speculations regarding the nature and origins of hypnotic behavior. Additional considerations. Am. J. clin. Hyp., 1962a, 4, 141-49.

Weitzenhoffer, A.M. The significance of hypnotic depth in therapy. Int. J. clin. exp. Hyp., 1962b, 10, 75-78.

Weitzenhoffer, A.M. & Hilgard, E.R. Stanford Hypnotic Susceptibility Scale: Form C. Palo Alto, Calif.: Consulting Psychologists Press, Inc., 1962.

1963

Åsa, A. Hypnotizability as a function of nonhypnotic experiences. J. abnorm. soc. Psych., 1963, 66, 142-50.

Åsa, A., Hilgard, E.R. & Weitzenhoffer, A.M. An attempt at experimental modification of hypnotizability through repeated individualized hypnotic experience. Scand. J. Psych., 1963, 4, 81-89.

Bentler, P.M. Interpersonal orientation in relation to hypnotic susceptibility. J. counsel. Psych., 1963, 27, 425-31.

Bentler, P.M. & Hilgard, E.R. A comparison of group and individual induction of hypnosis with self-scoring and observer-scoring. Int. J. clin. exp. Hyp., 1963, 11, 49-54.

Bentler, P.M., O'Hara, J.W. & Krasner, L. Hypnosis and placebo. Psychol. Rep., 1963, 12, 153-54.

Bentler, P.M. & Roberts, M.R. Hypnotic susceptibility assessed in large groups. Int. J. clin. exp. Hyp., 1963, 11, 93-97.

Hilgard, E.R. Ability to resist suggestions within the hypnotic state: Responsiveness to conflicting communications. Psych. Rep., 1963, 12, 3-13.

Hilgard, E.R., & Bentler, P.M. Predicting hypnotizability from the Maudsley Personality Inventory. Brit. J. Psych., 1963, 54, 63-69.

Hilgard, E.R., Lauer, L.F. & Morgan, A.H. Manual for Stanford Profile Scales of Hypnotic Susceptibility, Forms I and II. Palo Alto, Calif.: Consulting Psychologists Press, Inc., 1963.

Moore, R.K. & Lauer, L.W. Hypnotic susceptibility in middle childhood. Int. J. clin. exp. Hyp., 1963, 11, 167-74.

Weitzenhoffer, A.M. "Credulity" and "Skepticism" in hypnotic research: A critical examination of Sutcliffe's thesis and evidence: Part I. Amer. J. clin. Hyp., 1963a, 6, 137-62.

Weitzenhoffer, A.M. The nature of hypnosis. Amer. J. clin. Hyp., 1963b, 5, 295-321.

Weitzenhoffer, A.M. The nature of hypnosis: Part II. Amer. J. clin. Hyp., 1963c, 6, 40-72.

Weitzenhoffer, A.M. & Hilgard, E.R. Stanford Profile Scales of Hypnotic Susceptibility, Forms I and II. Consulting Psychologists Press, 1963.

1964

Clemes, S.R. Repression and hypnotic amnesia. J. abnorm. soc. Psych., 1964, 69, 62-69.

Hilgard, E.R. Profiles of hypnotic ability. Am. J. clin. Hyp., 1964a, 7, 136-139.

Hilgard, E.R. The motivational relevance of hypnosis. Nebraska Symposium on Motivation. Lincoln, Nebraska: University of Nebraska Press, 1964b, 1-44.

Hilgard, E. R. Introduction to Bernheim, H. Hypnosis and suggestion in psychotherapy. New Hyde Park, New York: University Books, 1964c. ix-xvi.

Hilgard, J. R. Review of Estabrooks, G.H. (Ed.) Hypnosis: Current problems. J. Nerv. Ment. Disease, 1964, 139, 302-304.

Melei, J.P. & Hilgard, E.R. Attitudes toward hypnosis, self-prediction, and hypnotic susceptibility. Int. J. clin. exp. Hyp., 1964, 12, 99-108.

Moore, Rosemarie K. Susceptibility to hypnosis and susceptibility to social influence. J. abnorm. soc. Psych., 1964, 68, 282-294.

Tart, C.T. The influence of the experimental situation in hypnosis and dream research: A case report. Am. J. clin. Hyp., 1964a, 7, 163-170.

Tart, C.T. A comparison of suggested dreams occurring in hypnosis and sleep. Int. J. clin. exp. Hyp., 1964b, 12, 263-289.

Tart, C.T. The hypnotic dream: Methodological problems and a review of the literature. Psych. Bull., 1964c, 63, 87-99.

Troffer, Suzanne, & Tart, C.T. Experimenter bias in hypnotist performance. Science, 1964, 145, 1330-1331.

Weitzenhoffer, A.M. Explorations in hypnotic time distortions. I: Acquisition of temporal reference frames under conditions of time distortion. J. Nerv. Ment. Disease, 1964, 138, 354-366.

1965

Cooper, L.M. & Pedersen, D.M. A note on the failure to find personality differences between volunteers and nonvolunteers for hypnotic research. Int. J. clin. exp. Hyp., 1965, 13, 274-278.

Hilgard, E.R. Hypnosis. Ann. Rev. Psych., 1965a, 16, 157-180.

Hilgard, E.R. Hypnotic Susceptibility. New York: Harcourt, Brace & World, 1965b.

Hilgard, E.R. & Cooper, L.M. Spontaneous and suggested posthypnotic amnesia. Int. J. clin. exp. Hyp., 1965, 13, 261-273.

Hilgard, E.R., Lauer, Lillian, W. & Cuca, Janet M. Acquiescence, hypnotic susceptibility, and the MMPI. J. Consult. Psych., 1965, 29, 489.

Lee-Teng, Evelyn. Trance-susceptibility, induction-susceptibility, and acquiescence as factors in hypnotic performance. J. abnorm. Psych., 1965, 70, 383-389.

Liebert, R.M., Rubin, Norma, & Hilgard, E.R. The effects of suggestions of alertness in hypnosis on paired-associate learning. J. of Per., 1965, 33, 605-612.

Pedersen, D.M. & Cooper, L.M. Some personality correlates of hypnotic susceptibility. Int. J. clin. exp. Hyp., 1965, 13, 193-202.

Sjoberg, B.M., Jr., & Hollister, L.E. The effects of psychotomimetic drugs on primary suggestibility. Psychopharmacologia, 1965, 8, 251-62.

Slotnick, R.S., Liebert, R.M. & Hilgard, E.R. The enhancement of muscular performance in hypnosis through exhortation and involving instructions. J. of Per., 1965, 33, 37-45.

Slotnick, R.S. & London, P. Influence of instructions on hypnotic and nonhypnotic performance. J. abnorm. Psych., 1965, 70, 38-46.

Tart, C.T. Toward the experimental control of dreaming: A review of the literature. Psych. Bull., 1965, 64, 81-91.

1966

Cooper, L.M. Spontaneous and suggested posthypnotic source amnesia. Int. J. clin. exp. Hyp., 1966, 14, 316-323.

Cooper, L.M. & London, P. Sex and hypnotic susceptibility in children. Int. J. clin. exp. Hyp., 1966, 14, 55-60.

Giddan, N.S. Effect of thirst on stimulus recovery and spontaneous imagery. Percept. Motor Skills, 1966, 23, 631-638.

Hilgard, E.R. Posthypnotic amnesia: Experiments and theory. Int. J. clin. exp. Hyp., 1966, 14, 104-111.

Hilgard, E.R. & Tart, E.T. Responsiveness to suggestions following waking and imagination instructions and following induction of hypnosis. J. abnorm. Psych., 1966, 71, 196-208.

Moore, Rosemarie K. & Cooper, L.M. Item difficulty in childhood hypnotic susceptibility scales as a function of item wording, repetition, and age. Int. J. clin. exp. Hyp., 1966, 14, 316-323.

Strassburger, F. The "steeple effect": Sex differences in marginal perception and fantasy. J. Nerv. Men. Disease, 1966, 142, 228-234.

Tart, C.T. Some effects of posthypnotic suggestion on the process of dreaming. Int. J. clin. exp. Hyp., 1966a,14, 30-46.

Tart, C. T. Types of hypnotic dreams and their relation to hypnotic depth. Journal of Abnormal Psychology, 1966b, 71, 377-382.

Tart, C.T. & Hilgard, E.R. Responsiveness to suggestions under "hypnosis" and "waking-imagination" conditions: A methodological observation. Int. J. clin. exp. Hyp., 1966, 14, 247-256.

1967

Cooper, L.M., Banford, Suzanne A., Schubot, E., & Tart, C.T. A further attempt to modify hypnotic susceptibility through repeated individualized experience. Int. J. clin. exp. Hyp., 1967, 15, 118-124.

Giddan, N.S. Recovery through images of briefly flashed stimuli. J. Pers.,1967, 35, 1-19.

Hilgard, E.R. A quantitative study of pain and its reduction through hypnotic suggestion. Proc. Nat. Aca. Sci., 1967, 57, 1581-1586.

Hilgard, E.R., Cooper, L.M., Lenox, J., Morgan, Arlene H., and Voevodsky, J. The use of pain-state reports in the study of hypnotic analgesia to the pain of ice water. J. Nerv. Ment. Disease, 1967, 144, 506-513.

Hilgard, E.R. & Hilgard, Josephine R. The personality background of susceptibility to hypnosis. Hypnosis and Psychosomatic Medicine. Proceedings of the International Congress for Hypnosis and Psychosomatic Medicine, Lassner, J. (Ed.), Berlin. 1967.

Osborn, Anne G., Bunker, J.P., Cooper, L.M., Frank, G.S., and Hilgard, E.R. Effects of thiopental sedation on learning and memory. Science, 1967, 157, 574-576.

Roberts, Mary R. & Cooper, L.M. Patterns of parental discipline. J. Soc. Psych., 1967, 71, 257-266.

Sachs, L.B. & Anderson, W.L. Modification of hypnotic susceptibility. Int. J. clin. exp. Hyp., 1967, 15, 172-180.

Voevodsky, J., Cooper, L.M., Morgan, A.H., and Hilgard, E.R. The measurement of suprathreshold pain. Am. J. Psych., 1967, 80, 124-128.

Weitzenhoffer, A. M., and Hilgard, E. R. Revised Stanford Profile Scales of Hypnotic Susceptibility, Forms I and II. Palo Alto, Calif.: Consulting Psychologists Press, 1967.

1968

Graham, K.R. & Patton, Ann. Retroactive inhibition, hypnosis, and hypnotic amnesia. Int. J. clin. exp. Hyp., 1968, 16, 68-74.

Hilgard, E.R. The experience of hypnosis: A shorter version of hypnotic susceptibility. New York: Harcourt, Brace & World, 1968a.

Hilgard, E.R. La psychologie experimentale et l'hypnose. Revue de Medecine Psychosomatique et de Psychologie Medicale, 1968b, No. 2, 95-111.

Hilgard, E.R. Review of Volgyesi, F.A., Hypnosis of man and animals: With special reference to the development of the brain in the species and in the individual. Cont. Psych., 1968c, 13, 64-65.

Hilgard, E. R. Foreword to paper edition of Clark L. Hull, Hypnosis and suggestibility. New York: Appleton, Century-Crofts, 1968d.

Hilgard, E.R., Morgan, Arlene H., and Prytulak, Susan. The psychophysics of the kinesthetic aftereffect in the Petrie block experiment. Perception & Psychophysics, 1968, 4, 129-132.

Nowlis, D.P. & Rhead, J.C. Relation of eyes-closed resting EEG alpha activity to hypnotic susceptibility. Percept. Motor Skills, 1968, 27, 1047-1050.

1969

Bakan, P. Hypnotizability, laterality of eye-movements and functional brain asymmetry. Percept. Motor Skills, 1969, 28, 927-932.

Bakan, P. & Svorad, D. Resting EEG alpha and asymmetry of reflective lateral eye movements. Nature, 1969, 223, 975-976.

Graham, K.R. Brightness contrast by hypnotic hallucination. Int. J. clin. exp. Hyp., 1969, 17, 62-73.

Hilgard, E.R. Altered states of awareness. J. Nerv. Ment.Disease, 1969a, 149, 68-79.

Hilgard, E.R. Pain as a puzzle for psychology and physiology. Am. Psychologist, 1969b, 24, 103-113.

Hilgard, E. R. Levels of awareness: Second thoughts on some of William James' ideas. In William James: Unfinished business. Washington, D. C.: American Psychological Association, 1969c.

Hilgard, E. R. Experimental psychology and hypnosis. In L. Chertok (Ed.), Psychophysiological mechanisms of hypnosis. New York: Springer-Verlag, 1969d, 123-238.

Hilgard, E. R. The psychophysiology of pain reduction through hypnosis: In L. Chertok (Ed.), Psychophysiological mechanisms of hypnosis. New York: Springer-Verlag, 1969e, 139-150.

Nowlis, D.P. The child-rearing antecedents of hypnotic susceptibility and of naturally occurring hypnotic-like experience. Int. J. clin. exp. Hyp., 1969, 2, 109-120.

Lenox, J.R. & Lange, A.F. Validation of a corrected digital method of measuring changes in systolic blood pressure. J. Comparative and Physiological Psych., 1969, 69, 454-458.

1970

Bakan, P. Handedness and hypnotizability. Int. J. clin. exp. Hyp., 1970, 18, 99-104.

Beahrs, John O., Harris, David R., Hilgard, E.R. Failure to alter skin inflammation by hypnotic suggestion in five subjects with normal skin reactivity. Psychosomatic Medicine, 1970, 32, 627-631.

Graham, K.R. Optokinetic nystagmus as a criterion of visual imagery. J. Nerv. Ment.Disease, 1970, 151, 411-414.

Hilgard, E.R. Review of Barber, T.X., Hypnosis: A scientific approach. Am. J. clin. Hyp., 1970, 12, 272-274.

Hilgard, J.R. Personality and hypnosis: A study of imaginative involvement. Chicago: University of Chicago Press, 1970.

Horowitz, S.L. Strategies within hypnosis for reducing phobic behavior. J. abnorm Psych., 1970, 75, 104-112.

Kratochvil, S. Prolonged hypnosis and sleep. Am. J. clin. Hyp., 1970a, 12, 254-260.

Kratochvil, S. Sleep hypnosis and waking hypnosis. Int. J. clin. exp. Hyp., 1970b, 18, 25-40.

Lenox, J. R. Effect of hypnotic analgesia on verbal report and cardiovascular responses to ischemic pain. J. abnorm. Psych., 1970, 75, 119-206.

Lenox, J. R., Lange, A.F., & Graham, K. R. Eye movement amplitudes in imagined pursuit of a pendulum with eyes closed. Psychophysiology, 1970, 6, 773-777.

Morgan, Arlene H., Hilgard, E.R., Davert, Edna C. The heritability of hypnotic susceptibility of twins: A preliminary report. Behavior Genetics, 1970, 1, 213-223.

Morgan, A.H., Lezard, F., Prytulak, S., and Hilgard, E.R. Augmenters, reducers, and their reaction to cold pressor pain in waking and suggested hypnotic analgesia. J. Per. Soc. Psych., 1970, 16, 5-11.

Nowlis, D.P., & Kamiya, J. The control of Electroencephalographic alpha rhythms through auditory feedback and the associated mental activity. Psychophysiology, 1970, 6, 476-484.

Sachs, L.B. Comparison of hypnotic analgesia and hypnotic relaxation during stimulation by a continuous pain source. J. abnorm Psych., 1970, 76, 206-210.

1971

Bowers, K.S. & Keeling, K.R. Heart-rate variability in creative functioning. Psychological Reports, 1971, 29, 160-162.

Hilgard, E.R. Hypnosis and childlikeness. In Hill, J.P. (Ed.) Minnesota Symposia on Child Psychology, 1971a,5, 29-51.

Hilgard, E.R. Hypnotic phenomena: The struggle for scientific acceptance. Am. Scientist, 1971b, 59, 567-577.

Hilgard, E.R. Hypnosis: Its place in psychology. Scientia, 1971c, 65, 369-389.

Hilgard, E.R. Pain: Its reduction and production under hypnosis. Proceedings of the American Philosophical Society, 1971d, 115, 470-476.

Hilgard, E. R., Der Schmerz, seine Psychophysiologie und seine hypnotische Reduzierung. In Katzenstein, A. (Ed.) Hypnosis: Aktuelle Probleme in Theorie, Experiment und Klinik. Jena: Fischer Verlag, 1971e, 159-167.

Kratochvil, S. & Shubat, N. Activity-passivity in hypnosis and in the normal state. Int. J. clin. exp. Hyp., 1971, 19, 140-145.

Morgan, A.H., McDonald, P.J., and Macdonald, H. Differences in bilateral alpha activity as a function of experimental task, with a note on lateral eye movements and hypnotizability. Neuropsychologia, 1971, 9, 459-469.

Ruch, J.C. & Morgan, A.H. Subject posture and hypnotic susceptibility: A comparison of standing, sitting, and lying-down subjects. Int. J. clin. exp. Hyp., 1971, 19, 100-108.

1972

Cooper, L.M. & Hoskovec, J. Hypnotic suggestions for learning during Stage I REM sleep. Am. J. clin. Hyp., 1972, 15, 102-111.

Diamond, M.J. The use of observationally presented information to modify hypnotic susceptibility. J. abnorm. Psych., 1972, 79, 174-180.

Hilgard, E.R. A critique of Johnson, Maher, and Barber's "Artifact in the 'essence of hypnosis'; an evaluation of trance logic," with a recomputation of their findings. J. abnorm. Psych., 1972a, 79, 221-233.

Hilgard, E.R. Hypnosis in pain control. In Langen, D. (Ed.) Hypnose und Psychosomatische Medizin. Stuttgart: Hippokrates Verlag, 1972b, 152-157.

Hilgard, E. R. Foreword in Mitchell, W. M. The use of hypnosis in athletics. Stockton, Calif.: Valley Oaks Printers, 1972c, 6-7.

Hilgard, E.R. & Nowlis, D.P. The contents of hypnotic dreams and night dreams: An exercise in method. In Fromm, E. & Shor, R.E. (Eds.) Hypnosis: Research Developments and Perspectives. Chicago: Aldine-Atherton, 1972, 511-524.

Hilgard, J.R. Evidence for a developmental-interactive theory of hypnosis. In E. Fromm & R.E. Shor (Eds.) Hypnosis: Research Developments and Perspectives. Chicago: Aldine-Atherton, 1972, 387-397.

Kratochvil, S. & Macdonald, H. Sleep in hypnosis: A pilot EEG study. Am. J. clin. Hyp., 1972, 15, 29-37.

Morgan, A.H. Hypnotizability and "cognitive styles": A search for relationships. J. of Per., 1972, 40, 503-509.

Morgan, A.H. & Hilgard, E.R. The lack of retest reliability for individual differences in the kinesthetic aftereffect. Educational and Psychological Measurement, 1972, 32, 871-878.

1973

Bowers, K.S. Hypnosis, attribution, and demand characteristics. Int. J. clin. exp. Hyp., 1973, 21, 226-238.

Harano, K. & Hilgard, E.R. Studies from the Laboratory of Hypnosis Research, Stanford University. Bulletin of the Faculty of Education, Tokyo University of Education, 1973, 19, 53-66.

Hilgard, E.R. Dissociation revisited. In Henle, M., Jaynes, J., and Sullivan, J. (Eds.) Historical Conceptions of Psychology. New York: Springer, 1973a, 205-219.

Hilgard, E.R. A neodissociation interpretation of pain reduction in hypnosis. Psych. Rev., 1973b, 80, 396-411.

Hilgard, E.R. The domain of hypnosis, with some comments on alternative paradigms. Am. Psychologist, 1973c, 28, 972-982.

Morgan, A.H. The heritability of hypnotic susceptibility in twins. J. abnorm. Psych., 1973, 82, 55-61.

Morgan, A.H. & Hilgard, E.R. Age differences in susceptibility to hypnosis. Int. J. clin. exp. Hyp., 1973, 21, 78-85.

Roberts, A.H., Kewman, D.G., and Macdonald, H. Voluntary control of skin temperature: Unilateral changes using hypnosis and feedback. J. abnorm. Psych., 1973, 82, 163-168.

Ruch, J.C., Morgan, A.H., & Hilgard, E.R. Behavioral predictions from hypnotic responsiveness scores when obtained with and without prior induction procedures. J. abnorm. Psych., 1973, 82, 543-546.

1974

Gur, R.C. An attention-controlled operant procedure for enhancing hypnotic susceptibility. J. abnorm. Psych., 1974, 83, 544-550.

Gur, R.C., and Gur, R.E. Handedness, sex and eyedness as moderating variables in the relation between hypnotic susceptibility and functional brain asymmetry. J. abnorm. Psych., 1974, 83, 635-643.

Hilgard, E.R. Visceral control through hypnosis. Proceedings of the International Union of Physiological Sciences, 1974a, X.

Hilgard, E.R. Toward a neo-dissociation theory: multiple cognitive controls in human functioning. Perspectives in Biology and Medicine, 1974b, 17, 301-316.

Hilgard, E.R. Weapon against pain: Hypnosis is no mirage. Psychology Today, November, 1974c, 121-128.

Hilgard, E.R., Macdonald, H., Marshall, G., and Morgan, A.H. Anticipation of pain and of pain control under hypnosis: Heart rate and blood pressure responses in the cold pressor test. J. abnorm. Psych., 1974, 38, 561-568.

Hilgard, E.R., Morgan, A.H., Lange, A.F., Lenox, J.R., Macdonald, H., Marshall, G.D., and Sachs, L.B. Heart rate changes in pain and hypnosis. Psychophysiology, 1974, 11, 692-702.

Hilgard, E.R., Ruch, J.C., Lange, A.F., Lenox, J.R., Morgan, A.H., and Sachs, L.B. The psychophysics of cold pressor pain and its modification through hypnotic suggestion. Am. J. Psych., 1974, 87, 17-31.

Hilgard, J.R. Imaginative involvement: Some characteristics of the highly hypnotizable and the non-hypnotizable. Int. J. clin. exp. Hyp., 1974a,22, 138-156.

Hilgard, J.R. Sequelae to hypnosis. Int. J. clin. exp. Hyp., 1974b, 22, 281-298.

Knox, V.J., Morgan, A.H., and Hilgard, E.R. Pain and suffering in ischemia. Archives of General Psychology, 1974, 30, 840-847.

Morgan, A.H., Johnson, D.L., and Hilgard, E.R. The stability of hypnotic susceptibility: A longitudinal study. Int. J. clin. exp. Hyp., 1974, 22, 249-257.

Morgan, A.H., Macdonald, H., and Hilgard, E.R. EEG Alpha: Lateral asymmetry related to task, and hypnotizability. Psychophysiology, 1974, 11, 275-282.

Ruch, J.C., Morgan, A.H., and Hilgard, E.R. Measuring hypnotic responsiveness: A comparison of the Barber Suggestibility Scale and the Stanford Hypnotic Susceptibility Scale, Form A. Int. J. clin. exp. Hyp., 1974, 22, 365-376.

1975

Dumas, Roland, & Morgan, A.H. EEG asymmetry as a function of occupation, task and task difficulty. Neuropsychologia, 1975, 13, 219-228.

Goldstein, Avram & Hilgard, E.R. Failure of the opiate antagonist naloxone to modify hypnotic analgesia. Nat. Aca. Sci., 1975, 72, 2041-2043.

Gur, R.C. & Hilgard, E.R. Visual imagery and the discrimination of differences between altered pictures simultaneously and successively presented. Brit. J. Psych., 1975, 66, 341-345.

Gur, R.E., Gur, R.C., and Marshalek, B. Classroom seating and functional brain asymmetry. J. exp. Psych., 1975, 67, 151-153.

Hilgard, E.R. Hypnosis. Ann. Rev. Psych., 1975a, 26, 19-44.

Hilgard, E.R. The alleviation of pain by hypnosis. Pain, 1975b, 1, 213-231.

Hilgard, E. R. Review of Barber, T. X., Spanos, N. P., and Chaves, J. F. Hypnosis, imagination, and human potentialities. American Journal of Clinical Hypnosis, 1975c, 18, 63-65.

Hilgard, E. R. In L. E. Uneståhl (Ed.) Hypnosis in the seventies. Örebro, Sweden: Vege Förlag, 1975d:

Cognitive control systems within hypnosis neo-dissociation theory, 146-149;

Modern gate theory of pain in relation to hypnosis and acupuncture, 15-23;

Neodissociation theory: Multiple cognitive controls in hypnosis, 7-14;

Self-induction of hypnosis by inexperienced subjects and self-deepening procedures of the highly hypnotizable, 61-65.

Hilgard, E.R. & Hilgard, J.R. Hypnosis in the relief of pain. Los Altos, Calif.: Wm. Kaufmann, 1975.

Hilgard, E.R. & Morgan, A.H. Heart rate and blood pressure in the study of laboratory pain in man under normal conditions and as influenced by hypnosis. Acta Neurobiologiae Experimentalis, 1975, 35, 741-759.

Hilgard, E.R., Morgan, A.H., and Macdonald, H. Pain and dissociation in the cold pressor test: A study of hypnotic analgesia with "hidden reports" through automatic key pressing and automatic talking. J. abnorm. Psych., 1975, 84, 280-289.

Knox, Jane V., Crutchfield, L., and Hilgard, E.R. The nature of task interference in hypnotic dissociation: An investigation of hypnotic behavior. Int. J. clin. exp. Hyp., 1975, 23, 305-323.

Ruch, J.C. Self-hypnosis: The result of heterohypnosis or vice versa? Int. J. clin. exp. Hyp., 1975, 23, 282-304.

1976

Banyai, Eva I. & Hilgard, E.R. A comparison of active-alert hypnotic induction with traditional relaxation induction. J. abnorm. Psych., 1976, 85, 218-224.

Hilgard, E.R. Neodissociation theory of multiple cognitive control systems. In G.E. Schwartz and D. Shapiro, Consciousness and Self Regulation, Vol. I, New York: Plenum Publishing Corp., 1976.

Stevenson, James H. Effect of posthypnotic dissociation on the performance of interfering tasks. J. abnorm. Psych., 1976, 85, 398-407.

1977

Dumas, Roland A. EEG alpha-hypnotizability correlations: A review. Psychophysiology, 1977, 14, 431-437.

Hilgard, E.R. Divided Consciousness: Multiple controls in human thought and action. New York: Wiley, 1977a.

Hilgard, E.R. Controversies over consciousness and the rise of cognitive psychology. Australian Psychologist, 1977b, 12, 7-26.

Hilgard, E.R. Hypnotic reduction of pain in laboratory and clinic. The Australian Journal of Clinical Hypnosis, 1977c, 5, 3-11.

Hilgard, E. R. The problem of divided consciousness: A neodissociation interpretation. In W. E. Edmonston (Ed.) Conceptual and investigative approaches to hypnosis and hypnotic phenomena. Annals of the New York Academy of Sciences, 1977d, 296, 48-59.

1978

Finke, R. A., and Macdonald, H. Two personality measures relating hypnotic susceptibility to absorption. Int. J. clin. exp. Hyp., 1978, 178-183.

Hilgard, E. R. Hypnosis and pain. In R. A. Sternbach (Ed.) The Psychology of Pain. New York: Raven Press, 1978a, 219-240.

Hilgard, E. R. A neodissociation theory of divided consciousness. In A. S. Prangishvilli, A. E. Sherozia, and F. V. Bassin (Eds.) The unconscious: Nature, functions, methods of study, Vol. III. Tbilisi, Georgia, USSR: Metsniereba Publishing House, 1978b, 574-585.

Hilgard, E. R. States of consciousness in hypnosis: Divisions or levels? In F. H. Frankel and H. S. Zamansky (Eds.) Hypnosis at its bicentennial. N. Y.: Plenum Press, 1978c, 15-36.

Hilgard, E. R., Hilgard, J. R., Macdonald, H., Morgan, A. H., and Johnson, L. S. Covert pain in hypnotic analgesia: Its reality as tested by the real-simulator design. J. abnorm. Psych., 1978, 87, 655-663.

Hilgard, E. R., Macdonald, H., Morgan, A. H., Johnson, L. S. The reality of hypnotic analgesia: A comparison of highly hypnotizables with simulators. J. abnorm. Psych., 1978, 87, 239-247.

Hilgard, J. R., and Morgan, A. H. Treatment of anxiety and pain in childhood cancer through hypnosis. In F. H. Frankel and H. S. Zamansky (Eds.) Hypnosis at its bicentennial. N. Y.: Plenum Press, 1978, 281-288.

't Hoen, P. T. Effects of hypnotizability and visualizing ability on imagery-mediated learning. Int. J. clin. exp. Hyp., 1978, 1, 45-54.

1979

Bowers, K. S. Time distortion and hypnotic ability: Underestimating the duration of hypnosis. J. abnorm. Psych., 1979, 88, 435-439.

Bowers, P. G., and Bowers, K. S. Hypnosis and creativity: Theoretical and empirical rapprochement. In E. Fromm and R. E. Shor (Eds.) Hypnosis: Research developments and perspectives. Revised Edition. Chicago: Aldine-Atherton, 1979.

Crawford, H. J., Macdonald, H., and Hilgard, E. R. Hypnotic deafness: A psychophysical study of responses to tone intensity as modified by hypnosis. American Journal of Psychology, 1979, 92, 193-214.

Hilgard, E. R. Consciousness and control: Lessons from hypnosis. Australian Journal of Clinical and Experimental Hypnosis, 1979a.

Hilgard, E. R. Divided consciousness in hypnosis: The hidden observer and its implications. In E. Fromm and R. E. Shor (Eds.) Hypnosis: Research developments and perspectives. Revised edition. Chicago: Aldine-Atherton, 1979b.

Hilgard, E. R. Hypnosis in the treatment of pain. In G. D. Burrows and L. Dennerstein (Eds.) Handbook of hypnosis and psychosomatic medicine. Amsterdam: Excerpta Medica, Elsevier North-Holland/ Biomedical Press, 1979c, 233-267.

Hilgard, E. R. The measurement of hypnotic responsiveness: Purposes and available instruments. Bulletin of the British Society of Experimental and Clinical Hypnosis, 1979d, 2, 6-10.

Hilgard, E. R. The Stanford Hypnotic Susceptibility Scales as related to other measures of hypnotic responsiveness. American Journal of Clinical Hypnosis, 1979e, 21, 68-83.

Hilgard, E. R., Crawford, H. J., Bowers, P. G., and Kihlstrom, J. F. A tailored SHSS:C, permitting user modification for special purposes. International Journal of Clinical and Experimental Hypnosis, 1979, 27, 125-133.

Hilgard, E. R., Crawford, H. J., and Wert, A. The Stanford Hypnotic Arm Levitation Test (SHALIT): A six-minute hypnotic induction and measurement scale. International Journal of Clinical and Experimental Hypnosis, 1979, 27, 111-124.

Hilgard, J. R. Imaginative and sensory-affective involvements in everyday life and in hypnosis. In E. Fromm and R. E. Shor (Eds.) Hypnosis: Research developments and perspectives. Revised edition. Chicago: Aldine-Atherton, 1979a.

Hilgard, J. R. Reduction of anxiety and pain in children with cancer through hypnosis and related psychological methods. Final Report, Grant CA 18325, National Cancer Institute, 1979b.

Hilgard, J. R. Personality and hypnosis. Chicago: The University of Chicago Press, Revised Edition, 1979c.

Hilgard, J. R., and Hilgard, E. R. Assessing hypnotic responsiveness in a clinical setting: A multi-item clinical scale and its advantages over single-item scales. The International Journal of Clinical and Experimental Hypnosis, 1979, 27, 134-150.

Morgan, A. H., and Hilgard, J. R. The Stanford Hypnotic Clinical Scale for Adults (SHCS: Adult). American Journal of Clinical Hypnosis, 1979a, 21 134-147.

Morgan, A. H., and Hilgard, J. R. The Stanford Hypnotic Clinical Scale for Children (SHCS: Child). American Journal of Clinical Hypnosis, 1979b, 21, 134-147.

Orne, M. T., Hilgard, E. R., Spiegel, H., Spiegel, D., Crawford, H. J., Evans, F. J., Orne, E. G., and Frishchholz, E. J. The relation between the hypnotic induction profile and the Stanford Hypnotic Susceptibility Scales, Forms A and C. International Journal of Clinical and Experimental Hypnosis, 1979, 27, 85-102.

Svorad, D., and Hilgard, E. R. Characteristics of resting and feedback EEG alpha-activity. Activitas Nervosa Superior, 1979, 21, 42-43.

1980

Hilgard, E. R. Consciousness in contemporary psychology. Annual Review of Psychology, 1980, 31, 1-26.

In Press

Bowers, K. S. Stress, disease, psychotherapy, and hypnosis. Journal of Psychology.

Bowers, P. G. Hypnosis and creativity: The search for the missing link. Journal of Abnormal Psychology.

Hilgard, E. R., and Loftus, E. Effective interrogation of the eyewitness. International Journal of Clinical and Experimental Hypnosis.

Hilgard, J. R., and Hilgard, E. R. Hypnosis in treatment. In D. A. Hamburg, J. D. Barchas, and P. A. Berger (Eds.) Psychiatry and the Behavioral Sciences. New York: Oxford University Press.

Hilgard, J. R., and Morgan, A. H. Treatment of anxiety and pain in childhood cancer through hypnosis. International Journal of Clinical and Experimental Hypnosis.

Kihlstrom, J. F. Posthypnotic amnesia for recently learned material: Interactions with "episodic" and "semantic" memory. Cognitive Psychology.

In Preparation

Experimental data gathered in the final year of the project have not yet been fully analyzed and the scientific reports prepared for publication. The analyses and write-ups will continue after the project ends formally on November 30, 1979.

Brenneman, H. A., Kihlstrom, J. F., and Hilgard, E. R. Analysis of profiles of hypnotic ability.

Corby, J. Evoked potentials in hypnotic deafness.

Crawford, H. J. Comparisons of normal and hypnotic visual imagery and memory.

Crawford, H. J., and Bowers, P. G. Hypnotizability, Gestalt closure, and absorption: Some interrelationships.

Crawford, H. J., Macdonald, H., and Hilgard, E. R. Hidden observer in hypnotic analgesia and deafness.

Hilgard, J. R., Crawford, H. J., and Macdonald, H. The occurrence of sequelae following hypnotizability scales as influenced by item content.

Hilgard, J. R., and LeBaron, S. Hypnosis in the alleviation of pain and anxiety in children with cancer.

Macdonald, H., and Hilgard, E. R. Unilateral hypnotic deafness studied by the signal detection method.

Monteiro, K. P., Macdonald, H., Hilgard, E. R., and Sheehan, P. W. A comparison between the Creative Imagination Scale, the Harvard Group Scale of Hypnotic Susceptibility, Form A, the Stanford Hypnotic Susceptibility Scale, Form C, in relation to imagery and absorption measures.

HYPNOSIS RESEARCH MEMORANDA

These were originally called Hawthorne House Research Memoranda, until the move to the quarters in the new Psychology Building, Jordan Hall. The last of those bearing the name of Hawthorne House was #115, issued on June 22, 1970. The first of those designated Hypnosis Research Memorandum was #116, issued January 21, 1971.

The Memoranda were introduced with this explanatory note:

Note: From time to time these memoranda will be prepared and distributed to the staff and assistants so that you may know some of the progress being made in data analysis. These are intended for information only, and are subject to revision prior to publication.

They bore in the upper right hand corner the statement: "For private circulation only; Not for publication." A limited number were circulated outside the university, and occasionally someone wished to publish data that had not been published. Eventually this notice was changed to read: "For private circulation only -- not for citation without written permission."

1962

#1. Ernest R. Hilgard, and Lillian W. Lauer. Terminology in the analysis of the Profile Scales. Dec. 10, 1962.

#2. Lillian W. Lauer. Some item and subscale intercorrelations in the Extended Profile Scales (Research). Dec. 11, 1962.

#3. Josephine R. Hilgard, Arlene H. Morgan, Evelyn Lee, Janet Melei, and Robert Slotnick. Some correlations between predictors and hypnotic susceptibility, Autumn, 1962-63. Dec. 12, 1962.

1963

#4. P. M. Bentler. Trust and hypnosis. Jan. 9, 1963.

#5. P. M. Bentler. Role enactment and ego strength. Jan. 9, 1963.

#6. Evelyn Lee. Shor-Aas-Lee Experience Inventory Data, Autumn, 1962-63. January 14, 1963.

#7. Ernest R. Hilgard. A classification of profiles on the Stanford Profile Scales of Hypnotic Susceptibility. Jan. 21, 1963.

#8. Lillian W. Lauer. Appropriateness of assignment of items to subscales of the Profile Scale as indicated by correlation of items with own and other subscales. Feb. 12, 1963.

#9. Mary R. Roberts. The relationship of the Myers-Briggs type indicator to hypnotizability. April 1, 1963.

#10. Anne G. Osborn. A comparison of hypnotic dreams and night dreams. Aug. 12, 1963.

#11. Janet Melei. Attitude toward hypnosis and hypnotic susceptibility. Aug. 13, 1963.

#12. Ernest R. Hilgard, and Eleanor L. Hewlett. Fantasy and adventuresomeness as alternative routes to hypnotic susceptibility. Aug. 13, 1963.

#13. Ernest R. Hilgard, and Eleanor L. Hewlett. Some problems created by differences between autumn and winter hypnotic samples, 1962-1963. Aug. 13, 1963.

#14. Ernest R. Hilgard, and Janet Melei. Factors in common between the Stanford Hypnotic Susceptiblity Scales (Forms A and C) and the Stanford Profile Scales of Hypnotic Susceptibility. Aug. 13, 1963.

#15. Ernest R. Hilgard, and Katherine Belz. Some relationships between adventuresomeness and fantasy and scores on the Profile Scales. Aug. 14, 1963.

#16. Ernest R. Hilgard, and Katherine Belz. Gross personality differences as a moderator of the relationship between other characteristics and Profile subscale scores. Aug. 14, 1963.

#17. Ernest R. Hilgard, and Eleanor L. Hewlett. Parent relationship and hypnotic susceptibility. Aug. 15, 1963.

#18. Eleanor L. Hewlett. Some further tests of the use of moderators in raising the correlations between interview ratings and hypnotic susceptibility. Aug. 16, 1963.

#19. Index to Hawthorne House Research Memoranda #1 to #18. Aug. 16, 1963.

#20. P. M. Bentler. Elementary statistics applied to factor analysis. Sept. 1, 1963.

#21. P. M. Bentler. A squared correlation approach to factor analysis. Sept. 16, 1963.

#22. C. T. Tart. Discriminability of two types of hypnotic "dreams." Dec. 2, 1963.

#23. Suzanne H. Troffer. Experimenter bias in hypnotist performance. Dec. 6, 1963.

#24. Henry Thomas Mudd, Jr., and Janet P. Melei. Hypnotic susceptiblity as measured by the Motoric-Ideational Scale. Dec. 11, 1963.

1964

#25. Ernest R. Hilgard. The measured hypnotic susceptibility of college students as related to estimates of parental hypnotizability based on interview data. Jan. 10, 1964.

#26. Ernest R. Hilgard. Some relationships between similarity to parents in temperament, parent hypnotizability, and the hypnotizability of college students. Jan. 15, 1964.

#27. John W. Mudd, and H. Thomas Mudd, Jr. Hypnotic susceptibility as related to verbal indicators of regressive tendencies. March 12, 1964.

#28. Carol Hilgemann. Motoric interests and hypnotic susceptibility. March 16, 1964.

#29. Charles T. Tart. Types of hypnotic dreams and their relation to hypnotic depth. April 24, 1964.

#30. Mary R. Roberts. The relationship of the Myers-Briggs Type Indicator to degree of hypnotizability. Aug. 3, 1964.

#31. Charles Imm. Repression in hypnotic dreams of situations suggested during regression. Aug. 4, 1964.

#32. Bruce Mussell. Hypnotic susceptibility and ratings from interviews in advance of hypnosis. Sept. 14, 1964.

#33. Dedication ceremony, new Hawthorne House. Oct. 30, 1964.

#34. Michael B. Conant. Conditioned visual hallucinations. Nov. 4, 1964.

1965

#35. Leslie M. Cooper. Distribution of scores, SHSS, Form A, 1958-1963: Sex differences in scores and differences attributable to hypnotist. Jan. 26, 1965.

#36. Leslie M. Cooper. Differences in susceptibility for sexes by age. Feb. 16, 1965.

#37. Rosemarie K. Moore. A comparison of the Children's Hypnotic Susceptibility Scale with a revision of the Stanford Hypnotic Susceptibility Scale for Children. Feb. 19, 1965.

#38. Ernest R. Hilgard, and Charles T. Tart. Responsiveness to suggestions following waking and imagination instructions and following hypnotic induction. Feb. 26, 1965.

#39. Suzanne A. Troffer. A further study of age regression. March 4, 1965.

#40. Ernest R. Hilgard, and Leslie M. Cooper. Spontaneous and suggested amnesia. March 4, 1965.

#41. Index to Hawthorne House Research Memoranda #20 to #40. March 8, 1965.

#42. Charles T. Tart. Hypnotic dreams about "anything" versus "the meaning of hypnosis." Aug. 3, 1965.

#43. Charles T. Tart. Content discriminability of four types of hypnotic dreams. Aug. 5, 1965.

1966

#44. Leslie M. Cooper, and Arlene H. Morgan. Accuracy of specific days given during hypnotic age regression. March 18, 1966.

#45 Lyn K. Carlsmith. Family study: Susceptibility of parents and children by age. March 30, 1966.

#46. Leslie M. Cooper and Arlene H. Morgan. A comparison of simulators and hypnotizables in a referred pain study. April 18, 1966.

#47. Leslie M. Cooper and Ernest R. Hilgard. An attempt to find physiological correlates of hypnotic analgesia. April 19, 1966.

#48. John Voevodsky and Leslie M. Cooper. Pain transient responses caused by step inputs in various hypnotic states. April 20, 1966.

#49. Arlene H. Morgan. Hypnotic responsiveness at various depths. June 1, 1966.

#50. Errol Schubot and Bruce Sanders. The validity of hypnotic age regression in the recall of past events. June 23, 1966.

#51. David Nyberg. An examination of bias in "Psychology I" subject pools. Aug. 8, 1966.

#52. Robert E. Reuter. Conditioned hallucinations and the process of image composition. Aug. 18, 1966.

#53. J. Voevodsky, L. M. Cooper, A. Morgan, and E. R. Hilgard. The measurement of suprathreshold pain. Sept. 1, 1966.

#54. John Voevodsky, and Arthur Lange. A function to describe the course of pain state reports following immersion of the hand and arm in ice water. Sept. 1, 1966.

#55. Leslie M. Cooper and Arlene Morgan. Post-hypnotic analgesia in three hypnotizable subjects. Sept. 8, 1966.

#56. Ernest R. Hilgard, Leslie M. Cooper, Lillian W. Lauer, and Arlene H. Morgan. Revised Stanford Profile Scales of Hypnotic Susceptiblity, Forms I and II. Sept. 15, 1966.

#57. John Voevodsky, Leslie M. Cooper, Arlene H. Morgan, John Lenox, and Ernest R. Hilgard. Some demonstrations of the use of pain-state reports in the study of hypnotic analgesia to the pain of ice water. Sept. 23, 1966.

#58. Marshall F. Gilula. Hypnotic Control of Autonomic Functions I: Heart Rate. Oct. 24, 1966.

1967

#59. Ernest R. Hilgard and Roland G. Boucher. The Effect on Heart Rate of Hallucinated Exercise Under Hypnosis: Some Unexpected Findings. March 12, 1967.

#60. Ernest R. Hilgard. Introductory Remarks on the Pain Response: Its Psychophysics, Psychophysiology, and Control Through Hypnosis. May 8, 1967.

#61. Arthur F. Lange. The Psychophysics of Suprathreshold Pain. May 8, 1967.

#62. Lewis B. Sachs. Pain Reduction Through Suggested Hypnotic Analgesia. May 8, 1967.

#63. John R. Lenox. Physiological Measures in Relation to Verbal Reports of Pain. May 8, 1967.

#64. Susan Prytulak. Some Additional Studies Under Way on the Relation Between Pain and Hypnosis, and Other Indicators of Pain. May 8, 1967.

#65. Arlene H. Morgan. Correlations Between Responsiveness to Pain and Other Measures of Hypnosis and Personality. May 8, 1967.

#66. John R. Lenox and Susan Prytulak. A Comparison of Three Scoring Methods for Finger Blood Pressure. Nov. 10, 1967.

#67. John R. Lenox and Susan Prytulak. Rules for Scoring Physiological Variables. Nov. 10, 1967.

#68. David P. Nowlis. A Pilot Project on Hypnotic Susceptibility and Mood. Nov. 10, 1967.

#69. John R. Lenox and Arthur Lange. Monitoring Finger Blood Pressure by Polygraph. Nov. 29, 1967.

#70. John R. Lenox, Arthur Lange and Lewis B. Sachs. Finger Blood Pressure as a Means of Distinguishing Between True and Simulated Hypnotic Analgesia to the Pain of Ice Water. Nov. 30, 1967.

#71. John R. Lenox. A Summary of the History of Blood Pressure Measurement. Dec. 15, 1967.

1968

#72. Arthur Lange, Susan Prytulak, Lewis B. Sachs, Toshimasa Saito, and Ernest R. Hilgard. The Psychophysics of Suprathreshold Pain to Ice Water and its Reduction Through Hypnotic Suggestion. Jan. 27, 1968.

#73. Arthur F. Lange and Ernest R. Hilgard. Calibration of Pain-Reduction Under Hypnosis by Pain-States as a Function of Water Temperature. Feb. 1, 1968.

#74. Arthur F. Lange and Ernest R. Hilgard. Pain Response to the Immersion of a Hand and Forearm in Cold Water at 0°, 5°, and 10° Centrigrade: I. Pain State Reports. Feb. 8, 1968.

#75. John Lenox, Joan Zaro, and William Mulligan. Reliability of Physiological Responses and Verbal Pain Reports in Ischemic Pain: A Pilot Study. Feb. 15, 1968.

#76. John R. Lenox, Arthur F. Lange, and Ernest R. Hilgard. Pain as a Function of Immersion of Hand and Forearm in Water at Three Temperatures: II. Physiological Measures. March 12, 1968.

#77. Index to Hawthorne House Research Memoranda #42 to #76. March 15, 1968.

#78. David P. Nowlis. Early Observations on a System Providing EEG Alpha Feedback. March 29, 1968.

#79. David P. Nowlis. The Child-Rearing Antecedents of Hypnotic Susceptibility and of Naturally Occurring Hypnotic-Like Experience. Apr. 1, 1968.

#80. Ernest R. Hilgard and Arlene H. Morgan. The Tranceable and Untranceable Distinction in Normal Waking Reaction to The Pain of Water at 0° Centigrade. May 7, 1968.

#81. Arthur S. Yablonky. Programming Subjects for Hypnotic Experiments. May 20, 1968.

#82. Arthur S. Yablonky. Arousal and Memory. May 21, 1968.

#83. John R. Lenox, Arthur F. Lange, and Ernest R. Hilgard. Pain as a Function of Immersion of Hand and Forearm in Water at Three Temperatures: III Finger Blood Pressure. June 17, 1968.

#84. Arlene H. Morgan and Arthur S. Yablonky. Suprathreshold Pain to Ice Water and its Reduction through Hypnotic Suggestion: Heart and Breathing Accompaniments. July 30, 1968.

#85. Lewis B. Sachs, Arlene H. Morgan, and Ernest R. Hilgard. Pain to Ice-Water and its Reduction Through Suggested Hypnotic Analgesia (Replication Experiment): I. Pain State Reports. July 31, 1968.

#86. David P. Nowlis, James M. Boyers, and Ernest R. Hilgard. Blood Pressure Correlates of the Pain of Ice Water in Waking, Hypnosis Without Analgesia, and Hypnotic Analgesia. Aug. 1, 1968.

#87. David P. Nowlis and Ernest R. Hilgard. The Interrelations Between Heart Rate and Blood Pressure in the Cold Pressor Response in Waking and Hypnosis. Aug. 2, 1968.

#88. Arlene H. Morgan. Item Content of the Ås Experience Inventory and the Lee-Teng Hypnotic Characteristics Inventory. Aug. 7, 1968.

#89. Arlene H. Morgan and Kenneth R. Keeling. True and Simulated Hypnotic Analgesia to the Pain of Ice Water: A Pilot Study Including Verbal Reports and Physiological Measures. Aug. 8, 1968.

#90. William Mulligan. The Effects of Changes in the Verbalization of a Suggestion upon an Arm-Moving Task. Aug. 9, 1968.

#91. John R. Lenox and William Mulligan. The Detection of Hypnotic Analgesia in Experimental Ischemic Pain. Aug. 12, 1968.

#92. Nick Kanas. Resistance Both To and Within Hypnosis. Aug. 15, 1968.

#93. John C. Rhead. Peripheral Blood Volume Irregularities and Hypnosis: A Negative Finding. Oct. 30, 1968.

1969

#94. Gary D. Marshall and Michael J. Diamond. Increasing Hypnotic Susceptibility Through Modeling. Feb. 1, 1969.

#95. Hugh Macdonald and David Nowlis. Terminology, Apparatus and Procedure in EEG Alpha Feedback Training. March 2, 1969.

#96. David Nowlis and Hugh Macdonald. Further Evidence for Rapidly Developed Control of EEG Alpha Rhythms Through Feedback Training, and Reports of Associated Mental Activities. March 6, 1969.

#97. James Hartnett, David Nowlis and Domin Svorad. Hypnotic Susceptibility and EEG Alpha: Three Correlations. March 7, 1969.

#98. Nancy Kerr, Curt Madison, and David Nowlis. Manipulation of EEG Alpha Activity Through the Use of Hypnotic Suggestion. March 8, 1969.

#99. Arlene H. Morgan and Ernest R. Hilgard. A Comparison of Blood Pressure Responses for Three High Hypnotizables in Three Pain Experiments. Apr. 15, 1969.

#100. Arlene H. Morgan and Gary D. Marshall. True and Simulated Hypnotic Analgesia to the Pain of Ice Water: A Replication Study Including Verbal Reports and Physiological Measures. Apr. 16, 1969.

#101. Arlene H. Morgan, Susan Prytulak, and Edna C. Davert. Hypnotic Susceptibility and Education-Occupation Level in a Sample of High School Students. Apr. 17, 1969.

#102. Gary D. Marshall. A Pilot Study on Hypnosis and Lie Detection. Apr. 18, 1969.

#103. Arlene H. Morgan and David Lam. The Relationship of the Betts Vividness of Imagery Questionnaire and Hypnotic Susceptibility: Failure to Replicate. May 23, 1969.

#104. Arlene H. Morgan and Edna C. Davert. Parent-Child Similarities in Temperament and Interests Compared to Hypnotic Susceptibility Scores. May 26, 1969.

#105. James M. Boyers and Arlene H. Morgan. The Veridicality of Post-Hypnotic Amnesia. June 2, 1969.

#106. Index to Hawthorne House Research Memoranda #78 to #105. June 11, 1969.

#107. Stanislav Kratochvil and Mojmir Svoboda. Activity and Passivity in Hypnosis. Aug. 20, 1969.

#108. Stanislav Kratochvil and Nancy Shubat. Dimension of Activity-Passivity in Hypnosis and Personality Traits: Consistency of Psychomotor Speed in Normal and Hypnotic State. August 25, 1969.

#109. John R. Lenox. A Review of Studies of "Pain Responses" in the Congenitally Insensitive. Aug. 25, 1969.

1970

#110. Arlene H. Morgan and Dwight Williams. Hypnotic Susceptibility of Stanford Students During the Past Ten Years. March 8, 1970.

#111. Arlene Morgan. The Effect of Monoptic Presentation on the Visual Backward Masking Phenomenon. Apr. 1, 1970.

#112. Luby Prytulak. A Pilot Investigation of a Linguistic Analysis of the SHSS Form A Challenge Items. Apr. 3, 1970.

#113. Gary D. Marshall. Heart Rate Responses in Real and Hallucinated Exercise. Apr. 10, 1970.

#114. Philip G. Zimbardo and Christine Maslach. Internal Control of Complex Skin Temperature Modification by Humans. May 1, 1970.

#115. David McNeil Morse. The Effect of Attribution on Hypnotic Susceptibility: A Pilot Study. June 22, 1970.

1971

#116. John Rhead. Heart Rate Responses in High and Low Hypnotizables During Relaxation Periods Before and After the Cold Pressor Test. Jan. 21, 1971.

#117. Arlene H. Morgan, Ernest R. Hilgard, and John S. Thomas. Comparison of Scores on a Group Adaptation of theStanford Hypnotic Susceptibility Scale, Form C, with a Standard Individual Administration. Jan. 26, 1971.

#118. John O. Beahrs and Hugh Macdonald. Voluntary Control of a Peripheral Vasomotor Tone Achieved by Auditory Feedback: A Pilot Case Study. June 21, 1971.

#119. Ernest R. Hilgard, Gary D. Marshall, and Hugh Macdonald. The Pain of Circulating Ice Water: Its Reduction under Hypnotic Analgesia and Its Production through Hypnotic Hallucination. Aug. 16, 1971.

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#127. Index to Hypnosis Research Memorandum #107 to #126. Dec. 15, 1971.

1972

#128. Arlene H. Morgan and Michael J. Maloney. Hypnotic Susceptibility and Self-Ratings on Roberts and Tellegen's Trust Rating Scale. July 12, 1972.

#129. Arlene H. Morgan. A Note on Subjective Comparisons of Initial and 10-Year Retest Hypnosis Sessions. July 14, 1972.

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1973

#133. Arlene H. Morgan. Sex Differences in Response to Pain as Indicated By Verbal Pain Reports, Heart Rate, and Blood Pressure. May 30, 1973.

#134. Ernest R. Hilgard and Hugh Macdonald. Pain and Dissociation: A Pilot Study Using the Cold Pressor Response. June 15, 1973.

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#136. V. Jane Knox, Lila Crutchfield, and Ernest R. Hilgard. The Nature of Task Interference in Hypnotic Dissociation. Oct. 30, 1973.

1974

#137. James H. Stevenson. Sex Differences in Items of the Stanford Profile Scales of Hypnotic Susceptibility. Aug. 2, 1974.

#138. Ernest R. Hilgard and Arlene H. Morgan. Blood Pressure Changes in Pain and Hypnosis. Aug. 9, 1974.

1975

#139. Ronald Finke. The Effect of Positive and Negative Color Hallucinations on the Production and Inhibition of the McCollough Effect. Aug. 18, 1975.

1976

#140. Index to Hypnosis Research Memorandum #128 to #139. Apr. 9, 1976.

#141. Ernest R. Hilgard, Josephine R. Hilgard, Hugh Macdonald, Arlene H. Morgan, and Lynn S. Johnson. Demand Characteristics and the Hidden Observer in Hypnotic Analgesia. May 18, 1976.

#142. Ernest R. Hilgard. The "Hidden Observer" Technique in Hypnosis Research. May 20, 1976.

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1978

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#159. Mark J. Thomas. Proactive Inhibition and the Hidden Observer. Aug. 24, 1978.

#160. Ernest R. Hilgard. Preliminary Tabular Data Comparing the Interrelationships of HGSHS:A, CIS, QMI, TAS, on Male and Female Samples Tested at Queensland and at Stanford: First Report. August 17, 1979.

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