

TENSION SYSTEMS AND UNCONSCIOUS PROCESSES

An Exploratory Study

by

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## TABLE OF CONTENTS

I.	INTRODUCTION: STATEMENT OF THE PROBLEM . . . . .	1
II.	BACKGROUND OF THE PROBLEM . . . . .	6
	A. Critical Discussions . . . . .	7
	B. Experimental Studies . . . . .	12
	1. Investigations of the influence of emotions on memory . . . . .	12
	2. Experiments with clinical orientation . . . . .	16
	3. Experiments using hypnosis . . . . .	20
	4. The work of Lewin and students . . . . .	24
III.	ACCOUNTS OF THE EXPERIMENTS . . . . .	35
	A. The Vicissitudes of Tension Systems in Normal and Hypnotic States . . . . .	36
	1. The influence on the normal state of a tension system created in hypnosis . . . . .	37
	2. Attempts to discharge a tension system by task completion in normal state . . . . .	53
	3. Discharge of a tension system by task completion in hypnotic state . . . . .	56
	4. The "revival" of a tension system by a hypnotic regression . . . . .	57
	5. A comparison of normal and hypnotic Zeigarnik quotients . . . . .	59
	6. An experiment on hallucinated task completion in hypnosis . . . . .	62
	B. The Recall of Fairy Tales in Normal and Hypnotic States . . . . .	70
	1. Fairy tale recall in the normal state . . . . .	70
	2. Fairy tale recall in the normal and hypnotic states . . . . .	77
IV.	CONCLUSIONS AND IMPLICATIONS . . . . .	86

## I. Introduction: Statement of the Problem

The broadest aim of the research, the beginnings of which are reported here, is to make a first attempt to cope with the recognized dilemma of "vitality of material versus precision of method" by the use of the clinical tool hypnosis in conjunction with several relatively standardized techniques developed by experimental psychology. The first series of this long-term research is concerned with some aspects of the motivational factors in memory, and the results of exploratory investigations are reported in this paper. Before detailing the nature of the problem itself, several theoretical considerations are in order inasmuch as the central purpose of this paper includes both an attempt to clarify some theoretical problems and a presentation of tentative experimental findings. The present problem is "exploratory" not because the problem itself is new, but because the frame within which the experiments were constructed is not anchored to a traditionally established set of guiding principles and because the potentialities of hypnosis as an experimental tool have only just begun to be tapped. It is in this departure from established compartmentalization that both the disadvantages and the advantages of this research lie.

Clearly, it is easier and perhaps less ambiguous to construct an experiment within the "theory" of a single school of psychology where the aims have already been clearly established, where an accepted terminology has been invented, and where specific procedures have been devised to the end of studying certain kinds of problems. Yet it has been precisely this internal systematization within each school which has led to the stalemate of the science of psychology. No one can

question any longer the fact that psychology has reached an important and perhaps crucial transition. The volume of critical discussions of methodology and of the applications of the philosophy of science to the particular discipline of psychology clearly shows the increasing awareness that the isolated monopolies in psychological research must give way to an integration of the most fruitful theories, tools, and experimental procedures. Ideally, this would not be simply a superficial eclecticism in which an experimenter would blindly pick from a scientific grab-bag whatever theories or procedures seemed most convenient for his problem of the moment. Rather, there would exist a highly systematized theoretical framework which could dictate the construction of a specific experiment. In such a system, such constructs for example as "drive," "tension system" and "instinctual striving" would be unequivocally differentiated from each other, united in a single clear-cut concept, or abandoned. It is obvious that such an advance in methodological sophistication will not result simply from a preoccupation with the verbal-logical problems of extending a speculative blue-print system nor from an emphasis on what Fratt (49) has aptly called the "formal" properties of an observed event. A slow and painstaking series of experiments, specifically designed to meet the present urgent need for systematic integration will be prerequisite to this growth. This is not to say that the development of theory must wait for the lagging experiment; it is simply a re-statement of the well-known fact that, "theory without practice is sterile, practice without theory is blind."

The present research, then, has been conceived against the background of its historical position in the development of the science of psychology as one of the investigations of the sort which, it is

hoped, will contribute eventually to a complete and systematic theoretical integration. J. F. Brown (//) has discussed in detail the fundamental trends in the history of psychology since the days when both psychology under Wundt's leadership and psychiatry led by Kraepelin were agreed that atomistic classification was all-important. He has shown that, from the time of the split which followed Freud's early work up to the present, there has been a consistent contrast between the rich content but methodological weakness in the psychoanalytic approach on the one hand, and the increasing methodological precision but weakness in "vital interest" of general experimental psychology on the other. He has shown further that the conceptual development of Gestalt psychology in general, and the Lewinian psychology in particular, has been paralleled by the independent and fertile development of psychoanalysis, and that the current trend in experimental psychopathology is toward a resolution of the breach between these two. Both Brown (9, //) and Lewin (35) have discussed the points of similarity in these two approaches, although this comparison and contrast will be further developed in Chapter II, it should be stated at the outset that both theoretical approaches accept the modern organismic position, whether by implication as in psychoanalytic theory or by frequent concrete statement as in Lewinian theory. It is this fundamental philosophical agreement which has made possible cooperative research problems between the two and without which the present transitional period could not have come about. The present research is thus a product of a long historical process and could not have been conceived in Wundt's day. This debt to the pioneers of psychiatry and of general psychology is thus not to be under-estimated.

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\* See Appendix A. A Diagrammatic Representation of the History of Psychiatry and Psychology [from Brown (//)]

The essentially transitional character of the present study may be readily seen in the variety of sources upon which it has had to draw. It deals essentially with the problem of "memory," the traditional property of the experimental psychologist, only recently pried loose from the "associationist"; yet it uses as its major tool the little-understood phenomenon of hypnosis developed mainly by the clinician. The "Zeigarnik technique," developed by the Lewinian school of psychology, and the recall of fairy-tales, a procedure of decidedly mixed ancestry, are the two most important methods used in the present problem. Finally, the nucleus of the problem, namely the attempt to derive from these procedures some hint regarding the motivational factors in memory, has for the most part been considered most fruitfully probed by the psychoanalysts. It is not important to clarify, in this introductory chapter, the specific application to the present problem of these various "ways and means"; this will be done in Chapter III. They have been mentioned in order to illustrate the extreme catholicity of selection which was necessary to carry forward the investigation of a problem which might explore an area common to psychoanalytic and Lewinian theory.

This selection of ways and means was determined further by a consideration of the problem of "vitality versus precision" of experiment. Brown (9), Lewin (35) and others have pointed out that for the most part, precise experiments have lacked vitality and that vital phenomena have usually not been attacked experimentally. Lewin (36) has made it clear that this situation is not necessarily a dilemma without a solution. He has expressed his hope for psychology in the following:

" . . . He [the psychologist] finds himself in the midst of a rich and vast-land full of strange happenings: there are men

killing themselves; a child playing; a child forming his lips trying to say his first word; a person who having fallen in love and being caught in an unhappy situation is not willing or not able to find a way out; there is the mystical state called hypnosis, where the will of one person seems to govern another person; there is the reaching out for higher, and more difficult goals; loyalty to a group; dreaming; planning; exploring the world; and so on without end. It is an immense continent full of fascination and power and full of stretches of land where no one ever has set foot.

"Psychology is out to conquer this continent, to find out where its treasures are hidden, to investigate its danger spots, to master its vast forces, and to utilize its energies."

Thus Lewin expresses his belief that it is not impossible to ultimately develop methods whereby vital phenomena may be attacked by precise experiments. The methods used in the present investigation are bound, however, by the current limitations; thus the more vital content of the fairy-tale recall has been within a loose and far from stringent method, while the more stringent method used in applying the Zeigarnik technique has been in connection with relatively neutral material. These two lines of investigation have from an operational point of view been carried on independently thus far, but inter-relatedly from a theoretical point of view. The importance of this inter-relation will be considered in detail in the concluding chapter on "Conclusions and Implications," in which further experimental methods will be discussed to the end of suggesting possible extensions of the investigations here reported. It is hoped that in the further development of these preliminary experiments, a method will be evolved which is simultaneously vital and precise.

Although it is obvious that the present research is an attempt to make a contribution toward bridging the gap between clinical observation and experiment, and between general psychology and psychoanalytic theory, it cannot be said at present in what specific sense these investigations attain this end. The resolution of this schism is an obvious and urgent

need inasmuch as it may make for a greater conceptual clarity of psychoanalytic theory and for a more vital import of psychological experiment. Glib "proofs" or "disproofs" of psychoanalytic theory, however, simply do lip-service to this end; this theory cannot be proven or disproven by a single experiment nor by a dozen experiments. The many attempts to produce such simple "proofs" or "disproofs" have usually done little more than reveal a general naivete of general psychology with regard to psychoanalytic theory.

A substantial and valid rapprochement between the two disciplines will be accomplished only by a long-term systematic exploration of phenomena related to those observed phenomena upon which psychoanalytic theory has been built. The investigations reported here are but tentative moves in that direction.

## II.

### Background of the Problem

The need for a detailed presentation of the present status of "cooperative problems" was mentioned in the introductory section of this paper. As Brown has summarized the general field, this chapter will be restricted to an account of those discussions and investigations which have a direct bearing on the present research. Allied investigations will simply be mentioned. However, inasmuch as the problems, the research tools, the procedures and the theoretical assumptions of this study have been drawn from widely different sources, there exists a great latitude in determining the "direct bearing" of a particular critical discussion or a specific experiment. The experimental background will hinge on the following four kinds of investigations: (1) studies usually described as inquiries into the "influence of emotions on memory"; (2) experiments

with a semi-clinical orientation; (3) investigations that have employed hypnosis as a research tool; and (4) studies by Lewin and his pupils related to the problem of motivational factors in memory or to the more general problem of integrating psychoanalytic theory with topological psychology.

#### A. Critical Discussions of Psychology and Psychoanalysis

Although on the whole it has been the academic psychologist and not the psychoanalyst who has been concerned with the problems of "conceptual refinement" and general methodology, the recognition of common problems and of the need for systematization in psychology has not been entirely confined to the academician. Yet, despite several noteworthy attempts at conciliation from each "camp," the present situation still precludes a genuine and consistent working relationship between them.

Brown (10) has emphasized this fact and has discussed its implications:

"This state of affairs works to the disadvantage of both psychoanalysis and the universities. Although psychoanalysis is of the greatest importance to medicine, it is, as I have tried to show in this paper, of even greater importance for the science of psychology. The present psychoanalytic training centers, primarily for psychiatrists, only occasionally have the opportunity to train research psychologists. The teaching staffs are made up almost exclusively of practising physicians, often with little teaching experience. Library and laboratory facilities are usually inadequate; the atmosphere of leisure necessary for scholarly research scarcely prevails in them. And the training centers have hardly any opportunities to develop research programs into problems other than those of psychiatry. Thus psychoanalysis suffers as a branch of psychology by its lack of the research facilities which characterize the first-rate universities. Academic psychology, on the other hand, is not being fertilized by the vital and pertinent questions which psychoanalysis is throwing up on every side. Psychoanalysis has more legitimate implications for the field of social psychology - which for our times is of such importance - than have introspectionism, behaviorism, gestaltism (which are now part of every curriculum) combined."

Brown (9, 11) and Lewin (35) have discussed at length the important similarities and differences between the topological and the psychoanalytic

approaches. These were only indicated in the introduction. Both agree that in each approach there is implicit an organismic philosophy which necessitates the breakdown of dichotomies, a central interest in the underlying significance of all psychological phenomena, and a belief that the development of a multiple-structured personality result from a process of differentiation of parts out of primitive wholes. Both agree, too, that there are serious differences between the two approaches which might be resolved by cooperative research. The essential differences emphasized are these: first, psychoanalytic theory has been built on the basis of clinical observation while that of topological psychology has been built on precisely constructed experiments; secondly, psychoanalysis has neglected logical strictness of theory, a nuclear factor in topological psychology; and is thus, according to Lewin (35), "a body of ideas rather than a system of theories and concepts"; and finally, psychoanalysis does not sharply distinguish between historical and systematic problems and tends to favor the former type of description. This last point has been more emphasized by Lewin than by Brown; Lewin has suggested that here perhaps lies the crux of the problem.

One might suppose that the psychoanalyst would judge this last mentioned problem of little practical importance, and find it difficult to accept even as a theoretical proposition. Yet the question of "historical" versus "ahistorical" emphases has recently been the topic of heated debate between various groups of psychoanalysts. It has come to expression in Horney's (27) contrast of "horizontal" with "vertical" analysis. Alexander (3) in a critical discussion of the need for the revision of psychoanalytic theory has suggested that:

"Horney's error lies in erecting an antithesis between the analysis of the actual dynamic structure of the patient . . . as opposed to the genetic point of view . . . only both points of

view together can give a satisfactory understanding of human behavior." (p. 18)

Alexander states further that:

"Freud was primarily a great observer and only secondarily a great theoretician. His theories sometimes lack strict consistency, contain contradictions, and are avowedly of a preliminary nature. One must realize that he did pioneer work in an almost virgin territory. He developed an extremely refined instrument for psychological investigation, accumulated novel observations, and it is only natural that his first formulations were groping attempts to bring some order into the chaos of the newly discovered field of the dynamics of human personality. He was perfectly aware of the shortcomings of his theoretical concepts and . . . consistently worked on their improvement. He justifiably stated that it was too early to create a pedantic and strictly defined conceptual system because this would hamper further development." (pp. 25-26)

This extended quotation from the work of a psychoanalyst has been introduced as evidence against the current belief that psychoanalysts have no awareness of the methodological crisis existing in the science of psychology and that they adhere in a slavish and satisfied fashion to the concepts originally set up by Freud.

Further evidence for a growing sensitivity among psychoanalysts to the need for "improving the method" is provided in a suggestive discussion by Bernfeld (6). He argues that scientific methods are always specializations and refinements of everyday commonsense techniques; and applying this fact to psychoanalysis, he concludes that everyday conversation has provided the basic model for psychoanalytic techniques. It is his opinion that conversation is a model hitherto used but little in science and therefore subject to great scorn and skepticism by non-analytically oriented scientists. He proposes, then, systematic experimental studies of the "psychology or the logic of conversation" which would investigate specifically the conditions under which obstacles to communication may be removed and the relation of such findings to the

"solution of resistance" in psychoanalysis. He says:

"Theoretically, such experiments are not impossible, though practically they will be difficult - and fascinating. The recent development of experimental psychology has shown that ingenuity has overcome obstacles to experimentation which formerly appeared to be unsurmountable. The work of Lewin and his pupils, which in many respects is related to the program we are speaking of, is an example." (p. 305)

Bernfeld, commenting on the necessity for developing new techniques in experimental psychology to meet the problems raised by psychoanalytic theory, says wittily: "What we see through the microscope we cannot check by eye-glasses." He develops this further, saying:

"The observation made by the technique cannot and need not be checked by other, so-called usual, methods. Insofar as psychoanalysis uses techniques equivalent to new observation instruments, it is not subject to the approved 'other methods.'" (p. 303)

This statement, although intended by its author as a warning comment with regard to future experimentation, is a succinct and appropriate criticism of the body of experiments designed by general psychologists to prove or disprove Freudian theory. This will be seen in greater detail in the section devoted to "Experimental Studies."

It has been mentioned that the points of contact between psychoanalytic theory and general psychology occur at the intersection provided by the organismic philosophy or generalized field-theory. An excellent illustration of the extent to which the conceptual approach and even the terminology of field-theory have been accepted by some workers in psychoanalysis is a paper by Thomas M. French, entitled, "Goal, Mechanism, and Integrative Field" (25) in which he begins:

"The aim of psychoanalysis is the study of human motives. A motive is a concept that implies striving toward a goal. Everyone knows that rational behavior has a purposive goal-seeking character. Psychoanalysis has demonstrated that irrational behavior also is striving, though less successfully, toward the fulfillment of wishes." (p. 226)

He elaborates this view in a well-documented, scholarly discussion, giving a "dynamic analysis of goal-directed behavior." The following quotation, taken from the body of this paper, represents the quality of the entire argument and is given here because it shows so unambiguously the impact on psychoanalytic thought of recent advances in the theoretical systems developed by general psychology, specifically by the "field-theorists":

"As we have seen, the goal-directed striving acting through the medium of a cognitive field, must successively activate one subsidiary goal after another and inhibit other goal-directed strivings, all in accordance with the time-schedule contained in the cognitive field. It is obvious that the difficulty of this integrative task will vary according to the amounts of psychic tension and psychic energy that are bound in the various subsidiary goals and motor mechanisms."  
(pp. 245-246)

It is not without significance that French's bibliography includes not only wide reference to the work of Freud but also to that of Koehler, Lewin, Tolman, and Hull.

Lest it be thought, however, that the lions and the lambs have lain down together with a perfect serenity, Lewin's recent reply (36) to various of French's criticisms of topological psychology should be mentioned. Lewin points out that topological psychology has developed on an empirical basis as has psychoanalytic theory but that topological psychology has the following scientific advantages: first, a higher level of aspiration with regard to concepts; secondly, a "greater readiness to face the logical consequences of a theory without explaining non-fitting cases as exceptions . . ."; thirdly, stricter requirements regarding the proof a theory; and finally, greater attention to the differences between historical and ahistorical questions.

It has been the purpose of this section on "critical discussions" to indicate concretely the beginnings of a trend in the literature toward

a consolidation of the aims and theories of psychoanalysis and experimental psychology and the important existing differences between them. The papers selected to illustrate this trend are only a sampling from an expanding literature.\* Quotations from the work of both academic psychologists and psychoanalysts were given in order to demonstrate the reciprocal character of the "revision" in progress.

## B. Experimental Studies

### 1. Investigations of the "influence of emotions on memory." \*\*

On the whole, experiments conducted by psychologists in the field of "memory" led to highly abstract laws of memory functioning. Precisely because these abstract laws bore so minimal a relation to the everyday function of memory, the need for exploring the so-called "interfering factors" was soon made apparent. Thus, there existed for a time an enthusiastic interest in phenomena labelled "retroactive inhibition," "reminiscence," the effects of "set" and "context," et cetera. This developing interest in "additional factors" in memory functioning was given impetus by what appears now to have been a serious misunderstanding and misapplication of the Freudian theory of forgetting. Experimenters working in this field assumed that Freud had believed quite literally that " . . . we tend to forget the unpleasant" and so they proceeded to set

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\* Recent papers such as those of Kardiner (29) and Landis (33) further illustrate this general point. An excellent example of the impact of organismic philosophy generally and of Gestalt psychology in particular on the study of personality is Angyal's recent book (4) in which the stress is on theoretical systematization. Equally organismic but closer to experimental and clinical methods is the pioneering work at the Harvard Psychological Clinic, brought together in Murray's suggestive account (46) of the results of their experiments and clinical investigations.

\*\* The most complete critical discussion of this work is that by Rapaport (50). This summary is based on this work.

\*\*\* This specific phenomenon has been discussed recently by Edwards (15) in a critical "restatement of the problem" of the retention of affective experiences.

up experiments which completely disregarded the specific meaning of this expression in Freudian usage and certainly its implications regarding unconscious psychological processes. Thus a host of vaguely "emotional" influences on memory were investigated either as isolated curiosae or with the aim of proving or disproving the Freudian memory theory. Such terms as "hedonic," "affective," "pleasant-unpleasant," "liked-disliked" were used to indicate the nature of the influencing factor.

In one group of these experiments word-lists were the stock in trade. The subject was asked to learn them and the influence of the emotional factor on this learning was investigated either by introducing "pleasant" (P), "unpleasant" (U) or "indifferent" (I) sensory stimuli, or by presenting words which held P, U, or I connotations for a given subject. A host of such experiments was conducted; some were devoted to the development of rigid controls of such factors as length of list, recency, primacy, and so on. Others ventured into an investigation of the many possible variations of experimental set-up which might determine the essential character of the learning of word-lists. Thus a great number of experiments studied delayed versus immediate recall; others, the problem of "overlearning" versus incidental memory; still others, the effects of age, sex, and intelligence on the learning of word-lists. This enumeration gives only the merest hint of the extent to which this type of experiment was developed.

In an effort to reduce the artificiality of the word-list learning experiments, other investigators used instead the recall of P, U, and I life experiences. In this series, too, there were meticulous controls attempted of the same type as those mentioned in connection with the word-list experiments.

Further efforts to study the "influence of emotions on memory" took the form of association experiments which used words with P, U, and I "feeling-tones." In addition to noting the reaction-time and the quality of the reaction to a given word, some of these studies included a reproduction experiment in which the subject was asked to repeat his previous reactions.

Although, in all of these experiments, the essential criterion for the "influence" of the emotional factor was the amount of material retained, there was some recognition of the importance of qualitative analyses. Instances of such qualitative analyses are the study of the course of the recall in reproduction, the analysis of the reaction word in the association experiments, and the study of the role of "context" and "set." Yet these qualitative findings were, for the most part, considered incidental and only subsidiary to the quantitative results.

Emphasis has been placed on the qualitative aspect of the experimental results only in a very few experiments. Rapaport (50) has selected as representative of these a study by Flanagan (20), two studies by Sharp (58) and one by Diven (14). These studies, in their implications, pertained more directly to the Freudian theory of memory than any others.

Flanagan's investigation and Sharp's first study used paired nonsense syllables which when read together had a socially unacceptable or sexual meaning. They discovered, in addition to a quantitative impairment of the learning of these nonsense syllables as compared with the learning of innocuous pairs, a number of significant methods used by their subjects to circumvent the pronouncing of tabooed expressions.

The subjects would often misunderstand or distort the word formed by the paired syllables; sometimes he would condense them, utter them quickly or even forget them entirely. Both authors pointed out the similarities of these methods to the "Freudian mechanisms." However, they did not make it clear whether these techniques were adopted consciously and deliberately, or whether like genuine "Freudian mechanisms" they were adopted without the subject's being directly aware of the techniques themselves or their purpose. Despite this lack, the experimental results themselves are striking and significant.

In Sharp's second study, the subjects were psychiatric patients. Sharp selected from their case-histories various nouns and adjectives directly related to their focal problems. The patients were then asked to learn lists of words among which were the "critical" nouns and adjectives selected from the case-history. Here again, Sharp found "mechanisms" similar to those described by Freud.

Diven, in an exceedingly sophisticated experimental study, used a series of stimulus words in which a pair of words recurred several times. In one series of experiments, called "conditioning sessions," an experimental "trauma" was imposed on the subject by giving him an electric shock simultaneous with the second word of the recurring pair. The subject was then asked to recall the stimulus words; this was followed by a "deconditioning session" in which no shocks were administered and after which the subject was again asked to recall the stimulus words. There were several supplementary techniques used and Diven presents a mass of detailed experimental results, in the analysis of which he differentiates subjects who became aware of the significance of the critical stimuli from those who did not. This presentation will

be restricted, however, to a brief statement of the general results and of their significance for the present problem. Diven found a "completely reliable" increase in the average number of words recalled after "deconditioning" than before. He adduces evidence, from his findings for "primary and secondary displacement," for "dynamic repression" and for the "reactivation of a repressed complex." His data suggest a "relatively greater strength of unconsciously integrated complexes." The relation of this last finding to the present problem will be seen in detail in Chapter III.

This brief account of experimental investigations of the "influence of emotions on memory" has included the double aim of demonstrating the numerous blind alleys to which over-ambitious precision in memory experiments has led, and yet the beginnings of "translatability" from the results of experiments to those of clinical investigations. In addition, it has been shown that a hasty and superficial application of Freudian theory to the construction or interpretation of an experiment cannot but delay the ultimate integration of psychoanalytic and experimental findings.

## 2. Experiments with a clinical orientation

Inasmuch as the transition between the preceding experiments and those to be described now is not clear-cut, an arbitrary division has been made to fit the needs of the present research. The subject-matter of the preceding experiments will be seen as contrasting sharply with the relative vitality of material used in experimental studies conceived in a semi-clinical framework.

As background for that part of the present investigation concerned with the normal and hypnotic recall of fairy tales, the

experiments dealing with story reproduction are directly relevant. These investigations are concerned essentially with the problem of studying the character of the subject's reproduction of an experience under conditions where the reproduction may be directly compared with the original experience. The need for such experiments arose from both commonsense and clinical observations, still unexplored by experimental psychology. It is widely recognized that few persons successfully resist the need (whether conscious or unconscious) to modify, embellish, and distort experiences in re-telling them. Frequently, as in the classic "fish stories," the motivation for their characteristic distortion is perfectly obvious to any layman, and it is probably safe to say that few, if any, fishermen have distorted their original experience by making the "fish that got away" smaller than it really was, unless attempting to console themselves for their defeat. In other instances, the motivation underlying the distortions in reproductions of previous experiences are far more subtle and require for their elucidation the delicacy of a finely tuned scientific investigation.

The corroboration of the report of an experience has long been a practical problem for the psychiatrist and for the lawyer. Patently naive solutions have been attempted by securing additional reports from other persons and comparing these with the original testimony of the patient or of the witness. Frequently, the flatly contradictory character of these has suggested that there has been considerable distortion in both versions. The same problem has emerged from the criticisms directed against workers in psychoanalysis or hypnosis who, having "uncovered" by highly specialized techniques,

early "traumatic" experiences, are unable to establish their authenticity.

In an attempt to investigate the precise nature and the mechanisms of memory changes, psychologists have developed elaborate studies of the "psychology of testimony," an area beyond the scope of this discussion. More directly related to the present research are those investigations which have used the immediate and delayed recall of short stories. Koeppen and Kutzinsky (32) and Levy-Suhl (34) have used this method in investigating thinking and memory in psychiatric patients. It was used also by Betlheim and Hartman (7) to investigate memory-functions in Korsakow patients and by Schilder to study these functions in paretics. All of these experiments suggested the fruitfulness of this technique and demonstrated the possibility of investigating the qualitative aspects of memory-changes.

Continuing this same theoretical approach, Morgan and Murray (45) shifted the emphasis and instead of presenting a story and asking for its recall, presented a picture and asked the subject to construct the story. This was, of course, the beginnings of the Thematic Apperception Test, since extended by many investigators using different sets of pictures to nursery school groups, children of grammar school age and adolescents.

Despert (13) has made creative use of several "play techniques" for the investigation and treatment of emotional problems in children. Among these, she has utilized the reproduction of fairy tales. Inasmuch as the analysis of the recall of fairy tales in normal and hypnotic states, to be presented in this paper, is directly related to Despert's qualitative approach, a brief extract from her case material will help

to orient the reader:

"Joseph, . . . 9 years, 0 months . . . brought to the Psychiatric Institute by his father . . . with the complaint that the boy goes into wild rages in which he is violently assaultive toward his mother; behaves well in father's presence. Fights with older brother, 22, but gets along fairly well with sister, 17. Is asocial and has no friends . . . The family have known better days. The father once a financially successful opera singer, has been recently forced into minor dramatic acting and music teaching is an . . . egocentric, domineering individual . . . Mother oversolicitous. Up to time of admission the patient slept in parent's bedroom . . . He says he loves his mother and does not refer to his belligerence toward her."  
(pp. 11-12)

When interviewed, the boy was on the whole not productive and maintained that ". . . he gets along well with everybody." Despert thus concluded that a direct approach to the child would be futile, and had him tell the story of "The Big Bad Wolf." He said:

"Once upon a time there were three little pigs, two were singing songs. The third was building houses. There was a big bad wolf who was poor and had three sons. The two little pigs who were singing wanted to learn some more songs, and the third didn't like the songs. The wolf heard it, and he disguised as a teacher and his three little children, two disguised as boys, one as a girl . . . Then he captured them while he was giving them singing lessons." (p. 12)

Despert comments on this indirect expression of the child's emotional conflict as follows:

"In this story, as well as in several others elaborated by this boy, the principal theme is that of a powerful adult male (man) who is a threat to his offspring (child). The wolf is easily identified as the real father, even to the extent of similarity of profession. Other points for identification are the poverty . . . the 'disguise' as a teacher, the number and sex of children." (p. 12)

This instance of Despert's work has been quoted thus extensively because it provides an excellent concrete precedent for the analyses of the distortions and omissions in the fairy-tale reproductions to be described in Chapter III.

Although Ricklin's imaginative investigation of fairy-tales (53) is not an experimental study, its relationship to Despert's work and to the fundamental aims of the present research is such that a discussion of it is clearly indicated here. Essentially, his book is a scholarly survey of numerous fairy-tales, showing the possibility of using Freudian theory to the end of making them psychologically comprehensible. It is his thesis that the fairy-tale is primarily a subtle wish structure which, like the dream, utilizes symbolism and the various dream-mechanisms to accomplish its "purpose." He says:

" . . . the psychology of fairy-tales, as we have learned to know through Freud, stands in close relationship to the world of dreams, of hysteria, and of mental disease." (p. 1)

"Now certainly the scientific method in the psychological exploration of fairy-tales is circumscribed by the investigation of dreams and of psychotic structures. Here through many experiments, one can follow the sources and association paths which the elements in the formation of the dream story or the delusional structure have supplied . . . The creator of these fairy-stories in his traditional form is dead or unknown to us . . . however, the human psyche . . . in conditions in which the unconscious is especially active, and also in abnormal psychic activity, is always still a fairy poetess, and a continued comparison of these products with the fairy-tales permits us to draw the most valuable conclusions." (p. 3)

Ricklin emphasizes the importance of sexual symbolism in the fairy-tale and points out its close agreement with dream symbolism and that of psychopathology.

### 3. Experiments Using Hypnosis.

Although the phenomenon of hypnosis was apparently known to ancient peoples, its acceptance as an instrument of science is even today hotly contested by a few scientists. It has had its "boom" periods during which respectable men of considerable eminence found it worthy

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\* It is clearly beyond the scope of this paper to review all of the recent work in experimental hypnosis. The most complete summary of the recent literature may be found in F. C. Young's review. (66)

of serious investigation; and it has had its years of "depression" during which only the untutored lay public found it of interest. In recent years, the interest in hypnosis has revived and it is not entirely a speculation to say that its future as a "respectable" tool for the scientist is brighter than it has ever been. This is because of the tremendous advances which have been made in psychodynamic theory. Whereas previously hypnosis could survive only because of its profound and dramatic "powers," and in spite of its relative isolation from existing explanatory theories, it now is being re-examined in the light of a more sophisticated approach to the problems of psychological functioning.\*

Erickson (7) has pointed out that during the past ten years not only has the volume of work in this field doubled but that " . . . the approach to the problems of hypnotism has been placed more and more on the scientific basis of controlled laboratory analysis and experimentation . . ." It is the aim of this discussion to present a few experiments which have used hypnosis as a research tool and which have direct implications for the present research. It will be seen that this application of hypnosis to the problems of psychology, particularly in the recent experiments, promises some solution to the dilemma of "vitality of material versus precision of method"; for the strong affective relationship between experimenter and subject makes possible the creation of psychological phenomena of significantly greater strength than those produced by the usual laboratory methods. This does not mean, however, that experimenters using hypnosis have always availed themselves of its great potentialities; many have used hypnosis in precisely the

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\* Examples of such attempts to integrate hypnosis with a more dynamic theory than that of "dissociation" may be seen in Freud's discussion of hypnosis (24) as a phenomenon closely related to those loosely classified as "love-relationships" and in White's recent discussion of hypnosis (64) as a "meaningful, goal-directed striving."

same artificial, rigid manner criticized in several of the previously discussed experiments on memory-function.

The normal and hypnotic recall of fairy-tale material is related to studies of hypnotic hypermnnesia. Although there is still some debate on this question, one study by Stalnaker and Riddle (57) and another by White, Fox, and Harris (64) indicate the probability that earlier negative findings resulted from the use of meaningless material, thus precluding a creative reproduction. In contrast to the essentially qualitative analyses in the present research, both of these studies emphasized the quantitative differences between the normal and hypnotic recall of meaningful material.

The fact that certain acts may occur without awareness of their motivation had been demonstrated frequently by clinicians in the phenomenon of post-hypnotic suggestion. Erickson (18) brought this phenomenon into a close relation with psychoanalytic theory by his striking experiments on the "psychopathology of everyday life" in which he induced various socially unacceptable attitudes in his subjects during hypnosis, with the result that these attitudes came to expression during the subsequent normal state in the disguised form of slips of the tongue, parapraxes, et cetera.

Young (66) discusses M. M. White's experiment (62) on "inhibition as a factor in recall" as a partial verification of the Freudian theory of repression, on the basis that White found a longer reaction-time to unpleasant words than to pleasant words in the hypnotic state. Although this finding is of interest, its relation to the Freudian theory of repression can be so easily assumed only by

accepting a superficial understanding of this theory.

The problem of hypnotic regression is relevant here inasmuch as an attempt was made in the present research to re-establish a "tension system" several months after it had been induced in hypnosis. Although Platonow (46) has published extensively on the genuineness of this phenomenon, and although Erickson (17) has expressed the belief that this is the ". . . best and most promising approach to date to one of the most significant . . . problems," Young (66) is not satisfied with the existing evidence and suggests the possibility that hypnotic regression may be simply an artifact. It is hoped that the experiments to be reported here may contribute to the solution of this still unsettled problem.

Although the present research does not deal directly with the hypnotic production of "complexes," or of "experimental neuroses," brief mention should be made of the work in this field for two reasons: first, because it has been in this area that there has been the most clear-cut attempt to incorporate both "vitality" and "precision"; and secondly, because the extension of the present experiments will of necessity take many cues from these investigations. The pioneering investigations into the "nature of human conflicts" were conducted by the Russian psychologist, A. R. Luria (39). He suggested to deeply hypnotized subjects experiences of such a nature as to result in a significant affective disturbance which, though rendered amnesic, would bring about discernible symptoms in the normal state. In both normal and hypnotic states, word-association tests were given; these were accompanied by meticulous measures of voluntary and involuntary motor responses. Clear evidence for the affective disturbance was

found. Further, hypnotic psychotherapy was used to remove the conflict and this was proven efficacious by a readministration of the association tests and the measures of motor response. Luria's work, thus, was a clear-cut experimental demonstration of a clinical concept, the "complex." His work is perhaps the most successful synthesis to date of meaningful content with rigorously controlled method. \*

#### 4. The Work of Lewin and students

This group of experiments has been selected for discussion both because it provides part of the direct setting for the experiments to be described, and because the investigations of Lewin and his followers come closer to a systematic synthesis of vitality and sound methodology than those of any other theoretical approach of academic psychology. Inasmuch as most of the early experiments by his students have been excellently summarized by Lewin (40), this presentation will be limited to a sampling of the kinds of problems attacked by this group, the evidences for recent attempts at a rapprochement with psychoanalytic theory, and finally the precise contributions of these experiments to the formulation of the present problem.

Under the heading, "general laws of psychological systems," Lewin (40) includes the study of the formation of tension systems as the result of a "need," a "purpose," or an "intention." It is this area, particularly the work of Zeigarnik, with which the present research is directly concerned; a detailed discussion will be given of several pertinent investigations. Still under this general heading, Lewin discusses the experiments on "substitution," that is the " . . . question of

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\* Other investigations of this sort, which followed Luria's general mode of attack, have been summarized by P. C. Young (66).

\*\* This is in contrast with important single experiments, not conceived within a given theoretical system, such as the work of Luria (39) previously discussed.

the discharge of the psychological systems through substitute or compensatory activities . . . " (p. 247) This problem is considered as the experimental analogue to the problem of "sublimation" in Freudian theory. Other studies in this sub-grouping include investigations of "level of aspiration" and "psychical satiation."

Under "problems of the environment," Lewin includes the problems of "general topology and dynamics" (for example, anger, as a dynamic problem) and problems of "reality and unreality." The implications of the latter for psychopathology are many; it will probably be one of the most important fields for cooperative research. A recent attempt - not experimental - to apply this concept to problems raised by psychoanalysts is that by MacKinnon (41); he gives a "topological analysis of anxiety" in terms of the simultaneous and contradictory distortions on the levels of "positive and negative unreality."

Yet another attempt to find a common ground conceptually is that by French (22). In his discussion of dreams as a means " . . . of studying the subjective factors in structuralization of the field" (p. 17) he reports two consecutive dreams from a single patient and says:

"Different parts of the two dreams could be shown to be merely different ways of dealing with this one fundamental problem comparable to the changes in the practical grasp of the experimental situation achieved . . . by Kohler's monkeys. Just as Kohler's monkey is at first baffled by the problem of getting a banana just out of its reach . . . so the dream attempts first one method and then another of practically grasping and reacting to the problem presented by conflicting emotional urges . . . " (p. 17)

Although the present research is, at its present stage, concerned only incidentally with the problem of "regression," a recent major study by Barker, Dembo, and Lewin on "frustration and regression" (5) will be considered here in some detail because it is the one of

the best examples of an attempt to attack experimentally a problem " . . . at the intersection of historical and systematic questions." It shows clearly both the strong and weak aspects of a transitional investigation.

The authors begin with a discussion of the loose usage to which the term "regression" has been subject, and they point out Freud's recognition of the need for a conceptual refinement of the term. There is included then a fairly detailed critique of "regression" as understood by the psychoanalyst, and a distinction is drawn between "retrogression" regarded as a re-instatement of an earlier behavior pattern and "regression" as discussed in terms of a "de-differentiation" and "primitivization" of the person. The experiment is concerned thus with the concept, "regression."

Using the most advanced experimental techniques in child psychology, the investigators have constructed an elaborate laboratory situation in order to contribute to the much-needed "conceptual refinement." Thirty pre-school children were first observed in a "free play situation" and later in a "frustrating situation" where a number of more attractive toys have been added but rendered inaccessible by replacing one of the walls of the room by an impregnable wire-net, through which the toys may be seen but not reached. Interest in the new toys was guaranteed by permitting the child to play with them for a little while before letting down the wire-net between the child and the toys. The criterion used for determining the resulting "regression" was the extent to which the productivity of the child, with his original toys, decreased in this frustrating situation as compared with the previous free play situation. A careful scale of "constructiveness" was developed, and it was found that "a background of frustration decreases the average constructiveness

of play with accessible toys . . . by an amount equivalent to 17.3 months of mental age." (p. 207) Other suggestive results are offered, and it is stated that "probably different factors were important for different subjects." (p. 216)

This study is perhaps one of the best examples of the "transitional experiment." No one could say that its problem is pedantic or sterile. Equally, it could not be said that the methods used were loose or "literary." Yet one cannot feel that in this type of experiment lies the final solution to the problem of combining vitality and precision, although there can be little question that it is one of the most promising approaches yet devised by experimental psychologists. The inadequacies of such experiments are perhaps related to their tremendous refinement and differentiation of small areas of great problems which themselves are not yet clearly comprehended even in a gross manner. Thus, in a sense, it may be that the precision of such experiments has outgrown the present grasp of the underlying problems and that this fact may create a feeling in the reader that there is "too much talk about too little." Perhaps the course of experimentation should proceed from the opposite direction with attempts to achieve some feeling for the gross total pattern of the "whole elephant" before proceeding with histological investigations of the tissues of his ear. There can be no question, for example, but that the Freudian theory of regression includes phenomena of a magnitude and depth not within the scope of this investigation. This is not to say that the observed phenomena in this study are unimportant or invalid, but that the serious differences between these phenomena and the monumental changes in a clinically observed regression must not be underestimated, nor must they be

regarded as the inevitable price of scientific investigation. It may be that the experimentalist will be enabled to come closer even than he has to the study of central rather than peripheral phenomena.

Rapaport (5'), in a critical discussion of "Freudian mechanisms and frustration" says:

"The similarity of the phenomena observed in frustration experiments to the Freudian mechanisms is obvious. The gravest danger in dealing with them lies in the possibility that one may lose sight of the fact that our knowledge about them has been gathered in a methodologically basically different way than knowledge of the Freudian mechanisms. The Freudian mechanisms reflect vicissitudes of instinctual needs inferred from historical investigations. The reactions to frustration in the frustration experiments are ahistorically established dynamics of a field situation out of which no conclusion as to the genetic relation between frustration and its sequelae should be drawn."

Although these comments were made specifically with regard to frustration experiments, the same might be said of the experimental investigation of any Freudian concept. Thus the evaluation of the experiments on "repression" now to be considered should be based at least partly on the above considerations.

A study by Gould (26), called "An Experimental Investigation of Repression" was reported in part at a recent meeting of topological psychologists. She described her procedures as follows:

"The experimental technique creates a conflict in a context which is potentially a threat to the self-esteem or ego of the individual. The subject is presented with two tasks from which he must choose one to perform. He is told that the nature of his choice will reveal a particular personality characteristic. Regardless of his choice, however, he is given a prearranged personality evaluation. Each subject is presented with six (6) choice situations and is given six (6) personality comments after each of these choices, three (3) positive and three (3) negative."  
(p. 40)

It was expected that the behavior of the subject in response to the comments as well as the characteristics of the recall of both tasks and

comments would provide a means for investigating various nuclear problems regarding the repression process, such as the criteria for repression, the specific role of the emotional factor in repression, the determining factor which dictates "repression" as a 'path out of conflict' and so on. In analyzing her results (in an unpublished paper), Gould places more emphasis on the qualitative than on the quantitative findings; she concludes "presumptive evidence for repression" and offers a " . . . two-fold hypothesis concerning the psychodynamics of repression . . . ":

"(1) The level of emotional tension . . . determines the extent of possible recall of that situation; (2) the specific motivational pattern operating at the time selectively determines, within the range set by the tension level, what aspects of the situation will be recalled. A high level of tension makes repression possible . . . In conjunction with a high level of tension, certain motivational factors determine that those aspects of the situation which arouse anxiety and tension, shall . . . suffer most in recall.

In addition, quantitative results are cited to give supportive evidence that repression was actually created by the experiments. For example, the comments though fewer in number are forgotten relatively more often than the tasks; also, the tasks associated with U-comments are forgotten more often than tasks associated with P-comments, and a U-task initially forgotten and spontaneously recalled during the interview is often accompanied by intense affect toward the task.

Like the frustration-regression experiment at Iowa, Gould's investigation is transitional and therefore relevant to the present research. It, again, attempts to apply a more rigorous method to the study of a central Freudian concept. Yet, precisely because it is so restricted in its content, it is difficult to accept it as a bonafide relative of Freud's description of "repression." It may be that the

"level" of the need or striving evoked by this experiment is quite different from the type of striving or wish which is "repressed" in everyday life. Even though one may grant the possibility that similar mechanisms may be involved, it is of little use to call the phenomena produced experimentally, "repression" until one can demonstrate a more organic relationship between the experimental and the clinical phenomena. In Erickson's experimental demonstration of the psychopathology of everyday life (18) for instance, this organic relation exists so obviously that no one would question its relevance to the psychoanalytic theory of parapraxes; yet even this experiment added nothing to its conceptual refinement. It is clear thus that the tremendous complexity of psychoanalytic concepts is not to be underestimated and that there is perhaps more to be lost than gained by an easy identification of experimental processes with the various Freudian concepts; in this instance with the concept "repression."

Although Zeigarnik (67) dealt only incidentally with the problem of "repression," her experiments and those of Ovsiankina (52) will be discussed here because they provided techniques which have been applied to many different kinds of experiments, some of which have stated explicitly that their purpose was to study the process of "repression" with experimental methods. The present research has adapted the Zeigarnik technique for the exploration of the vicissitudes of "tension systems" originated in normal and hypnotic states.

Zeigarnik, it will be recalled, gave a series of 18 to 20 simple tasks to a number of subjects, allowing them to complete only half of the tasks and interrupting the other half before the subject was able to finish. The subject was then asked to recall the tasks;

Zeigarnik found a 90% mean advantage in recall of the interrupted over the completed tasks. This advantage was held to be an indication of the existence of a "quasi-need" to complete the interrupted task, and thus experimental corroboration of the Lewinian theory of "tension systems" was provided. Numerous control experiments were introduced to show that the undischarged "tension system" and not some other factor was responsible for the results. This material has been summarized adequately and frequently in the reports of subsequent experiments which have stemmed from the work of Zeigarnik and Ovsiankina, who demonstrated the same essential point by observing the high per cent of resumptions of interrupted tasks. Refinements of technique and elaboration of problems inherent in the use of the "Zeigarnik technique" have expanded the literature to the point that a sizable bibliography of experiments using the method of interrupted tasks now exists. Investigations by Pachauri (47), Marrow (42), Katz (30), Schlote (57) and others generally substantiated Zeigarnik's findings.

Recently, a number of experimenters have become interested in radically varying the conditions of the Zeigarnik experiment in order to investigate the different ways in which a "tension system" may be structured, and in some instances to investigate the relation of such differences to the Freudian concept of "repression." Rosenzweig (54) has reported an experiment in which every subject was given a number of jig-saw puzzles to do; the experimenter let the subject complete only half of the puzzles. However, he divided his subjects into two groups presenting the puzzles as an intelligence test to one group and in an informal spirit to the other. Those subjects who regarded the experiment as a test tended to favor the finished puzzles in recall,

while those who had done the puzzles informally tended to recall the unfinished puzzles more frequently. In a subsequent discussion (55) Rosenzweig draws a distinction between what he calls "need-persistent" and "ego-defensive" reactions to frustration, and concludes that in this experiment the members of the informal group were under little tension and their interest was centered on the task (need-persistent reaction), while those in the formal group were under considerable tension and incompleteness meant the evocation of feelings of failure (ego-defensive reaction). Rosenzweig proposes these "two fundamental types" of reaction as a framework for most of the psychoanalytic mechanisms and in this instance calls his experiment, therefore, an "experiment on repression."

Although Rosenzweig's study is still an extremely crude approach to the delicate and subtle character of the process of repression as described by Freud, its importance in raising certain focal problems has been overlooked both by other workers and apparently by Rosenzweig, himself. For example, Adler and Kounin (2), in a recent paper review the general status of the problem of interrupted tasks. They cite Rosenzweig's experiment as one of the few instances of "contradictory evidence" on the question of whether interrupted tasks are better retained than completed ones. They say:

"The authors believe that the discrepancies between Rosenzweig's data and those of others are due to his use of a 'success and failure' rather than an interruption technique." (p. 256)

Thus Rosenzweig's results are regarded as due to a technical innovation and therefore of trifling significance. If, instead, the emphasis were placed on the "supplementary" rather than on the "contradictory" character of these results, the contemporary "island-character" of various isolated

researches would tend to be somewhat neutralized. Rosenzweig hints at the possible integrative value of his experiment in his establishment of the "need-persistent" versus "ego-defensive" reaction types. This dichotomy is perhaps too restricted, however, and serves to obscure the possibility (suggested by Rapaport, 50) of the existence of an emotional hierarchy of highly differentiated gradations which shade from relatively peripheral needs or strivings to more central ones. Although Lewin (39) has hinted at such a stratification in his discussion of the "topology of the person," particularly in his description of the "inner-personal strata," his distinction between "central" and "peripheral" inner-personal strata seems still decidedly in the blue-print stage. J. D. Frank (21) has recently pointed out the need for a greater clarification of Lewin's "representation of the person." Such a development would be precluded by considering the results of the Rosenzweig experiment "contradictory" to those of the Zeigarnik experiment. The relevance of these theoretical considerations regarding allied problems to the findings of the present research will be considered in detail in the discussion following the presentation of the experiments themselves.

Adler (/) has reported other pertinent studies in a paper entitled, "The Experimental Production of Repression." In one study conducted by Blumberg, the subject was given sixteen jig-saw puzzles to put together; half were bright and sharply defined, the other half, dull and unclear. All were interrupted. The subject was told that

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\* Adler has appended a footnote to the title of this paper, suggesting that the phenomena described are significantly different from "repression" in the Freudian sense and should more properly be called "suppression." However, this qualifying statement was apparently an after-thought; the body of the report uses the term "repression" throughout.

this was an intelligence test and that he would be rated. After each interruption of an easy puzzle, the subject was told he was doing better than average; after interruption on the harder ones, he was told his performance was poorer than average. When all sixteen puzzles had been administered, the experimenter asked for recall and found that those who did not accept the experimenter's judgment of failure and who felt they could have done better recalled more failure-puzzles than successes, while those who experienced real failure recalled more success-puzzles than failures. Blumberg concludes that in this second group " . . . the experience of failure led to an inability to recall the failed activity, i. e., to repression." (p. 28)

A second experiment, conducted by Adler and reported in this same paper, employs a procedure with adults used by Wright (65) to study altruism in children. The subject must decide which of two tasks (one judged pleasant and the other unpleasant) to do himself and which to leave for a stranger to do. The assumption was that if the "selfish" decisions actually produced guilt then perhaps there should be some difficulty in recalling those tasks related to the selfish choices. Adler's preliminary results indicate that in the recall, the selfish choices are forgotten more frequently than the generous ones. As the result of an attempt to "bring back" the forgotten items by a removal of guilt, Adler found some evidence that this guilt removal does permit a freer return of the memory for the "selfish" choices in an additional recall period. This increase was compared with the character of the recall in a "guilty" group for which the experimenter made no attempt

to remove the guilt and which, accordingly, recalled fewer "selfish" choices in the additional recall.

Although there can be little doubt that the phenomena described in all of these "repression" experiments are genuine and possess an independent validity, it must again be emphasized in conclusion that their relevance to the phenomena designated by the Freudian term will not be clear until the specific relationships of the central and peripheral "inner-personal strata" to each other and to Freudian "unconscious drives" are worked out.

### III.

#### Accounts of the Experiments

It was mentioned in the introductory section that the experiments to be described comprise two lines of investigation, proceeding from opposite directions, to an experimental convergence. Thus the fairy tale recall experiments tackle a complex and intricate problem with an admittedly loose method; the experiments on "tension systems," on the other hand, explore somewhat more restricted problems with a more systematic method. Inasmuch as both these lines of experimentation have been essentially exploratory, they have been conducted more or less independently of each other and thus their specific results will be discussed separately. However, the possibility of unifying conceptually the hypotheses derived from each will be discussed, and plans for subsequent experimentation will be presented.

Before proceeding to the experimental accounts, several methodological and technical problems should be mentioned. The entire series of experiments uses the method of systematic variation with few subjects

rather than that of literal repetitions with large numbers. Quite apart from the fact that Fisher (19) and others have recognized the value of using qualitative methods to increase the sensitiveness of an experiment, this approach is dictated by the high degree of selection and the intensive training of subjects necessary for work with hypnosis. For example, it is not at all unusual to find that from a group of twenty volunteers, one can use only one or two subjects for certain kinds of experiments. When these are selected on the basis of their reactions in a group hypnosis, the "weeding-out" process is fairly simple. However, when these rare subjects must be found by a trial-and-error in individual hypnosis, the practical problem is far more serious. Thus, the statistical treatment of the data is extremely crude inasmuch as the samples are necessarily so small. However, it has been possible to deal intensively with qualitative data and with consistent trends in the quantitative data.

A. The Vicissitudes of Tension Systems in Normal and Hypnotic States.

It was mentioned in the section on background material that the work of Zeigarnik (67) provides the direct antecedents of these investigations. It will be recalled that Zeigarnik found that, in general, if a person is given a number of tasks and permitted to complete only half of them, he will recall the interrupted tasks significantly better than those completed, thus revealing the persistence of a "tension system" related to the "quasi-need" to complete the interrupted task. A good hypnotic subject, preferably one who has been developed by systematic training to the point of deepest "somnambulism," can be made to forget not only having been interrupted

in certain tasks but even having seen the task materials. Thus, it has been possible to initiate the investigation of the following problems: (1) What is the influence on behavior in the normal state of a "tension system" created in hypnosis, and conversely, the influence on behavior in the hypnotic state of a "tension system" created in the normal state? (2) Can a "tension system" created in one state be discharged in the other (normal and hypnotic)? (3) What is the relationship between the spontaneous needs set into operation by the hypnosis itself and the experimentally induced quasi-needs? (4) Is it possible by a technique of hypnotic "regression" to re-create a "tension system" after a period during which under Zeigarnik's conditions it would have completely disintegrated? (5) What is the relation of reality levels in hypnosis to those in the normal state?

This list by no means exhausts the theoretical possibilities for exploring the structure and the fate of "tension systems" in normal and hypnotic states. It simply offers a glimpse of the kind of problem for which this general approach seems best suited.

(1) The Influence on the Normal State of a Tension System Created in Hypnosis.

Statement of the Problem: The results of both psychoanalytic and hypnotic clinical investigations have suggested that frequently behavior is determined by needs, strivings, or goals of which the individual has no direct awareness; the aim of this experiment was to apply a more standardized technique, developed by an experimental psychologist, to the study of this problem. If it could be shown that a "tension system" created in hypnosis has observable effects on behavior in the normal state when the subject has amnesia for the

origin of the "tension system," then perhaps this would open a path to the systematic exploration of the so-called "unconscious mechanisms."

Subjects: This problem was explored on three separate occasions: twice with the same subject, Alice A. using radically different techniques each time and once with Barbara B., essentially a confirmation of the first experiment with Alice A. Barbara B. is a high school senior, aged 17; she is an attractive somewhat frivolous youngster and has never read a book on psychology. She had seen hypnosis once on the stage and had been skeptical of it. Her response to hypnosis was immediately deep; she showed a good amnesia after the first session and was subsequently developed into a somnambulistic subject. Alice A. is a trained nurse, aged 26; she has had a year of psychiatric training but she had never seen any hypnosis. She is a top-notch subject, one of the upper five per cent of the population. From the first, she showed most of the extreme hypnotic phenomena.

Procedure with Alice A: In order to secure the most reliable kind of hypnosis, Alice A. was put through a period of gradual training during which each session would serve to familiarize the subject with the general phenomena of the hypnotic state. For example, many subjects firmly believe that hypnosis is essentially a passive lethargic state resembling sleep and that one cannot be in hypnosis with his eyes open. In her normal state, Alice A. expressed some such belief. Therefore, one session was devoted to letting her experience the fact that she could open her eyes in hypnosis and yet be in a deep hypnosis (proven to her own satisfaction by the functional paralysis of her legs).

Another session was designed to let Alice A. experience the fact that she could "do things" in hypnosis without disrupting the trance. Although this may seem an over-cautious and laborious procedure to the experienced investigator in hypnosis, it seems that it might be better to waste a little time in "over-training" a subject than to introduce a subject to a critical experiment and run the risk of ruining the experiment.

When it appeared that the preliminary training period had taken into account most of such possible unevenness in Alice A.'s responses to hypnosis, the experiments were begun. Alice was first asked in her normal state to select the preferred one of a pair of tasks in ten pairs.\*

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\* The ten pairs of tasks are listed; many were adapted from Zeigarnik (67) and Marrow (42):

1. Copy a geometrical design (P). / or 2. Construct a geometrical figure with match-sticks.
3. Cut out and color a tulip. / or 4. Cut out sport outfit in fashion magazine (P).
5. Arrange scrambled panels of cartoon / or 6. Put Manikin profile to-strip to make joke. together (P).
7. Jig-saw puzzle. / or 8. Copy block design (P).
9. Simple cross-word puzzle (P). / or 10. Put together cut up proverbs to make sense.
11. Cut design out of paper by folding. / or 12. Fill in blanks in sentences (P).
13. Number puzzle (P). / or 14. Simple arithmetic problems.
15. Fill ellipses with crosses (P). / or 16. Complete a series of squares.
17. Find an actor, a city, a state, and a body of water starting with the same letter. / or 18. Build a sentence from the words: crowd, hatred, wire, table (P).
19. Draw plan of hospital grounds (P). / or 20. Draw plan of school grounds.

("P" means preferred task)

She was shown each task and told:

"I'm going to show you a number of tasks and I'd like you to tell me which one of two you'd rather do. I don't want you to do them, but just tell me which you would prefer."

When Alice A. had given all of her preferences in the normal state, she was brought into a state of deep hypnosis and amnesia for these choices was induced. Still in hypnosis, she was given the twenty tasks to do; half were interrupted and half completed with an equal number of preferred tasks interrupted and completed. \* She was then brought out of hypnosis with a complete amnesia both for her original preferences in the normal state and for her task performance in the hypnotic state. Now, back in the normal state, she was again asked which of each pair of tasks she preferred.

Results with Alice A.: Two reversals of preference occurred: whereas in her original choices in the normal state Alice A. had preferred the cross-word puzzle task (9) to putting together the proverbs (10), her preference was now reversed; a similar reversal took place between tasks (19) and (20). It is apparent that if no change in the "valence" of the tasks had taken place, she would have preferred five interrupted and five completed tasks inasmuch as five preferred tasks were interrupted and five were completed. Her "preference-quotient" would then have been  $5/5$  or 1.0. Instead, she preferred seven completed tasks and three interrupted tasks, yielding a "preference-quotient" of .42 and indicating a need either to avoid the interrupted tasks or to repeat the completed tasks.

Procedure with Barbara B.: Procedure here was essentially a repetition of the experiment on Alice A. The tasks used were

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\* See Appendix B for this list and for order of presentation.

different\* and the Zeigarnik experiment in hypnosis was not conducted on the same day that the original preferences were made. Aside from these two deviations, the experiment with Barbara B. was carried out in precisely the same manner as that with Alice A.

Results with Barbara B. Here again, the preference-shift in the direction of the completed tasks appeared after Barbara was brought out of hypnosis with amnesia for having done twenty tasks and completing only half of them, in hypnosis. In this normal state, then, following the Zeigarnik experiment in hypnosis, she preferred three interrupted tasks and seven completed tasks. This clearly shows that two tasks previously "preferred," which were interrupted during the experiment, have now become "non-preferred"; thus the theoretical quotient of 1.0 which would result had the preferences undergone no change is reduced

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\* These ten tasks were also adapted from several sources as indicated in the listing for the experiment with Alice A.:

1. Do a simple multiplication (P). / or 2. Write an old nursery rhyme.
3. Model a clay animal. / or 4. Draw a vase (P).
5. Make a mosaic design (P). / or 6. String beads.
7. Fill a paper with crosses. / or 8. Copy a paragraph (P).
9. Connect scattered numbers from 1-20 (P). / or 10. Maze-puzzle.
11. Jig-saw puzzle. / or 12. Write 12 cities or states starting with 3 different letters, 4 in each group (P).
13. Underline l's and n's in a paragraph (P). / or 14. Count crosses on a page.

to 3/7 or .42, just as in the experiment with Alice A., indicating again either a "negative valence" of the interrupted or a "positive valence" of the completed tasks.

Use of a second technique with Alice A. The question was raised that perhaps even the neutral tasks given Alice A. in the first experiment were variable with regard to their attractiveness; although the shift in task-preference toward the completed tasks made this consideration appear less significant, it was thought worthwhile to explore the same problem, using nonsense syllables. This experiment was conducted five months after the first experiment with Alice A.

Procedure: The technique used here was adapted from an unpublished study by K. B. Watson (61) carried out under the direction of Adams; Alice A. in a state of deep hypnosis was given a sheet of paper with the lines numbered from one to twenty, and with a nonsense syllable at the top. She was given the general instruction for the whole period to copy the nonsense syllable on each line of the page but was interrupted, of course, in half of the trials. The point of interruption was always somewhere between lines fifteen and twenty. She was given only one sheet at a time and she did not know how many to expect. Twenty syllables were used altogether. Still in hypnosis amnesia was induced for all of the above and Alice A. was given the list of nonsense syllables and asked to choose the ten in order of preference that she would choose to copy if she were asked to copy some.

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\* The nonsense syllables used in this experiment were the following: meev, jish, glet, crad, lerm, sark, goje, hool, fape, kise, roif, twic, thog, chuz, daux, bune, nowk, whab, dalm, krof.

Results: She chose seven syllables that she had been allowed to complete and three that had been interrupted ("Preference-quotient" is thus  $3/7$  or .42).<sup>\*</sup> She was asked to make these choices first in hypnosis in order to see whether the preference for the completed tasks in the normal state after the Zeigarnik experiment in hypnosis in the previous experiment might be because of the sudden transition from a hypnotic to a normal state. Apparently, this was not the reason for the shift in preference. She was then brought back to the normal state and asked her preferences. She still preferred the completed tasks, though not so definitely as in the preceding hypnotic state: she chose four interrupted and six completed tasks, yielding a "preference-quotient" of  $4/6$  or .66. Thus, it appeared that this experiment using nonsense syllables instead of ~~semk~~-meaningful tasks substantiated the results from the first two experiments. The preference for the completed tasks after the Zeigarnik experiment was conducted in hypnosis seemed clear.

Discussion: On the basis of the Zeigarnik and Ovsiankina experiments, the expectation had been that a "tension system" created in hypnosis would behave very much like a "tension system" created in the normal state, the only difference being that in hypnosis, it would be possible to render the origin of the "tension system" inaccessible to the direct awareness of the subject. Thus, it had been thought that in the normal state directly following the Zeigarnik experiment in hypnosis that the subject would prefer more interrupted than completed tasks. Precisely the opposite occurred. In each of

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\* See Appendix C for detailed data including order of presentation and syllables chosen in hypnotic and in normal state.

the three experiments, the subject in the normal state preferred the completed tasks after the experiment and in one case preferred the C-tasks in hypnosis directly after it. This fact could mean one of three things: first, perhaps there was no "tension system" set up by the interruption; secondly, if such a "tension system" were set up it may have been disrupted by some intense intervening experience; and thirdly, it might have been created but obscured by some other, more urgent motivating factor.

Zeigarnik (67) has described several situations in which these three possibilities are illustrated. For example, she conducted experiments which showed that the completed tasks have an advantage in recall if the experiment is conducted while the subject is fatigued. The rationale given for this finding is the following, according to Fachauri (44):

"There are, as it were, two forces at work in the U-C effect, the strain of U-tasks in virtue of unresolved urge, and the strain of C-tasks in virtue of accomplished form."\*

That this hypothesis was unlikely was indicated by other data, derived from extensions of these experiments performed on the same day and described in the next section on the discharge of tension systems. The second possibility seemed unlikely in view of the fact that the preference for the uncompleted tasks was evident not only when there was a transition from the hypnotic to the normal states but also when preference was asked in the hypnotic state directly following the experiment. Of course, it might be said that any subject in hypnosis

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\* This argument will be again referred to in the summary discussion of this entire group of experiments on "tension systems."

\*\* See account of experiment on Alice A., using nonsense syllables.

is in an "excitable" state and thus would give a reduced value of U over C tasks. Other data, to be presented, seems to obviate this possibility as well. Yet another possibility was suggested by the fact that pre-knowledge of the content of the tasks has been shown to decrease the "Zeigarnik ratio." Although the subjects were made amnesic for their having first seen the tasks in the normal state, it might be argued that there was retained some sense of "familiarity" with the tasks and that, therefore, the preference-quotient was below 1.0, indicating a favoring of the completed tasks. However, it will be recalled that in the experiment employing nonsense syllables, Alice A. had never before seen the tasks.

Inasmuch as the first two hypotheses seemed unlikely the third was tentatively adopted. This hypothesis, which supposed the creation of the "quasi-need" to finish the tasks simultaneously of some more central and opposed need, was formulated as follows: if the need to literally obey the hypnotist were stronger than the need to complete the interrupted task, then the subject would regard the interruption as a prohibition, though it were given mildly; the interrupted task would thus acquire in Lewinian terms, a "negative valence," and the subject would prefer the completed tasks after being brought out of the hypnotic state. It was assumed that if this hypothesis were correct, a severe prohibition to continue with a task even in the normal state should have a roughly similar result. Accordingly, the usual Zeigarnik experiment with critical variations was conducted with two groups of college students in the normal state.

Control Experiments: In one group of college students the subjects were interrupted in a severe and slightly threatening manner, and in the other the interruptions were mild and somewhat friendly. \* The subjects in both groups were asked for both recall and preference of the tasks after they had been permitted to complete half of the twenty tasks and were interrupted in the other half. \*\*

Results of Control Experiments: In line with the prediction, the members of the "prohibitive group," like the hypnotic subjects, recalled and preferred more completed tasks than did the "mild group." (See Tables I and II)

Table I gives the results in the "mild group"; this group is probably more like Zeigarnik's original experimental group than is the "prohibitive group." (See Table II) Evidence for this is the fact that the averages of the absolute numbers of unfinished (U) and completed (C) tasks in the "mild group" so closely resemble Zeigarnik's figures. In Lewin's (40) account of Zeigarnik's experiment, the average of the U-tasks recalled is 6.8 and that of the C-tasks, 4.25 yielding

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\* The exact wording of the interruption was varied somewhat to prevent a stereotyped interjection devoid of all affect. The basic structure, however, and the interruption in each group was constant. In the "prohibitive" group the interruption was given sternly and in a somewhat domineering manner: "Stop now! Right away. I don't want you to work on that one any more at all!" or "That's all on that; you must not work on that one any more!" In the mild group, the interruption was casual and friendly: "That's enough on that one, now. Let's do another." or "O.K., I see how you do that one. Now I'd like you to do this one."

\*\* The tasks used in these experiments were the same as those used in the experiment with Barbara B. See footnote, p. 41

TABLE I

## Recall and Preference Quotients in "Mild" Control Group

Subject	Recall			Preference		
	RU	RC	$\frac{RU}{RC}$	PU	PC	$\frac{PU}{PC}$
1. R.M.	7	2	3.5	2	8	.25
2. C.F.	6	3	2.0	4	6	.66
3. B.C.	8	5	1.6	4	6	.66
4. V.N.	6	4	1.5	4	5	.80
5. J.B.	3	2	1.5	4	5	.80
6. H.M. *	7	6	1.15	5	5	1.0
7. B.B.	7	6	1.15	1	9	.11
8. K.M. *	5	5	1.0	5	5	1.0
9. L.Y.	3	6	.50	2	6	.33
<u>Means:</u>						
1. Including 2 atypical S's	5.7	4.3	1.6	3.4	6.1	.64
2. Excluding 2 atypical S's	6.0	3.8	1.8	4.0	5.7	.76
<u>Medians:</u>						
1. Including 2 atypical S's	6.0	5.0	1.5	4.0	6.0	.66
2. Excluding 2 atypical S's	6.0	4.0	1.5	4.0	5.0	.80

RU, number of uncompleted tasks recalled (up to 1st long pause).

RC, number of completed tasks recalled (up to 1st long pause).

$\frac{RU}{RC}$ , ratio of uncompleted to completed tasks recalled: "Zeigarnik Quotient."

PU, number of uncompleted tasks preferred.

PC, number of completed tasks preferred.

$\frac{PU}{PC}$ , ratio of uncompleted to completed tasks preferred.

Note: Although the sum of PU and PC should equal 10 in each case, it is necessary in some cases to change the planned division of U- and C-tasks (e.g. when an S finishes a U-task too soon). Thus, such tasks are omitted.

\* Atypical subjects

TABLE II

## Recall and Preference Quotients in "Prohibitive" Control Group

Subject	Recall			Preference		
	RU	RC	$\frac{RU}{RC}$	PU	PC	$\frac{PU}{PC}$
1. M.I.	7	3	2.33	3	7	.42
2. G.P.	7	5	1.40	4	6	.66
3. C.F.	4	3	1.33	4	6	.66
4. M.R.	5	4	1.25	2	8	.25
5. D.T.	5	4	1.25	3	7	.42
6. P.R.	7	6	1.16	3	7	.42
7. J.M.	6	7	.85	6	4	1.50
Means	5.8	4.5	1.36	3.5	6.4	.61
Medians	6.0	4.0	1.25	3.0	7.0	.42

RU, number of uncompleted tasks recalled (up to 1st long pause).

RC, number of completed tasks recalled (up to 1st long pause).

$\frac{RU}{RC}$ , ratio of uncompleted to completed tasks recalled: "Zeigarnik Quotient."

PU, number of uncompleted tasks preferred.

PC, number of completed tasks preferred.

$\frac{PU}{PC}$ , ratio of uncompleted to completed tasks preferred.

a difference of 2.5. In the "mild group" the average number of U-tasks recalled is 6.0 and C-tasks, 3.8, yielding a comparable difference of 2.2. Also, the "arithmetic mean" of the  $\frac{RU}{RC}$  quotients (recalled-unfinished over recalled-completed) is 1.9 in Zeigarnik's experiment and 1.8 in the "mild group" here, if two subjects, established as atypical prior to calculating averages, are excluded from the computations.

In decided contrast with these figures, Table II shows the results in the "prohibitive" group. The average "recall-quotient" is 1.36. This figure shows thus only a 36% advantage in recall for the interrupted tasks. This should be compared with the 80% average advantage ( $\frac{RU}{RC} = 1.8$ ) for the interrupted tasks in the "mild" group and with the 90% average advantage in Zeigarnik's group. The average number of unfinished and completed tasks in the "prohibitive" group show a similar difference. A comparison of the median figures in both groups again points in the direction, although less sharply.

A similar trend is shown by a comparison of the "preference-quotients" in Tables I and II. In the "mild group" the average quotient is .76, indicating some preference for the completed tasks. In the "prohibitive" group this preference for the completed tasks is more marked, the average quotient being .61. This difference is brought out far more sharply by a comparison of the median "preference-quotients" in the two groups. In the "mild" group, the median quotient

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\* Marrow (42) has shown that the averaging of these ratios by Zeigarnik was statistically illegitimate. If a comparison is made, however, of "corrected values" in both experiments, the results are still roughly comparable.

\*\* It will be recalled that a "preference-quotient" of 1.0 indicates that the unfinished and completed tasks are preferred equally often, a quotient below 1.0, a preference for the completed tasks, and a quotient above 1.0, a preference for the unfinished tasks.

is .80 while in the "prohibitive" group, it is .42. Thus it seems clear that although both prefer the completed tasks directly after the experiment, this preference for the completed tasks is much stronger in the "prohibitive" group.

Although the established difference between the "preference-quotients" of the two groups is the point of greatest interest for the present problem, the fact that both groups show a preference for the completed tasks raises a problem of considerable theoretical interest. This will be discussed in some detail.

Table III presents the most significant quantitative comparisons of the "mild" and "prohibitive" groups in these control experiments. It shows the greater advantage of the interrupted tasks (in recall and in preference) in the "mild" group. The percentages were derived from Tables I and II.

TABLE III

A Comparison of the Recalls and Preferences in the "mild" and "prohibitive" control groups

		Mild	Prohibitive
% advantage of unfinished tasks (recall)	Mean	80%	36%
	Median	50%	25%
% advantage of completed tasks (preference)	Mean	24%	39%
	Median	20%	58%

For example, the eighty percent advantage in recall of the unfinished tasks in the "mild" group refers to the fact that the mean recall quotient in the "mild" group is 1.8 (see Table I). The higher

these figures are the greater appears to be the quasi-need to finish the interrupted tasks. The other percentages were derived in the same way. Inasmuch as the completed tasks were preferred in both the "mild" and in the "prohibitive" groups, the only meaningful comparison is between the per cent advantage of each. Clearly, thus, a higher figure here means a greater advantage for the completed tasks and thus a lesser "quasi-need" to complete the interrupted tasks. Table III shows thus that in terms of recall the "mild" group shows the greater quasi-need to complete the unfinished tasks and also that the "mild" group prefers more interrupted tasks than does the "prohibitive" group. The first of these two results is the more clear-cut.

The qualitative observations reinforce the quantitative trends. It was apparent from the relative lack of spontaneous talk in the "prohibitive" group that the severe interruption was quite different from the casual interruption in the "mild" group. However, it was curious to note that only a few subjects admitted genuine imitation at the manner of interruption. Only one subject (M. R.) expressed herself rather vehemently regarding the interruption:

"You kept stopping me all the time . . . I like to finish what I start . . . when you'd interrupt me I'd be working hard enough that I really could be mad. I was annoyed. I don't see that it was necessary to be so terse." (This was all said in clear irritation, in a sullen manner.)

In this particular instance, the experimenter had noted before the end of the experiment that the character of the interruption had been especially severe and that this might influence the results. Actually the "preference-quotient" was the lowest in the "prohibitive" group.

In another instance (J. M.), an analysis of the interview provided a clue to the fact that hers was the only recall quotient below 1.0 in the "prohibitive" group. When J. M. was asked about her conclusions regarding the interruption, she said, "I imagined it was surely timing and that it meant I was slow on those tasks. I guessed I did better when I finished."

Evidence of yet another sort comes from K. M.'s behavior. He came into the laboratory, looking bored and a trifle supercilious. His first comment in response to the first task was, "Oh, gosh, I don't see any point in that at all - everybody does the same thing, don't they?" After the second task, he said, "I'll just tell you what I would do and then I won't do it - O.K.? That's just as good, isn't it?" During the third task: "Aw shucks, I don't believe in this stuff, do you?" At this point, the prediction was made (and recorded) that there was little likelihood of there being any "tension system" set up in this subject. The experiment continued and K. M., an exceedingly intelligent, witty student continued to joke and to make light remarks about the experiment. He recalled five interrupted and five completed tasks (recall-quotient, 1.0); and he preferred five interrupted and five completed tasks (preference-quotient, 1.0). The prediction, thus, that there would be no "tension system" formed was thus checked. This instance is of importance because it illustrates so clearly the need for more than a peripheral involvement in the creation of even a quasi-need. These qualitative data could easily be duplicated by a number of other individual case records. However, they are a representative sampling.

Summary and Comment. Several experiments with hypnotic subjects showed that after a number of tasks were given in hypnosis, half completed and half interrupted, the subjects preferred the completed tasks both in the hypnotic state and in the normal state which followed directly. In order to investigate this finding, an hypothesis was set up according to which the subject regarded the interruption as a prohibition (because of the strong affective relationship obtaining in the hypnotic state); as a result of this, the interrupted tasks, it was supposed, thus acquired a "negative valence."

In an attempt to check this hypothesis, control experiments were carried out with two groups of college students in the normal state. In one group, the interruption was "prohibitive"; in the other, it was "mild." The "prohibitive" group like the hypnotic subjects, preferred (and recalled) relatively more completed tasks than did the "mild" group. Apparently then, when the field conditions are so varied as to set into operation a need opposed to the "quasi-need" to complete an interrupted task, the "Zeigarnic effect" is accordingly modified. That this opposed need can be a powerful one in hypnosis is indicated by the fact that a mild interruption during hypnosis had results roughly equivalent to a severe "prohibition" in the normal state with the control subjects.

It may be tentatively concluded, thus, that a "tension system" created in hypnosis may have an observable influence on

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\* This finding requires support from further experiments with additional control subjects in order to attain complete statistical reliability. However, the trend in this direction is unmistakable.

behavior in the normal state, even though the subject has no awareness of the existence of such a "tension system" nor of its origins. The precise character of this influence is apparently related to the more central needs created either by the hypnotic relationship itself or by specific instructions during hypnosis.

(2) Attempts to Discharge a "Tension System" Created in Hypnosis by Task-Completion in Normal State

Statement of the Problem: The second problem investigated was whether a "tension system" created in the hypnotic state could be "discharged" by the completion in the normal state of those tasks which had been interrupted in the hypnotic state. \*

Procedure with Alice A. It will be recalled that the first half of the experiment with Alice A. was concerned with the problem of the influence on the normal state of a "tension system" created in the hypnotic state. The experimental account brought Alice A. to the point where she was brought out of hypnosis with amnesia for the Zeigarnik experiment and in this normal state preferred seven completed tasks and only three interrupted tasks in the ten pairs. It is at this juncture that the investigation of the second problem, that of the "discharge" of the "tension system," begins.

In the normal state, thus, Alice A. was permitted to complete the interrupted tasks, was then returned to the hypnotic state with amnesia and asked for both recall and task preference. (Her amnesia was partially resolved by the experimenter who told her that she had "been doing some tasks" and that some of them would "come back to you now.")

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\* In the Zeigarnik (67) and Ovsiankina (52) experiments, it had been shown that after the interrupted tasks were completed, there was apparently no longer a "quasi-need" to do the interrupted tasks, thus indicating that the "tension system" had been "discharged." This problem was conceived prior to any actual experimentation, and was based on the premise that the Zeigarnik experiment conducted in hypnosis would result in a recall or preference advantage for the interrupted tasks. Despite the fact that the results of the experiments with Alice A. and with Barbara B. indicated a preference for the completed tasks both in hypnosis and in the following normal state after the Zeigarnik experiment, the experiment was carried out according to plan directly following the procedures discussed in the previous accounts of Alice A. and Barbara B.

Results with Alice A. In striking contrast to her previous attitude in the normal state prior to completing the interrupted tasks, she now in the hypnotic state gave clear evidence for an undischarged "tension system" related to a quasi-need to complete the interrupted tasks. She recalled four interrupted tasks and only one completed task yielding a Zeigarnik quotient of 4.0. Also in contrast with her previous preferences of only three interrupted and seven completed tasks, she now preferred six interrupted and four completed tasks, yielding a "preference-quotient" of 1.5 as compared with a previous one of .42. Before discussing these results, a description will be given of a repetition of this experiment with Barbara B.

Procedure and Results with Barbara B. Exactly the same procedure was followed in this experiment with similar results. After completing the tasks in the normal state Barbara was returned to the hypnotic state and asked for recall and preferences. She recalled six interrupted and three completed tasks, yielding a quotient of 2.0. Her preference-quotient "rose" from .42 (three interrupted and seven completed tasks) to 1.5 (six interrupted and four completed). Upon being returned once again to the normal state, with the posthypnotic suggestion that she would be able to recall some of the tasks, she recalled six interrupted and four completed tasks, a quotient of 1.5.

Discussion. Apparently something of vital significance dynamically had occurred between the time both subjects were asked for task-preferences in the normal state directly following the experiment in hypnosis and the second hypnotic state. Behaviorally, the task-completion was the important intervening experience. However,

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\* This recall goes up to the first long hesitation.

in the 'normal' Zeigarnik experiment, completion of the interrupted tasks should discharge the "tension system." In these two experiments, the attempted resolution in the normal state of a "tension system" originated in the hypnotic state had a diametrically opposite effect: it brought to the surface a strong quasi-need for completion of the tasks. If this result is tentatively interpreted along the same lines as the previous finding, then one might say that this sudden flaring up of the need to complete the interrupted tasks gives further evidence that this experimental situation had induced two opposed needs and that when the pressure of one was relaxed, the other could then be expressed. The permission to complete the tasks in the normal state apparently had the effect not of discharging the "tension system" but only of removing the "prohibition."

(3) Discharge of a "Tension System" Created in Hypnosis :  
Task-Completion in the Hypnotic State.

Statement of the Problem. It had been predicted that although a "tension system" created in hypnosis could not be discharged by task-completion in the normal state, it probably could be discharged by task-completion in a subsequent hypnotic state. Accordingly, a new experimental situation was set up to check on the latter half of this prediction.

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Procedure. The procedure was described earlier up to the point where Alice A. has been given the Zeigarnik experiment in the hypnotic state and had indicated her preferences for the completed

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\* It should be emphasized that although no "tension system" in Zeigarnik's sense was apparently created in the first hypnotic state, there can be little question that a real disequilibrium was produced as evidenced by the preference-shifts in the direction of the completed tasks.

tasks in the normal state directly following. It was, thus, essentially a repetition of the other two experiments except for the fact that nonsense syllables were used. However, an additional step was added to test the above hypothesis. This was not described in the earlier account because it is, logically, an independent problem.

Task completion in the normal state was permitted with results similar to those just described: completion in the normal state had absolutely no effect on preference in the normal state and when Alice A. was returned to hypnosis, she recalled (after her amnesia was partially resolved) seven interrupted and five completed tasks, yielding a quotient of 1.4. Her preference-quotient, however, remained unchanged (.66).

It was at this point that the critical additional step was taken: still in hypnosis, Alice A. again completed the interrupted tasks and was asked right away in hypnosis for her preferences. Apparently, this questioning was too soon on the heels of the task-completion as no change had yet taken place. However, when she was brought back to the normal state and asked for task-preferences, Alice A. preferred five interrupted and five completed tasks, yielding a quotient of 1.0 which, of course, is what one would obtain where no quasi-need was present either to do the interrupted or the completed tasks, i. e. a system in equilibrium.

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\* When returned from hypnosis to the normal state, having just done the Zeigarnik experiment, she preferred four interrupted and six completed tasks (quotient of .66). These figures were the same after completion in the normal state.

Discussion. The results of this last experiment suggest that the "discharge" of a tension system created in hypnosis can be expected only in hypnosis; it appears that physical task-completion in the normal state does not "discharge" the tension system and that it is necessary for this completion to take place in hypnosis in order to restore an equilibrium in which neither interrupted nor completed tasks are favored.

(4) The "Revival" of a Tension System by a Hypnotic "Regression"\*

Statement of the Problem: This experiment was set up with two fundamental objectives: (1) to see whether a technique of "hypnotic regression" could be applied to so transitory an experience as the quasi-need set up by interrupted tasks and (2) to observe the nature of the "regressed" quasi-need and its relation to the originally observed structure of the tension system created in hypnosis.

Procedure: Three months after the first experiment with Alice A. she was experimentally "regressed" to the specific day on which the experiment proper had taken place. Alice A. was first told while in a state of deep hypnosis that she had forgotten first the day, then the month, and finally the year. After this initial period of temporal disorientation she was re-oriented to the day of the experiment and told that she would no longer have any feeling of doubt regarding the date, month, and year but would be certain it

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\* The term "regression" here refers to a reorientation in hypnosis to an earlier time. It is not used either in a Freudian or a Lewinian sense.

\*\* See pp. 38-40.

was the day of the experiment. At this point, Alice A. began to perspire and complain of the heat and stuffiness of the room. Inasmuch as this experiment took place on a day in mid-winter, these reactions were somewhat puzzling until it was recalled that the day on which the original experiment had taken place had been one of the hottest of the Kansas summer. When it seemed established that this reorientation was accepted by Alice A., she was told that she had just been doing some tasks and that she would recall some of them now.

Results. Alice A.'s recall, taken up to the first long pause, showed a 400% advantage in memory for the interrupted tasks; she recalled five interrupted and one completed task. (Zeigarnik quotient equals 5.0) Her manner showed a great deal of tension and she seemed disturbed. She enumerated also two tasks which she had seen on several days prior to the experiment proper during a preliminary training period. This would indicate that the experimental "regression" was not so thorough going that it entirely abrogated all standard "memory-laws." Yet it must be emphasized that regression to a specific

\* She recalled these tasks from the experiment in the following order:

<u>Interrupted</u>	<u>Completed</u>
1. Cut out sport outfit	6. Block design
2. Ground plan	
3. Jig-saw puzzle	
4. Cross-word puzzle	
5. Mathematical problems	

\*\* It seems likely from this and other studies of hypnotic "regression" that the process of reorientation puts a severe strain on the subject and that unless the subject has an extended period of training for such "regression," it is difficult for him to remain "regressed" for long periods.

day after a lapse of three months requires an extremely delicate discrimination.

Discussion. In Zeigarnik's original experiment the average advantage in memory for the interrupted tasks directly following the experiment was 90%. Also, an advantage of 110% dropped within twenty-four hours to only 13%. In the above report, the 400% advantage of the interrupted tasks appears therefore especially striking. This result suggests that both the intensity and stability of a "tension system" created in hypnosis are greater than that created in the normal state. In order to further check this hypothesis it will be necessary to do the same experiment with a hypnotic subject in the normal state and then effect a "regression" to the normal state after a similar period. This will indicate whether it was the experimental regression or the creation of the tension system in hypnosis which produced the 400% advantage in memory for the interrupted tasks.

(5) A Comparison of "Normal" and "Hypnotic"  
Zeigarnik Quotients

Statement of the Problem: The hypothesis regarding the preference for completed tasks after the Zeigarnik experiment in hypnosis was based on three experiments. It was felt that perhaps in these three cases, the personalities of the subjects might have determined a low quotient, with or without hypnosis. Therefore, it seemed necessary to establish the "normal" quotients of a good hypnotic subject and compare these directly with the "hypnotic"

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\* See P. 45

\*  
quotients.

Subject used. Carol C., aged 28, is an attractive young stenographer; she volunteered for the experiment and although she is not quite so good a subject as Alice A., developed a good trance during the first individual session. She had seen hypnosis once as part of a vaudeville show which she had attended at about the age of eight. Despite the fact that her friends wondered at her not being afraid of hypnosis, she continued to come to the laboratory.

Procedure. In the normal state, Carol C. was asked her preferences between ten pairs of tasks. <sup>\*\*</sup> Then, still in the normal state, she was given the twenty tasks to do and allowed to complete only half. She was asked for recall and again for preferences. Directly following this, amnesia for the entire experiment was produced in hypnosis. Five days later, she was given the Zeigarnik experiment in hypnosis and again asked for recall and preferences.

Results. After the experiment in the normal state, Carol C.'s preferences had shifted in the direction of the completed tasks. <sup>\*\*\*</sup> Her

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\* It is a fairly unanimous view among investigators in hypnosis that the best "control" for a given hypnotic subject is the same subject in the normal state.

\*\* These were the same as those used in the experiment with Barbara B. See p. 41.

\*\*\* Preferences before and after experiment:

<u>Before</u>	<u>After</u>
1, 4, 6, 8, 9	1, 4, 5, 8, 10, 12
12, 13, 16, 17, 20	14, 16, 18, 20

The tasks corresponding to these numbers have been listed on p. 41 (footnote). In the "after" calculations, tasks 8 and 10 were omitted because they were given as U-tasks to supplant others too quickly finished and therefore did not occupy the same position as in the original listing.

original preferences before the experiments had been for four interrupted and six completed tasks (quotient, .66); after it, her quotient "dropped" to .33. Her recall in the normal state totalled seven unfinished and six completed tasks. (Quotient is 1.16, a 16% advantage for the unfinished tasks.)

After the experiment in the hypnotic state, her recall totalled six interrupted and seven completed tasks (Quotient is .85, a 15% 'disadvantage' for the interrupted tasks.) Because of interfering circumstances, the "preference-quotient" could not be obtained in this experiment.

Discussion. This experiment seems one of the least clear-cut in this series and therefore permits of many possible interpretations until it is artificially varied to meet the various problems which it raises. First, it would appear that the central problem had been settled by the fact that Carol C. favored the interrupted tasks in her normal recall and the completed tasks in her hypnotic recall. However, it will be noticed that both of these trends are only trends and not sharply opposed, quantitatively. The sixteen per cent advantage of the unfinished tasks is far below the average advantage (90%) reported by Zeigarnik. Although this low quotient may be determined by a number of "non-hypnotic" factors, it seems additionally probably that the interpersonal relation existing between an experimenter and a hypnotic subject influences behavior to some extent in the normal as well as in the hypnotic state. A future experiment is thus logically dictated in which the "normal" Zeigarnik experiment will be given the subject by a person who is completely divorced from the hypnotic

situation.

Secondly, the recall quotient of .85 does not indicate a decided tendency to favor the completed tasks (ratio, 6:7). In order to check this further, an experiment might be set up similar to the previously described normal "controls" during the course of which the quality of the interruption might be varied systematically, and its effect on the recall quotient observed.

Finally, a new experiment must be set up in which the hypnotic experiment precedes the normal one; this, again, would safeguard against the possibility of producing a low recall quotient which is a result of a repetition of the experiment and not of the peculiar affective character of the hypnotic state.

If, when all of these factors have been systematically controlled, the results still indicate a lower recall quotient in the same individual in hypnosis, then the hypothesis of interference by a more central need will be nearer "proof."

#### (6) An Experiment on Hallucinated Task-Completion in Hypnosis

Statement of the Problem. It had been suggested by some investigators that the recall of tasks performed might frequently be influenced by the type of reaction aroused by the specific conditions of the experiment: that, for example, an experience of

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\* See pp. 46-50

\*\* See Pachauri (47) on this point.

\*\*\* See discussion of Rosenzweig (pp. 31-33) and Blumberg (pp. 33-34).

failure might result in the forgetting of a specific interrupted task. Accordingly, it was the aim of this experiment to see whether one could manipulate the attitudes toward various tasks by the creation of subjective reactions entirely independent of the objective or physical performance of the tasks.

Procedure. This experiment started at that point in the previously described experiment with Carol C. when Carol had just been through the Zeigarnik experiment in hypnosis. She was now brought back to the normal state and asked for recall ( she had completed only half of the tasks in hypnosis, of course). Her recall totalled eight interrupted and seven completed tasks, yielding a recall quotient of 1.11 (an 11% advantage for the interrupted tasks). Now she was again brought into a state of deep hypnosis and told to hallucinate all of the tasks, one by one and to 'actually' complete them all at this hallucinated level. After each task that had been an interrupted task in the previous hypnosis, she was told that she had done "very poorly" or "much below average" and after each that had been a completed task she was told that she had done it "very well" or "much above average." Although her total time in "completing" these hallucinated tasks was slightly shorter than it had been when she had actually performed the tasks, the proportionate times she took for each was in striking agreement with her objective time taken previously. She was asked for recall and task-preference and amnesia was produced for this experiment. The same procedure was then repeated except that the "praise" and "blame" was reversed: the interrupted tasks were now given approbatory comments and the

completed tasks, disapproving comments.

Results: Carol C.'s recall quotient after the first part of this experiment "dropped" from 1.11 (in the previous normal state) to 1.0. She recalled seven interrupted and seven completed tasks. Her task-preferences showed a striking shift: in contrast to her original task preferences in the normal state before any of these experiments (quotient, .66), she now produced a quotient of .11 (i.e. she preferred all the completed tasks but one, the mosaic design). Thus, her preference for those tasks which had been "praised" was unmistakable. After the second half, her preference quotient "rose" slightly (quotient, .25) and her recall quotient remained 1.0. Thus, in response to the "praise" of the unfinished tasks the differential between the U and C tasks decreased.

Discussion. The most significant implication of this experiment is that it suggests the possibility of directly manipulating a "quasi-need" by the experimental introduction of a stronger, more central need. <sup>\*\*</sup> It suggests too that the objective source of such a need may lie simply in an affective relationship and not in the "real" results of "real" behavior. Further, it opens a new path for the study of substitution. Lewin (40) reports a study by Mahler of "substitute activities of different degrees of reality" in which Mahler found that substitute activities of "higher degrees of reality have greater substitute value." (p. 249) Yet hallucinated task-completion apparently "discharged" the tension system in this experiment.

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\* In the first half, the unfinished tasks were "blamed" and the completed tasks "praised." The reverse was done in the second half.

\*\* This formulation would correspond roughly to Rosenzweig's distinction between an "ego-defensive" and a "need-persistive" reaction. (See pp. 31-33)

This finding, if it is found to be valid, thus focusses attention on another aspect of Mahler's discussion of his experiment which Lewin (40) has summarized as follows:

"The relation of the substitute act to the inner goal of the original activity nevertheless remains of decisive importance. Substitute satisfaction occurs only when this inner goal is in sufficient degree attained by the substitute activity." (p. 249)

If the "inner goal" of a good hypnotic subject is to "obey" or to "please" the experimenter, it is thus not difficult to see why it is theoretically to be expected that hallucinated task-completions have results very similar to those of actual task-completions. This experiment serves only to ask the question. In order to fully answer it, a systematic series of experiments will have to be set up involving varying reality-levels in both hypnotic and normal states.

(7) Summary and Discussion of Part A: The Vicissitudes of Tension Systems in Normal and Hypnotic States

The experiments in Part A have been described as aspects of various relatively independent logical problems. Although it was indicated that frequently a single experiment included the investigation of several distinct problems, the precise temporal relationships of the sub-sections of the single experiments may not have been unambiguous. For this reason, Figures 1-4 are included in this summary; they are a schematic representation of the individual hypnotic experiments. \*  
The control experiments have been adequately summarized earlier. These figures are thus longitudinal summaries of the experience of the individual subject, in contrast with the cross-sectional summaries,

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\* See pp. 46-50.

Figure 1. - Experiment with Alice A., using Meaningful Tasks.

N.S.#1	H.S.#1	N.S.#2	H.S.#2	H.S.#3 (3 mo. later)
P's asked in 10 pairs of tasks	Amnesia for N.S.#1	P's asked: PQ = .42	Recall asked: RQ = 4.0	"Regression" RQ = 5.0
	Zeigarnik experiment	Task completion	Preference asked: PQ = 1.5	
	Amnesia for H.S.#1			

Figure 2. - Experiment with Alice A., using Nonsense Syllables

N.S.#1	H.S.#1	N.S.#2	H.S.#2	N.S.#3
P.Q. = 1.0 (theoretical-ly)	Zeigarnik experiment	P's asked: PQ = .66	Recall asked: RQ = 1.4	P's asked: PQ = 1.0
	P's asked: PQ = .42	Task-completion	P's asked: PQ = .66	
		PQ = .66	Task-completion	
			PQ = .66	

N.S., Normal State

H.S., Hypnotic State

F, Preference

R, Recall

Q, Quotient

Figure 3. - Experiment with Barbara B.

N.S.#1	H.S.#1	N.S.#2	H.S.#2	N.S.#3
P's asked: PQ = 1.0	Amnesia for N.S.#1	P's asked: PQ = .42	Recall asked: RQ = 2.0	R's asked: RQ = 1.5
	Zeigarnik Experiment	Task-Com- pletion	P's asked: PQ = 1.5	
	Amnesia for H.S.#1			

Figure 4. - Experiment with Carol C.

N.S.#1	H.S.#1 (5 days later)	N.S.#2	H.S.#2
P's asked: PQ = 1.0	Zeigarnik Experiment: RQ = .85	RQ = 1.11	1. Told to hallucinate and perform tasks: C-tasks "praised"; U-tasks "blamed": RQ = 1.0 PQ = .11
Zeigarnik Experiment	Posthypnotic suggestion for recall.		2. Reverse of (1): RQ = 1.0 PQ = .25
Recall asked: RQ = 1.16			
P's asked: PQ = .33			
Amnesia			

N.S., Normal State

H.S., Hypnotic State

P, Preference

R, Recall

Q, Quotient

U, Unfinished (task)

C, Completed (task)

verbally presented in the subdivisions (1) through (6).

It must be emphasized that inasmuch as the experiments have been frankly exploratory, the conclusions must be considered tentative and subject to modification or even reversal in terms of the results of further experimentation. These experiments have had the merit, however, of crystallizing a number of uninvestigated problems and suggesting "provable" or "disprovable" hypotheses for those problems specifically investigated. It is with all of these qualifications that the following conclusions are offered: (1) It appears that a "tension system" created in hypnosis has an observable influence on behavior in the normal state although the subject is unaware of its origins. (2) The discharge of a "tension system" appears to be an irreversible process as between normal and hypnotic states, i. e. a "tension system" created in hypnosis can apparently not be discharged by task-completion in the normal state but can be by task-completion in the hypnotic state. It should be stated, however, that there is as yet no indication that the reverse is also true: namely, that a "tension system" created in the normal state may not be discharged in hypnosis. The results of experiments designed to investigate this latter problem will possibly indicate the relative boundary "permeability" of both normal and hypnotic states, thus offering a clue on the basis of which the topology of hypnotic states may be established. (3) The intensity and dynamic 'persistence' of a hypnotically created tension system seems more marked than that 'normally' created. This conclusion is based on

the "regression" experiment. (4) A comparison of the "normal" and "hypnotic" recall-quotients in the same subject, the preference- and recall-quotients in three additional experiments, and the results of a control experiment suggest that the interruption in hypnosis may be regarded as a "prohibition" by the subject which results in a "negative valence" of the interrupted tasks. When task-completion is permitted in the normal state it may be that the "taboo" is lifted for the hypnotic subject inasmuch as the interrupted tasks then apparently acquire a "positive valence." (5) The attractiveness of a task may be manipulated within limits in hypnosis by the experimental creation of subjective feelings of "success" or "failure" even in the absence of physical performance. This refers to the experiment in which the hallucinated task-performances took place.

Perhaps the single most puzzling question raised by these experiments is the problem of what Lewin has recently called "changes in valence," i. e., " . . . change in attractiveness of an activity A as a result of an increase in the need tension in an activity B, as distinguished from 'substitute value,' that is, the degree to which completing A satisfies the need for B." It will be noted that in the normal control experiments, thirteen out of sixteen subjects preferred the completed tasks after taking part in the Zeigarnik experiment. Of the three who did not, two preferred the U and the C tasks equally (See Table I) and one preferred six interrupted and four completed tasks (See Table II). Although this preference for

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\* Private communication.

the completed tasks was expected in the "prohibitive" group, they were not expected in the "mild" group. The possibility that this preference for the C-tasks lay in the nature of the tasks themselves was made doubtful by the fact that an independent equivalent group of thirteen students judged both U and C tasks "preferable" equally often.\*

Cartwright (12) has investigated this problem and suggests that at least two factors must be distinguished as determining the attractiveness of an interrupted activity: (1) the increase of "valence" as a result of the need tension after interruption and (2) the fact that interruption may mean psychological failure and completion, success. (This past success and failure, he feels, may increase or decrease the attractiveness of an activity.)

Yet another possibility is suggested by the fact that, while the resumption may perhaps be understood in terms of fulfilling a social expectancy, a statement of preference (where the subject no longer remembers whether the task was a U or a C task) may not be so understood. An experiment is thus suggested in which the subject is reminded at the time of his preferences that he did not finish this task and that he did finish that one.

In any case, it is clear that there is no simple relationship between the established indices of a quasi-need (better recall of U tasks and resumption) and the phenomenon of "preference." It is indicated, as well, that the needs evoked by the method of interruption must be considered in any experiment dealing with the

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\* This group simply judged the tasks without actually doing them. In order to rule out this possibility entirely, an experiment should be set up in which all tasks are completed and then judged for "attractiveness."

problem of the effects of interruption. An extension of Cartwright's investigation as well as the control experiments suggested will unquestionably help to clarify this problem.

Whether or not future investigation substantiates the specific findings of these experiments or the hypotheses used to explain them, it is more than likely that the fundamental conceptualization of even a new set of data and hypotheses will not be significantly different from the approach used here. The essentials of this conceptual framework have been discussed in the introductory section, in connection with allied experiments. Similarly, the hypotheses advanced to interpret the fate of "tension systems" created in hypnosis have been cast in terms of the stratification of needs whose dynamic interplay and conflict determine both the structure and the final disposal of the tension system.

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\* See p. 33

\*\* Taylor (60), in the theoretical section of an experiment designed to compare theories of memory, has advanced a similar view. He distinguishes three groups of "functional relata" within the psychological field: (1) the "environmental relata" which define the relationship of the organism to the external environment; (2) the "intrapersonal relata" which represent the differentiation of the individual; (3) the "intrafigural relata" which are responsible for the structure of the memory experience. Thus, according to Taylor, in the Zeigarnik experiment the interrupted tasks were at a disadvantage in terms of intrafigural relations but ". . . set up tensions in the intrapersonal field which more than overcame the disadvantage of the uncompleted tasks . . ." (p. 67) Thus, an apparent contradiction between the theory of Koffka (which stresses intrafigural relata) and that of Lewin (which stresses intrapersonal relata) is resolved. Although this view is in some ways different from the approach to the present research, its relevance is obvious.

## B. The Recall of Fairy Tales in Normal and Hypnotic States

Although the theoretical aspects of this problem have been discussed in some detail in the introductory section, it should again be emphasized that the intricacy of the role in memory of what have variously been called "needs," "strivings," "drives," et cetera is still an important question mark. It has been pointed out that the experiments purporting to deal with this problem have been perhaps prematurely precise and thus have had little relevance to the subtle and complex character of the memory distortions of everyday life. It will be the purpose of this section to attempt to clarify some aspects of the nature of this problem and to suggest a technique for investigating it. Illustrations will be given from individual protocols. No conclusions will be offered inasmuch as it is felt that the stage of development of the material does not permit as yet of conclusions. However, general hypotheses will be suggested as a somewhat better alternative to concluding that the systematization of rich and complex material is impossible.

Although far more data were gathered than can be reported here, it soon became obvious that any attempt to deal with all of it before any hypotheses could be derived, could result only in the encyclopedic reporting of a cumbersome set of observations. Therefore, it was decided that the recall of a single fairy tale, followed through all of the protocols (both normal and hypnotic), would be described in detail. Fairy tale material was chosen because it is assumed that

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\* See pp. 16-20

it carries more affective significance on deeper psychological levels than does almost any constructed narrative. After a number of preliminary experiments, asking for the recall of "The Three Little Pigs," "Cinderella," "Little Red Riding Hood," "The Three Bears," "Sleeping Beauty," "Beauty and the Beast" and several others, the story of "Little Red Riding Hood" was chosen as that to be followed through because it seemed to have a clearer structure than the others and because it permitted of a great variety of responses.

Inasmuch as the anthropologist has, until very recently, avoided the psychological interpretation of fairy tales, myths, and legends and inasmuch as the theoretical interpretations of this material given by the Freudian school of psychology has seemed too restricted to many observers, the attempt to establish a "significance" for the individual recall of a specific fairy tale is clearly fraught with great danger. However, like all first attempts to attack an interdisciplinary problem, this will be speculative and therefore subject to much criticism. However, if such speculation can lead to verifiable hypotheses and critical experiments, it would seem to be a legitimate procedure.

(1) Fairy Tale Recall in the Normal State.

Statement of the Problem. It was thought that from the recalls of a number of subjects, certain general kinds of distortion might be apparent in a single story. If such a patterning could be discovered, it was thought, this might help to establish the psychological structure of the story.

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\* For example, it was of interest to notice that almost no subject revealed serious memory distortions of "The Three Bears." This was ascribed to the strong "intrafigural relationships" in the story. (See Taylor, p.69)

Subjects. Forty undergraduate students, from two classes in psychology and four graduate students served as subjects for this part of the investigation. The age range was 18-23 in the undergraduate group.

Procedure. The subjects were asked to write out the story of "Little Red Riding Hood" just as it occurred to them. After they had completed this, they were asked to answer a number of questions among which were the following:

1. How old are you?
2. Male or female?
3. What is your family structure?
4. What fairy tale did you like best as a child?
5. Did you enjoy the story of "Little Red Riding Hood" as a child?
6. When did you last have contact with this story?  
Include film and radio versions.
7. Which incidents in the story did you find most difficult to recall?
8. What do you think is the moral of this story?
9. Sometimes animals in fairy tales and myths represent people. If you were going to guess, whom do you suppose the wolf in the story represents?

Results. Although each subject distorted the story in a different way, certain unmistakable patterns were obvious. For example, out of thirty-six cases, nineteen felt the greatest confusion about Little Red Riding Hood's meeting with the wolf in the forest, twenty were confused about the end and five about the opening of the story. Only three other points of haziness were mentioned, and these occurred in three different subjects: one was the grandmother's meeting with the wolf; another was the "technique used by the wolf in beating Little Red Riding Hood to the grandmother's house" and the third was "how

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\* Some indicated two points of confusion; for this reason there are more than 36 replies. Four subjects did not answer.

Little Red Riding Hood went to the grandmother's house." The latter two seem, in fact, to be related to Little Red Riding Hood's encounter with the wolf in the forest. It was of considerable interest, further, to note that no one omitted the scene between Little Red Riding Hood and the wolf (disguised as the grandmother) during which Little Red Riding Hood comments on the various features of the wolf and during which he replies in a stereotyped manner, ending with, "The better to eat you, my dear." All but three subjects omitted all reference to the fact that Little Red Riding Hood should not have "lingered in the woods" but should have proceeded directly to her grandmother's house.\* These, then, were the most clear-cut, observable characteristics of the normal recall in this group.

In order to provide a standard of comparison for the individual protocols to be analyzed in the next section, two sample-recalls will be given verbatim, the first a more or less accurate account, the second a considerably distorted account.

Sample 1. - B.B., female, aged 19:

"Little Red Riding Hood's mother made her a little red cloak and a little red hood which caused the little girl to be called by the name of Little Red Riding Hood.

"One day Little Red Riding Hood's mother sent her to take a basket of sweets to her grandmother who was ill. The grandmother lived some distance away, and the house could be reached by a short-cut through the woods. Little Red Riding Hood against her mother's warnings decided to take the short-cut and on the way gather flowers for her grandmother.

"In the woods Little Red Riding Hood met up with a wolf who asked where she was going. She replied she was taking some sweets to her grandmother who was ill. The wolf beat the girl to the grandmother's house where he gave his name as Little Red Riding Hood and was admitted to the house. Once inside he ate the grandmother and took her place. When Red Riding Hood arrived and

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\* Although not all versions of the Little Red Riding Hood story include explicit warning by the mother "not to linger in the woods," most earlier versions do. It is unlikely that so many subjects should never have had contact with this version. If they have had contact with both, it must be emphasized that they did choose one.

approached the bedside of what she supposed was her sick grandmother she exclaimed, 'What big eyes you have!' to which the wolf replied, 'The better to see you with.'

'And what big ears you have.'

'The better to hear you with.'

'And what a big nose you have.'

'The better to smell you with.'

'And, grandmother, what a big mouth you have.'

'The better to eat you with,' and at this point the wolf jumped out of bed with the intention of devouring Little Red Riding Hood, but Little Red Riding Hood ran screaming from the house, and near by workmen heard her and came to her rescue, killing the wolf."

This account gives a reasonable point of entry to the story; the role of the mother in the story is made clear; the purpose of the visit to the grandmother is included. The meeting with the wolf is not stated in a hazy manner. The disposal of the grandmother, the interview of the wolf and Little Red Riding Hood, and the conclusion of the story are given in a proper sequence.

In contrast with this, Sample 2 obliterates the mother entirely, substituting a "friend" for the grandmother. The meeting of Little Red Riding Hood with the wolf is entirely omitted and the whole character of the production is meager and abrupt:

Sample 2. - M.J., male, aged 20

"Once upon a time there was a little girl named Little Red Riding Hood who lived with her grandmother in a little cottage in the forest.

"One day she was sent by her grandmother to take a basket of fruit to a friend who was very sick. While Little Red Riding Hood was away, a big wolf got into the cottage and ate her poor grandmother. When she returned, the wolf was in the grandmother's bed pretending to be the grandmother. When Little Red Riding Hood looked at him, she said, 'My, what a long nose you have, grandmother.' 'The better to smell with,' said the wolf. 'And my, what long ears you have,' said Little Red Riding Hood. 'The better to hear with,' answered the wolf. 'And what sharp teeth you have, grandmother.' 'The better to eat you with,' said the wolf, who jumped out of bed and ate poor Little Red Riding Hood."

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\* Early versions of the story do not usually end in the rescue of Little Red Riding Hood, but in her being devoured by the wolf.

It will be noticed that even in this garbled, brief protocol, the interview between the wolf in bed and Little Red Riding Hood is not omitted.

Although attempts were made to determine some connection between the kinds of distortions and omissions and the family structure, no systematic relationships could be discerned.

The morals drawn from the Red Riding Hood story had a wide range, although approximately two-thirds of the subjects felt it had no moral. B.B. (See Sample 1) wrote, "The moral is to obey elders." \* M.J. (See Sample 2) could think of no moral at all. A representative group of morals offered are these:

- "Small children shouldn't be alone in the woods."
- "I was told as a child that all good little girls would be taken care of."
- "Don't talk to strangers or give them information."
- "You can't get away with an evil deed."
- "Don't wear a red coat in the woods." (obviously facetious)
- "Don't trust a deceiver."
- "Never trust in wolves even when they seem to be friendly."
- "Do not stray from home or you may get lost."

Most of the stated morals involved the fact that one cannot trust strangers and that one should therefore be more reticent about one's personal affairs than Little Red Riding Hood was.

The answer to the last question of whom might the wolf represent resulted in replies which fall into the following groups: "the evil stranger," "the father," "the forces of evil," "a criminal." Some specific replies were:

- "Little Red Riding Hood's father who didn't want her living with her grandmother."
- "The devil."
- "Strangers in general."

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\* Whenever the moral is explicitly stated in the Red Riding Hood story, it is this.

"The wolf probably represented someone who had been mean to her."

"A man-stranger, a villain - the forces of temptation."

"A cruel person in her family, perhaps even her father."

These answers, taken alone, are of little significance inasmuch as they are so sophisticated. However, they offer some hypotheses which will be further followed up in investigations of this type to be carried out with children.

Discussion. The results of the analysis of these recalls of the Red Riding Hood story suggest that the psychological structure of the story has three critical points: the beginning of the story (to some extent) and more clearly, the meeting with the wolf in the woods and the conclusion of the story. The meeting with the wolf is either denied completely (by being omitted) or Little Red Riding Hood is supplied with an excuse for chatting with the wolf. In one instance, she has "lost her way" and asks the wolf directions. In several other cases, she does not even see the wolf although he sees her and follows her. Thus Little Red Riding Hood is relieved of all responsibility for her "wrong-doing" in the confusion surrounding her meeting with the wolf. This may be related to the fact that the moral of the story is seen by so few. Clearly, if Little Red Riding Hood did no wrong, there could be no moral for her; in such cases, the moral refers to the wolf: "Evil deeds have their retribution." In those instances where the moral is given as, "Beware of strangers" there seems to be a vague recognition that perhaps Little Red Riding Hood had stepped off the straight and narrow path.

The most practical findings of the analysis of these "normal" protocols are the following: (1) that distortion is the rule, not the exception in the recall of a fairy tale (specifically Little Red Riding

Hood); (2) that certain points of confusion exist for the group as a whole; (3) that there is great individual variation in the omissions and distortions; (4) that those parts of the story having the most concretely structured quality are the best retained.\*

(2) The Analysis of Individual Recall Records from  
Normal and Hypnotic States

Statement of the Problem. It was thought that inasmuch as individual variations in the story recall were frequently so striking that some clue might be derived regarding the dynamics of these differences by an intensive individual analysis of normal and hypnotic recalls. The investigation of the relation of these variations in recall to the results of two "projective tests" was regarded as a source of information regarding the possible influence of various important emotional attitudes on the recall of affectively-toned material.

Procedure. Four hypnotic subjects were given the Rorschach and the Thematic Apperception Tests in the normal state. On a separate occasion, they were asked to recall the story of Little Red Riding Hood first in the normal, then in the hypnotic state. A series of "clues" was prepared for further questioning in subsequent normal and hypnotic states to the end of seeing whether the omitted sections could be "brought back" in either state. In order that the instructions be fairly constant, they were prepared and memorized beforehand. However, occasional deviations were found necessary. The request for the first recall (in both normal and hypnotic states) ran as follows:

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\* This refers to the fact that no one omitted mention of the series of comments directed by Little Red Riding Hood to the wolf in bed regarding his peculiar ears, arms, eyes, mouth, etc.

"I want you to tell the story of Little Red Riding Hood. Tell it just as it occurs to you and if you think of something that at first seems to belong to the story and then doesn't, put it in anyway, and you can change it as you go along. Tell me when you think there is a gap in your memory and also when a certain thing you have said is not correct."

The response to this request was not written by the subject, as in the previously described section, but spoken to the experimenter and stenographically recorded by a clerical assistant who sat behind a screen. The results of the projective tests and of the story recalls were analyzed separately.

Results: Subject 1. is a female, aged 25. The Rorschach Test on this subject suggests an extremely capable individual, not stereotyped yet excessively narcissistic and extremely impulsive. There is some indication of a superficial over-pliance and there is considerable evidence for great anxiety regarding sexual behavior.\* Her responses on the Thematic Apperception Test show an unusually consistent theme throughout. There are a number of explicit mother-figures in her stories but no bonafide father-figures. The few men who are mentioned either desire her sexually or reject her sexually. Her story repeats itself again and again in the form of a triangle; she has a relationship with a man and a feminine figure disapproves of her. Her stories suggest, too, an over-severe conscience, with frequent feelings of guilt. In the one card where she had her best opportunity to bring in an explicit father figure, she passed it off with a completely superficial narrative about a man straightening his tie and noting that his moustache is becoming gray.

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\* Although it would be desirable to cite the specific responses and their scoring, such a procedure will have to wait until there are sufficient subjects and a sufficient time interval to permit the individual subject the complete anonymity he deserves.

Dr. D. Rapaport provided the interpretations of the projective tests.

Her first recall of the story of Little Red Riding Hood ran as follows:

"Little Red Riding Hood -- I can't remember whether she had a father or mother, although she must have had a mother, for she had a grandmother -- one day she was going to bring her grandmother a basket of food, and she had to go through the woods to get to her grandmother's, so she started out -- I am not remembering the story. I am mostly making up words -- the sky was blue -- she walked through the woods and she met some woodsmen, I think -- she didn't meet the wolf, or did she meet the wolf and run away from him. Something happened in the woods -- I don't remember. She got to the grandmother's house and tapped on the door and walked in. In the meantime the wolf had come to her grandmother's house and possibly hidden her grandmother or something, or shoved her in the closet and locked the door and put on the grandmother's bonnet and got in bed. Little Red Riding Hood came in and asked a series of questions -- 'Grandmother, what big eyes you have!' 'They are to see with, my dear.' 'What big ears you have!' 'They are to hear you with.' She asked about the nose. (J.B. was not sure of this and laughed at it.) 'That is to smell you with.' Finally, she asked something about the teeth, and the grandmother said, 'So much the better to eat you with,' and jumped out of bed and ate Little Red Riding Hood -- I want to say but I know it wasn't what happened. I thought it would make a better story. Just before the wolf was going to eat her, a woodsman came, maybe a whole bunch of them came in and killed the wolf. I imagine the grandmother turned up sooner or later safe (because it's a children's story)."

Her recall in hypnosis, directly following, was substantially the same as her normal recall.

Discussion. The most important factors in this recall are the following: first, there is the question she raises of a ". . . father or a mother"; secondly, there is the unmistakable wish to avoid the meeting with the wolf; and finally there is included the undisguised desire that Little Red Riding Hood be devoured. In connection with each of these points, supplementary data help to suggest tentative hypotheses for understanding them. Subject 1.'s mention of the father is a rare occurrence in the recall of this story. Out of forty-eight records, only three make mention of the father. In the two other instances,

the father is brought in casually: ". . . Little Red Riding Hood who lived with her father and mother." The extreme reluctance to "meet the wolf" may not be unrelated to this singular inclusion of the father. It would seem thus that from both the fairy-tale recall and from the story productions on the Thematic Apperception Test one cannot help but be made aware that the father figure is a source of considerable conflict. Finally, although there can be little doubt but that the explicit wish that the story would conclude with Little Red Riding Hood's being devoured is of central importance in this case, it is impossible to develop this point without entirely taking leave of scientific caution.

Subject 2. is a male, aged 23, a student. His Rorschach protocol describes a person of great intellectual potentialities, which, however, he is unable to channel constructively. He has an over-active fantasy life and tends to intellectualize his problems lest they become sources of anxiety. His general integration seems poor relative to his endowment. He is markedly reticent and extremely narcissistic. The stories given in response to the pictures on the Thematic Apperception Test eliminate all direct experience of a mother figure. Three women are mentioned, all of whom disapprove of him. Two are the mothers of sweethearts of the person with whom he identifies; although both these women disapprove of him, he acts contrary to their wishes. The third feminine figure is a landlady who is angry at her boarder with whom, apparently, subject 2. identifies. The first recall of Little Red Riding Hood in the normal state is the following:

"It seems to me that Little Red Riding Hood went to visit her sick grandmother, taking a basket on her arm that had food in it and there was a fox that wanted to catch Little Red Riding Hood and the fox was in bed, posing as the grandmother.

He had the covers pulled up around his head to make it difficult to tell it wasn't the grandmother. Little Red Riding Hood went in and found the figure in bed and noticed the features weren't exactly those of her grandmother. She says, 'What big teeth you have grandmother,' and the wolf replied, 'All the better to eat you with.' I think that was in the story, at least, I heard it a number of times. She said, 'What big eyes you have, etc.' and finally the fox jumped out of bed and devoured Little Red Riding Hood."

Just as subject 2. eliminated the mother-figure in his responses on the Thematic Apperception Test, so does he eliminate her in the recall of the story. Not only the meeting with the wolf but the entire middle section of the story is eliminated. Little Red Riding Hood starts out and is at her grandmother's house instantly. Questioning, still in the normal state, regarding the omission of Little Red Riding Hood's trip through the woods led subject 2. to say that perhaps the "fox" had seen Little Red Riding Hood going through the woods on other days. This statement, apparently a veiled accusation against the mother, led to the prediction that either in a subsequent normal or hypnotic state, subject 2. would give supportive evidence for this hypothesis. In the first hypnotic state he 'brought the mother back' into the story. Accompanying the "return" of the mother in hypnosis, Little Red Riding Hood is rescued at the end instead of being devoured. After a series of questions during the normal state on the following day, regarding the role played by the mother, subject 2. said:

"I can only think of one thing . . . It might have been that she wanted to get rid of Little Red Riding Hood and told the wolf or sent the wolf."

In the hypnotic state that followed with only two questions of a similar sort, he said:

"She might have been the villain - along with the wolf . . ."

In the normal state following, subject 2. was asked what he thought the moral of this story was. At first he maintained that it had no moral at all. Finally, he gave as the moral (in utter seriousness):

"If you are a good little girl and take food to people who are sick you will get along all right and nothing will hurt you."

He was then re-hypnotized and gave now as the moral:

"Little Red Riding Hood disobeyed her mother on her way to the grandmother . . . and it might have been her punishment for that."

Discussion. It seems clear that in the case of subject 2., the mother-figure is the source of considerable stress but that the hostility toward her is held rigorously in check by many factors, some of which were mentioned in the Rorschach analysis. Although only fragmentary sections of the actual protocol were discussed, the results with subject 2. strongly suggested that a hiatus or a distortion in a recall may maintain itself even in the face of detailed questioning in the normal state but "break down" in hypnosis. This hypothesis is based on several sessions in this case during which the distortion remained rigid throughout questioning periods in the normal state but changed to the accurate version in the hypnotic state. If this be so, this technique may be useful for an experimental study of the Freudian concept of "repression."

Subject 3. is a female, aged 23. Her Rorschach protocol describes an extremely stereotyped and inhibited personality. The entire protocol totals only thirteen responses, no one of which is a full movement-response. Eight of these thirteen were animal-responses. She gives no color response until the eighth card. Generally, she

shows some negative suggestibility, considerable reserve, and little imaginativeness. Her responses on the Thematic Apperception Test are extremely brief and colorless. Her "stories" completely lack inventiveness and are, indeed, more often one or two descriptive sentences rather than stories. No clear picture of her central "needs" or "attitudes" could be derived from her responses on this test.

Her story recall was the shortest of any in the entire group; it was fairly accurate in both the normal and hypnotic states, with no significant difference between the two versions.

Discussion. It seemed apparent that the meagerness of subject 3.'s "personality output" was not restricted to a single kind of activity but was reflected in all three laboratory situations. Although with further work, her rigidity may have broken sufficiently to allow for a more intimate glimpse of her inner life, it was clear that the process would have been a long and arduous one. The results with subject 3. showed beyond any question that in future work of this type, a good deal of time might be saved by the administration of a Rorschach test at the very first.

Subject 4. is a female, aged 25. The analysis of her Rorschach protocol describes an anxiety-ridden person, lacking integration (she had only five whole-responses out of a total of seventy-five). Further, she is over-pliant and impulsive but lacks sufficient propelling power. Thus her superficial adaptation is far over-shadowed by her anxiety. Her protocol suggests further that she is unable to make any genuine libidinal investments and that she 'distributes' bits of emotion in a disorganized and inconsistent manner. Her

responses to the Thematic Apperception Test picture show very clearly strong aggressions which are, however, eliminated from direct expression. Also, there is a decided consistency regarding her treatment of parent-figures in her stories. She regards them as mean, dull, and generally distasteful.

Her recall in the normal state is short and perhaps the most distorted of any in this group:

"As I start to think of it, it seems to me that a wolf dressed up like the grandmother and Little Red Riding Hood came home and there was this wolf and there was something about 'eating you, my dear.' There was a bunch of conversation there but I have forgotten. I am confused with the 'Bears.' Oh - I am not remembering this well at all!"

In the hypnotic recall, the action is more organized: Little Red Riding Hood goes out; that something happens to the grandmother is admitted but the aggression is still denied - and vigorously. Also she now remembers the conversation between Little Red Riding Hood and the wolf as well as the attendant danger.

Discussion. The character of the first normal recall (quoted above) is one of absolute randomness with an all-over quality of panic. The memories are fragmented and completely chaotic. The essential action of the story has been eliminated: the child comes home instead of going somewhere; the wolf is suddenly there and no one is responsible. The mother is entirely omitted from the story. No violent or aggressive scenes take place. The relation of all of these facts to the responses on the Thematic Apperception Test and even to the Rorschach results seems the most obvious in this group. It should be pointed out that even in this brief and almost formless narrative, some reference to

Little Red Riding Hood's interview with the wolf regarding his peculiar appearance, was included.

It would seem from these few illustrations that, at least in some instances, the data supplied by projective tests may be "fitted" with the specific memory distortions of affectively charged material in such a way that at least some aspects of the individual motivational factors in memory may be seen. It would seem also that in studying the process of the "reconstruction" of the distorted memory, hypnosis may be a valuable research tool.

### (3) Discussion of Part B: The Recall of Fairy Tales in Normal and Hypnotic States.

It must be obvious that along with the investigation of the memory of a fairy tale, there must be a genuine and almost unprecedented attempt to achieve a full understanding of the nature of the fairy-tale itself. Kluckhohn (31), who has recently contributed what is perhaps the most catholic discussion to date of the general problem of mythology, pleads with his fellow anthropologists that they not neglect the concrete human organism in their theories. Although his prime concern is the relation between myth and ritual, the question he asks may be easily applied to the problem of the fairy tale. He asks:

"But how are myth and ritual rewarding enough in the daily lives of individuals so that individuals are instigated to preserve them . . ." (p. 65)

Until this question is answered, the problem of how fairy tales are forgotten and recalled will remain an enigma. The development of the solution to this problem will probably come about, as Kluckhohn suggests, not on a "unilateral" or "simplistic" level but on the basis of a more thorough understanding of the emotional needs of a concrete individual in a concrete situation.

#### IV. Conclusions and Implications

The specific conclusions derived from the experiments have already been summarized. However, inasmuch as the experiments are frankly exploratory, their results are considered to be only of secondary importance for this paper. Therefore, this brief and final section will be a recapitulation of the primary purpose of this paper, the conceptual framework proposed for a continuation and crystallization of the experiments initiated, and finally, specific suggestions for further research.

##### (1) The Purpose of this Paper

It has been the central aim of this presentation of background material and preliminary experiment to demonstrate the urgent necessity for finding ways and means to handle experimentally the vital and fundamental material unearthed by Freud and his followers. It was emphasized that this synthesis would, of necessity, take place through the medium of field-theory. Hypnosis was suggested as one of the most powerful, practicable research tools to the end of developing such a body of experiment and it was shown in two types of experimentation that it is manifestly possible to devise new experimental methods for the systematic investigation of what Freud has called "unconscious processes." An attempt was made to show that even now legitimate points of contact may be established between psychoanalytic and Lewinian theory. For example, the first series of experiments dealt with "tension systems," the origin of which was inaccessible to direct awareness in the subject. Although it is as yet premature to define the precise implications that

this experimentation will hold for Freudian theory, it is safe to say that this approach holds great promise for the development of cooperative problems.

## (2) The Conceptual Framework of the Present Experimentation

If further experiments are to be constructed and the research initiated here, continued, a brief consideration of the Freudian and Lewinian concepts of psychic forces is indispensable. The fact that both authors discuss "intentions" makes not for a greater but for a lesser conceptual clarity. Lewin (37) defines intentions as the setting up of "quasi-needs," which become possible only because of the existence of opposed needs. There would seem to be apparently, then, little difference between Freud's and Lewin's concept of "intention." However, Lewin tries to investigate the dynamics of "intentions" by hypothesizing quasi-needs set up. Freud shows only that intentions are interfered with by other unconscious intentions. He says, "An intention is an impulse for action which has already found approbation, but whose execution is postponed for a suitable occasion." (25, p. 106)

Lewin (37) appears to come closest to the Freudian theory of motivation in his discussion of the relation of "quasi-needs" to each other and to the "genuine needs." It is precisely this relationship which appeared crucial in the understanding of the experiments on hypnotically induced "tension systems." Lewin points out that it is this relationship too which explains the apparent paradox of the intensity of an intention bearing no relation to its effectiveness. It would seem that future cooperative experimentation will do well

to focus on this problem because it seems now one of the most vital points of juncture, and yet one most amenable to attack.

### (3) Further Research

Illustrations of the way in which the two independent lines of experimentation will be fused may be seen in a variety of possible experiments. One of these might be the direct investigation of the relation of "emotional needs" to memory-distortion by the hypnotic induction of deep needs created in such a way as to have an intimate association with the critical events of a given story. The distortions of the story could thus be systematically observed and even controlled. Such a series of experiments would be a clear check on the hypotheses set up in Part B. Another and perhaps more important series of experiments might investigate the relation of a "quasi-need" to a more central need by experimentally setting into opposition two such opposed needs. For example, a subject might be told a number of stories, half completed and half interrupted. If the stories were equated for interest, one might assume that the interrupted stories would be better retained. However, in hypnosis the experimenter would induce needs of such a sort as could be fulfilled on a fantasy level by the completed stories or which were in some way in conflict with the interrupted stories. The "tension" thus resulting from a desire for completion would compete with the "tension" set up experimentally and clearly this would check the hypothesized relations between "needs" on various levels. Yet another type of experiment might be of great importance in further developing the projective tests. For example, it would be of great significance to observe the changes in perception

(on a Rorschach test) in a deeply hypnotized subject for whom all idea, let us say, of animals was prohibited, or again, the creative productions on the Thematic Apperception Test of a subject who, in hypnosis, had been instructed to develop specific emotional needs. Subjects for certain of these investigations are now being developed by this experimenter.

It is thus apparent that the marginal area between psychoanalytic and Lewinian concepts is amenable to experimental investigation. The experiments reported herein are initial efforts to explore that area. The results obtained give sufficient grounds for hope that in time the gap may be narrowed and eventually closed.

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**APPENDIX**

Appendix A

The Historical Introduction to the Psychoanalytic (Psa.)  
and Topological (T.P.) Modes of Attack\*

1880 Cooperation in foundation of psychology and psychiatry  
Kraepelin -- Wundt

(Both sciences atomistic and classificatory. Psychology  
of use in descriptive symptomatology.)

The division at the time of Freud's early work

1895 Early Psa. speculations  
(Immense potential use-  
fulness but no exactness) . VS.

"Brass Instrument Psycho-  
logy" (Exactness but  
sterile except in field  
of sensory processes)

1910 Adler, Jung----- Psa.  
et al (Rich  
factual con-  
tributions;  
weak in method-  
ology)

Early Gestalt  
(Methodological  
contributions;  
weak in vital  
interest facts)

Behaviorism

Continuation of  
weakness

Continuation  
of weakness

1935 Psa. (Modern)

T.P.

(Present possibility of cooperative research problems from Psa.  
--method from T.P.)

\*This scheme was taken from Brown (61 )

Appendix B

Order of Task Presentation in Experiment with Alice A. (See p. 40)

1. Copy design (PC)
2. Cut out sport outfit (PU)
3. Manikin Profile (PC)
4. Cut out tulip (NPC)
5. Block design (PC)
6. Plan of hospital grounds (PU)
7. Construct figure with match-sticks (NPU)
8. Do simple arithmetic problems (NPU)
9. Cut out design (NPC)
10. Number puzzle (PC)
11. Arrange panels to make joke (NPU)
12. Jig Saw (NPU)
13. Put together proverbs (NPC)
14. Plan of school grounds (NPC)
15. Actor, city, etc. with same initial (NPU)
16. Complete series of squares (NPC)
17. Build sentences (PC)
18. Cross work puzzle (PU)
19. Fill in ellipses (PU)
20. Fill in blanks in sentences (PU)

P - Preferred  
NP - Non-preferred  
U - Unfinished  
C - Completed

## Appendix C

### I. Order of Presentation of Nonsense Syllables in Hypnotic State in Experiment with Alice A.: (See p. 42)

1. meer (C)	11. roif (U)
2. jish (C)	12. twic (U)
3. glet (C)	13. thog (U)
4. crad (U)	14. chuz (C)
5. lerm (U)	15. daux (U)
6. sark (C)	16. bune (C)
7. goje (U)	17. rowk (C)
8. hocl (U)	18. whab (U)
9. fape (C)	19. dolm (C)
10. kise (C)	20. krof (U)

### II. Syllables Preferred in Hypnotic State after Zeigarnik Experiment: meer, jish, sark, hocl, fape, kise, thog, whab, glet, bune.

### III. Syllables Chosen in Normal State Following: meer, jish, crad, lerm, hocl, fape, kise, bune, whab, dolm.