MEMORY FOR ANXIETY-PROVOKING WORDS AS MEASURED IN A FORCED RECALL SITUATION: A COMPARATIVE STUDY OF A NORMAL AND A NEUROTIC GROUP

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AN ABSTRACT

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A critical survey of experimental studies of repression showed that the technique of spontaneous recall leaves much doubt regarding the difference between what a subject is capable of reporting, and what he does report in a testing situation. This has resulted in speculation that the process of suppression, rather than repression, may explain the relative absence of report for anxiety-provoking material. The availability of theoretical justification for either conclusion, and the dearth of additional facts of observation, has led to an impasse regarding the interpretation of experimental findings.

One major objective of this study was to test the effects of forcing recall in a laboratory situation. If it were possible to demonstrate that more previously-learned, anxiety-provoking material could be secured in a forced situation than could be gained in a traditional spontaneous recall situation, the repression hypothesis would become untenable. This would not clarify all the issues of repression vs. suppression. However, it would provide an experimental criterion for suppression, and a means for reducing the margin of error in conclusions favoring the repression hypothesis.

In this investigation groups of twenty-six normal and twenty-six neurotic adult males were each divided into two subgroups. Several factors which might influence the learning

and retention of verbal material were equated among the four groups. All subjects were administered a Word Association Test composed of two lists of anxiety-provoking, and two lists of neutral stimulus items which they were later asked to recall. One normal and one neurotic group were tested under Spontaneous Recall Conditions, while the remaining groups were examined under Forced Conditions. A comparison was made of the number and type of word recalled by groups tested under the two conditions. A further analysis was made of the performance of the normal and neurotic groups tested under each condition.

It was hypothesized that groups tested under Forced Conditions would: (a) recall more list words and produce more total responses; (b) recall more anxiety-provoking words from the lists; and, (c) produce more extra-list words, than comparable groups tested under Spontaneous Conditions. The results tended to support these hypotheses.

A comparison of normal and neurotic performance supported the hypothesis that normal groups would show greater recall for list words than neurotic groups under both experimental conditions. The final hypotheses were that neurotic groups would recall proportionately more anxiety-provoking words, and produce proportionately more extra-list words than normal groups under the Spontaneous and Forced Conditions. Although

in the predicted direction, the results of these comparisons were not statistically significant.

Implications regarding the use of forcing procedures in therapy, the experimental criterion for repression, the effects of extreme anxiety on learning, and the limitations of the method for measuring learning were discussed. It was suggested that the forced technique used in this experiment may be fruitful in further empirical investigations of the effects of motivation on recall.

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EXPERIMENTAL AND THEORETICAL BACKGROUND

Introduction. Workers in psychology first considered forgetting to be a function of the amount of time that had passed, the assumption being that the memory traces of the brain wear away with the passage of time. The need for amplifying and amending this concept soon became evident. How, for instance, did it happen that of two events perceived at the same moment, one would be remembered and the other forgotten? The apparent answer was that one of the events made a stronger impression. Investigations of the effects of primacy, intensity, novelty and frequency of stimulation threw further light on factors influencing strength of impression. However, the recognition of these variables did not entirely answer the objections raised against the forgetting-through-time theory. The work of Bartlett (4) showed that there was no one curve of forgetting. There were instead as many curves as there were conditions which determined rate and content of forgetting. The search for additional determining conditions for forgetting led workers to turn their attention to factors such as the needs of the individual, his interests, past experiences and motivation at the time of learning and of recall. Increasingly, it was felt that forgetting was anything

but simple, that the "passage of time" was secondary, and that the primary factors were the needs of the individual and his attempts to satisfy them.

The next contribution made by laboratory and clinical workers concerned the fact that forgetting was never complete. "Forgotten" material often was either spontaneously recalled, or could be made available to the individual by the application of certain techniques. Most psychologists agreed that "forgotten" material was located somewhere in the nervous system, and devised hypothetical constructs such as neural schemata, engrams, neurograms, and traces to fill the gaps in immediate observation. Consideration of motivational factors in recall and the potential reversibility of forgetting led to hypotheses about processes which kept the "forgotten" unavailable. Principal among these was the "repression hypothesis" which stressed certain motivational aspects of forgetting, and postulated a complicated theoretical system of forces acting to initiate, maintain and disrupt the process of repression.

Critical Survey of Experimental Attempts to Test the Repression Hypothesis. The first experimental attempt related to repression was Colgrave's questionnaire in 1898 (8). He asked school children if it was

easier to remember pleasant or unpleasant experiences. His results showed that pleasant items were more easily remembered than those less pleasant. However, questionnaire methods are notoriously invalid for tapping repression (52), and Colgrave's work has more historical than practical value.

In 1905 Gordon's (20) study of recall for colored figures judged as "pleasant" or "unpleasant" marked the beginning of experimental attempts to test the repression hypothesis proper. Other studies on the relationship of "hedonic tone" to memory had subjects associate pleasant or unpleasant visual (48, 59), olfactory (3, 15, 21, 30) and auditory stimuli (48) with numbers or nonsense syllables. Superior recall of conceptual material associated with pleasant sensory experiences was often assumed to demonstrate repression of unpleasant associations. Results sometimes tended to support the hypothesis, but were too often conflicting or inconclusive. Today most psychologists agree that these studies made the erroneous assumption that sensory and ideational judgment can be equated, and that in retrospect they contributed little, if anything, to knowledge about repression (47, 52).

Still other studies of repression dealt with the recall of personal experience (14, 21, 42, 45, 61, 66).

Subjects were asked to list recent pleasant and unpleasant happenings. In general, a greater number of pleasant memories tended to be recalled. However, many of these studies made no allowance for the fact that people actually tended to have more pleasant than unpleasant experiences. When this variable was considered, no difference in recall for the two types of experience was found (6, 71).

Later types of research dealt with the induction of situational threats in ego-involved individuals. The general pattern of these studies was to induce failure on tasks ostensibly reflecting upon some socially-valued trait, such as intelligence or character (23, 65). Later recall often revealed results contrary to the Zeigarnik Effect (72) in that there was differential forgetting of incomplete or "failed" tasks (49, 50). This was taken to support the repression hypothesis. Variations in this technique were designed by Koch (31) and Korner (32) who tested recall for "good" and "poor" examination scores, and for "desirable" and "undesirable" personality traits. However, the general result of this type of experimentation was inconclusive, and the operation of variables other than repression which may have influenced "forgetting" was inadequately controlled. Koch's self-criticism regarding the inhibiting effect of the examiner (who was often the teacher in these classroom-situated

experiments) may be applied to many of these studies. She raises the question of how a subject's endeavor to maintain the good graces of the examiner might lead him to consciously withhold recall of "failures" or "deficiencies". This question will be discussed in greater detail later in this section.

Another major technique has been the use of word lists which included items designed to tap areas of repression. The content of experimental items was usually sexual, aggressive, or profane, and results tended to show that such words were less frequently recalled than neutral words for which there was equal practice (7, 13, 24, 34, 36, 54, 56, 68). This method comes closest to the theoretical prerequisites of the repression hypothesis (52). However, results secured by this method may reflect the poorer learning of infrequently used "taboo" words (53, 68), or the embarrassment of subjects to verbalize them in a recall period (43, 52, 73).

In terms of design and relevance to the present discussion, Sharp's study (54) offers one of the best illustrations of an experimental attempt to test the repression hypothesis.

Sharp, utilizing neurotic subjects, compared the amount of recall and time necessary for relearning two-word statements which were known from therapeutic in-

vestigations to be unpleasant, pleasant, or neutral in all her subjects' experience. Her results showed that unpleasant statements tended to be forgotten more frequently than those which had pleasant or neutral connotations, and that more time was necessary to relearn the former. Sharp's work is far superior to much of the early literature on "hedonic tone" and repression in that she designed her study around materials related to known sources of anxiety and maladjustment for her neurotic subjects. She also secured similar results using the same lists with a group of normal adults. Heathers and Sears (27) assumed that Sharp's list of words was tapping some sources of repression that are fairly common in people with an American background. However, they were unable to duplicate her findings with comparable groups of subjects. Even when a number of variations in procedure were introduced, Sharp's results could not be supported. Sears concluded:

> "Whatever may have been the difference between the two sets of data, it seems probable that this method is too uncertain and unreliable for extensive investigation" (52, p. 110).

Partly as the result of the criticisms noted above, but more likely due to the increased influence of experimental psychology, recent studies have attempted to control learning factors and to recognize that the ab-

sence of recall does not necessarily represent repression. This approach attempts to separate the effects of apparently unmotivated forgetting from the motivationally-determined resistance to recall theoretically associated with repression.

In his review of Sharp's work, McGeoch makes a comment which may be applied to any study of the repression hypothesis.

> "It remains a question whether these differences should be interpreted in terms of Freudian repression, if that is taken to mean anything more than the interference effects in terms of which most forgetting is to be understood. Until such differential rates of forgetting are shown to be produced by conditions other than those producing most experimentally measured forgetting, it is reasonable to hypothesize that unacceptable items are more susceptible to being interfered with by the intervening activities of the subject and that these items also suffer at recall from a less vigorous and direct set to recall them" (39, p. 373; underscoring mine).

In support of McGeoch's view is the work of Stalnaker and Riddle (58) and of White et. al. (69), showing the influence of hypnosis on the recovery of childhood memories. Their results showed that increased motivation to recall (hypnotically-induced by the examiner) is an important determiner of the amount and accuracy of recall from real life experiences. Representative of this

more cautious trend in evaluating differential forgetting is the work of Zeller (73). He holds that a threefold criterion must be met before repression can be inferred. One must first show that the subject learned the material in question. One must next indicate some experimentally-induced inhibiting factor (e.g. ego threat). Finally, and most important, when this threat is removed recall of previously unavailable material can be secured.

It is the recovery of material previously unrecalled which Zeller feels to be the crucial proof against ordinary forgetting, and in support of the repression hypothesis. This technique guards against the possibility of poorer initial learning by utilizing equivalent and innocuous stimulus materials (i.e. nonsense syllables). The independent variable is the introduction of ego-threat. Aborn (1) and Zeller (74, 75) have found results consistent with this rationale, and conclude that they have demonstrated repression in the laboratory. No explicit criticism of Zeller or Aborn has, as yet, appeared in the literature. However, it would appear to the author that Zeller's criticism of Sharp's findings (53) is equally applicable to his own design. He states:

> "The experimental situation was such that embarrassment over the nature of the material to be reproduced undoubt-

> edly contributed a great deal to the results" (73, p. 44).

Situational factors other than embarrassment may also act to inhibit recall. As Koch has indicated (31), the subject's attempt to hide fancied inadequacies from the examiner may play an important role in recall. When he is shown that these inadequacies are non-existent, (which constituted the removal of ego-threat in Zeller's design) he may produce what previously had been inhibited -- particularly if it now serves to increase his prestige.

In his summary of the literature on experimental studies of repression Sears states:

> "There is little to be concluded from the experimental study of repression. In general it is possible to demonstrate that, with the required conditions crudely established, recall of real-life or experimentally induced experiences follows the expectations suggested by repression theory. But the non-analytic data offer no refinement of the theory, no addition of relevant new variables, no streamlined techniques that promise eventual solution of the problems posed by Freud. Studies of recall of real-life experiences and efforts to tap existing repressions have been almost uniformly uninformative. Some hope may be held out for the artificial creations of repression in the laboratory, but even these must by necessity be mild and impermanent. Indeed, the triviality of obtained differences in this field makes a most discouraging picture; and the

> coarseness of the experimental methods so far available for trapping the sensitive dynamic of repression does not augur well for the future" (52, p. 120).

In the light of Sears' summary statement and considering the history of experimentation in this area, one wonders if much of the work on repression has not aimed to prove the hypothesis rather than test it. Certainly, existing facts suggest the need for further consideration of the effects of the condition under which recall is solicited, and a more cautious utilization of the concept of repression in the laboratory.

The Question of Repression vs. Suppression. Laboratory experiments have largely ignored the possibility that factors other than repression may explain why a subject withheld certain material from recall. The most obvious alternative explanation of results is that the individual had suppressed, rather than repressed, certain unrecalled material.

It is generally assumed that in a laboratory situation the subject will respond in a motivated and appropriate manner to test instructions. This expectation is based on the individual's cultural conditioning which leads him to obey authority figures (i.e. the examiner), and "to put his best foot forward" in the presence of his superiors (again represented by the examiner). The latter

factor generally serves to enhance an individual's performance in the ordinary test situation. However, it may also play an inhibiting role if compliance with the examiner's instruction leads the subject to violate the social pretense he wishes to maintain (28, 38). In a repression experiment the subject is often called upon to verbalize "taboo" material, or recall experiences in which he had appeared in an uncomplimentary light. In this situation the subject may compromise his inclination to recall all he can by suppressing those items which he feels might incur the displeasure or ridicule of the examiner (31, 43). The degree to which this is done would ultimately depend on the subject's assessment of the relative benefits to be gained by recalling or suppressing recall for certain material at the time of testing. The amount of material suppressed by a subject may in turn be altered by the kind of situational threat to recall present in a situation, and the amount of pressure to recall brought to bear by the examiner.

This interplay of factors fostering and inhibiting recall is readily recognized and substantiated by those with therapeutic experience. Alexander (2) notes that there are two important processes available to the individual for withholding objectionable material from the therapist. One is repression; the other is a "conscious

and voluntary process called suppression". Alexander explains how the patient's need for help and the therapist's accepting attitude reduce emotional resistance to verbalize suppressed material, and also how the technique of free association tends to thwart suppression of recall. As a function of the therapeutic procedure, "the patient gradually learns to overcome his natural reluctance to abandon his conventional facade and become entirely frank" (2, p. 29).

Haigh's (25) study of "Defensive Behavior in Client-Centered Therapy" demonstrated that individuals will consciously withhold certain material if it tends to be incongruous with a particular concept or experience highly valued by them. This was termed "defensive behavior" which included his clients' attempts to distort, deny, evade, or rationalize their awareness of a given state of affairs. It was shown that the accepting attitude of the therapist, and the clients' need to work out inconsistent feelings, tended to reduce the effectiveness and increase the admission of defensive behavior. Haigh concluded that:

> "...it is necessary to recognize the difference between material of which the individual is aware but which he does not communicate, and material of which he is not aware but which nevertheless influences his behavior. It

> would seem that this factor (the former; Ed. note) must be separated out before any defensiveness encountered need be attributed to the operation of unconscious factors" (25, p. 188).

Even the recognition of factors such as suppression has done little to clarify the experimental question of what is repressed and what is not. This is true in spite of the clear theoretical dichotomy existing between repression and suppression. Theoretically, the basis for differentiation is that repression is an unconscious, and suppression is a conscious process. Unconscious processes, including repression, follow three propositions (43):

(a) they are removed from consciousness;
(b) they can only be made available to consciousness by special techniques such as psychoanalysis or hypnosis; and
(c) they are not under voluntary control.

Suppression, on the other hand, is a conscious process, easily reversible (i.e. suppressed material is readily available for verbalization), and under voluntary control (11).

To the observer, however, the processes of repression and suppression are the same: both prevent the verbalization of certain material. The laboratory worker, unlike the therapist, seldom goes beyond the recall data given at the time of inquiry. When experimental results reveal that certain material is not verbalized, it has

been largely a matter of conjecture whether repression or suppression best explain the findings.

Implications of Freud's First and Second Theory of Anxiety. Among the influences predisposing workers to conclude in favor of the repression hypothesis is Freud's first theory of neurotic anxiety (16). According to this theory, the individual experiences libidinal impulses which he interprets as dangerous. These are repressed, and the affect connected with them is converted into "free-floating anxiety" or symptoms which are anxiety equivalents. Following repression, certain cues associated with a rejected libidinal impulse may also arouse anxiety. This is said to occur because these cues tend to reinstate the formerly repressed content in consciousness. The ideational representations of these cues are in turn repressed by a process termed "after-expulsion" (16). In studies of memory this theoretical formulation has led to the possibly erroneous conclusion that any material assumed to arouse anxiety would in turn be repressed. An example of this point of view is Sear's statement (52) that Sharp's word list (54) touched upon common areas of repression in persons with an American background.

Freud's second theory of anxiety posited that anxiety does not result from repressed impulses, but arises out

of the individual's endeavors to avoid danger situations in his social relationships (17, 18).

Freud's second theory of anxiety grew out of his emphasis on the concept of castration. In his later writings Freud states: "It is not the repression that creates the anxiety, but the anxiety is there first and creates repression" (17, p. 120). According to this theory, the individual's childhood fear of castration by the parent later becomes "impersonalized" into dread of conscience which is patterned after social modes of behavior.

> "One might say,then, that symptoms are created in order to avoid the development of anxiety, but such a formulation does not go below the surface. It is more accurate to say that symptoms are created in order to avoid the danger situation of which anxiety sounds the alarm" (18, p. 86).

Interpreted in this manner, impulses arouse anxiety because their expression would incur external danger: namely, punishment by authority figures. This emphasis on the external danger situation implies that in certain cases anxiety does not result until the individual is aware of both his impulse and the repercussions it might involve. However, Freud notes that the individual does not necessarily repress all impulses resulting in anxiety in a given situation. An alternative mechanism may be

the suppression (or inhibition) of his inclination.

> "An impulse which is inhibited is rejected by repudiation and condemnation . . . but can continue to exist as a memory. The whole process of decision takes place with the full cognizance of the ego" (19, p. 259).

Therefore, one may argue that experimental findings interpreted to support the repression hypothesis might have reflected a situation in which the individual was consciously aware of certain content, but suppressed recall because he feared verbalizing this content to the examiner (31, 52, 73).

Freud's theories of anxiety provide theoretical reference for conjectures regarding the role of repression or suppression in experimental findings. However, theoretical arguments alone cannot decide which of the two processes are operative in a given experimental situation. This is a problem for empirical investigation.

Limitations of the Experimental Criterion for Repression. In traditional psychophysical experiments the difference between consciousness and unconsciousness was determined by asking the subject whether or not he was aware of a certain stimulus. If he responded in the affirmative, he was conscious of it; if not, he was unconscious of it. With only minor modifications this same criterion has become standard in studies of recall. One

simply asks the subject to recall previously learned material. Response is the criterion for consciousness; absence of response is the criterion for unconsciousness (43, p. 40). However, this criterion may attribute much to unconsciousness which is, in fact, wholly conscious. Sears recognized this limitation, but did not suggest a remedy. He stated:

> "There are, of course, many factors which may interfere with the expression of conscious images, attitudes, or wishes in words. A man may wish that he had a different profession, but under a few conditions only will he translate this wish into verbal terms that an observer could measure. Such factors as alcoholic intoxication, extreme anxiety, sympathetic intimacy with the recipient of the information, or some other strong social polarization might be the only influence which would lead to this translation. It is clear that in order for the above description to be truly reflective of the Freudian position there must be a one-to-one relationship between the unexpressed content (verbal or preverbal) and the expressed (measurable) content of the verbal activity itself" (51, p. 246).

In the last sentence Sears implies that what is not verbalized must be <u>incapable of verbalization</u> before repression can be concluded. Most studies utilizing this criterion do not consider Sears' caution that one cannot regard all non-verbalized material as repressed. The confusion arising from the omission of this consideration was discussed in detail previously.

More important than reviewing past inadequacies in experimental studies, is the problem of improving the criterion for repression. In the last analysis repression cannot be observed; it can only be inferred from the absence of recall for material assumed to be anxiety-provoking and experienced. Therefore, the direction for improving the experimental criterion would seem to be towards obtaining all the material capable of verbalization. Even if this were possible by techniques available in the laboratory, it would not solve all the problems. But it would lessen the margin of error.

Revisions of the Criterion for Repression. Zeller (73) attempted to devise a better experimental measure of repression by having subjects associate ego-threat with innocuous material. He then tested recall for the stimulus material in the presence and absence of the induced threat. He demonstrated that improved recall followed the removal of ego threat. This upheld his assumption that experimentally-induced threats may inhibit recall. However, this does not necessarily prove that previously unavailable material was repressed. It might be said with equal justification that the removal of ego threat led to the release of suppressed material. The fact that these results are open to an alternate interpretation in no way establishes the efficacy of either

explanation. It merely places Zeller's criterion in question. However, Zeller's contribution is noteworthy in that he raised the interesting question of how the recovery of previously unavailable material might be included in a criterion for repression.

Personality theorists hold that the threatened return of repressed material results in an anxiety attack. Freud stated that it is the "charge of affect" associated with the content of repressed material which accounts for the release of energy represented by the anxiety attack (16). In somewhat different terms Miller and Dollard say the same thing: "...the immediate result of removing repression (like the interruption of any other reinforced symptom) is an increase in drive" (11, p. 203). Increased drive in this context refers to anxiety. Thus, whenever repressed material is recalled, one would expect a marked increase of manifest anxiety. In the writer's opinion this criterion might be useful when attempting to conclude whether repression or suppression is operating in a given experimental situation. For instance, when recall of previously unavailable material is achieved without a significant increase in manifest anxiety, it would seem justifiable to conclude that the material had been suppressed.

This criterion cannot be applied to Zeller's work (74, 75) because he tested recall before and after the removal of an ego threat. However, it could be useful in a situation where assumed threats to recall remained constant, while the method of soliciting recall varied.

Although of some practical value, observations of the presence or absence of "a marked increase in anxiety" would be highly subjective. Some measurable index of behavioral disorganization assumed to correspond to various levels of anxiety might be devised.[1] However, the usefulness of any index as a criterion for the release of repressed material would ultimately depend on the validity of the assumption that the material was, in fact, repressed. This brings one back to the question of what would constitute an experimental criterion to differentiate repression from suppression.

One alternative solution occurred to the author. If one cannot differentiate between repression or suppression of recall in the laboratory, can one devise a method that would support the assumption that repression

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[1]Although certain physiological techniques for distinguishing conscious from unconscious processes have been advanced, they are not directly pertinent to this study. Reference to representative work in this area by Luria (35), Diven (10), and McGranahan (40) may be made.

is not a tenable explanation for obtained results? As suggested earlier, this would not solve all the problems, but it would lessen the margin of error.

According to psychoanalytical theory, repressed memories are not consciously available to the individual; only special techniques (i.e. therapy or hypnosis) which serve to reduce ego threats to recall can release repressed content (43, 73). Therefore, no amount of direct encouragement or forcing could be expected to secure repressed material (11, 19).

One method for testing whether previously unrecalled "anxiety-provoking" material was, or was not, repressed would be to place the subject under additional pressure to recall. If, as a result, more memories for "anxiety-provoking" material are produced, a previous assumption of repression would become untenable.

PRESENT PROBLEM

This investigation will attempt to demonstrate how the quantity and quality of a subject's recall performance may be affected by placing him under pressure to recall. The results secured in such an experimental situation, hereafter termed "Forced Conditions," will be compared to those secured from subjects tested in a traditional recall situation, hereafter termed "Spontaneous Conditions."

The experimental task will require subjects to recall "anxiety-provoking" and "neutral" items from lists which comprise a Word Association Test.

It is hoped that this study may contribute to a lessening of the limitations of the present experimental criterion for repression, and provide some objective basis for evaluating the effects of forcing recall in therapy.

Effects of "Forcing" Techniques on Performance. Results of experimentation in the laboratory and in therapy suggest that the principal effect of forcing procedures is an increase in the subject's level of motivation to perform.

Perhaps the most pertinent study in the literature regarding the effects of "forced conditions" on perform-

ance is that of Dembo (9). Human subjects were given the task of reaching for a flower which was four feet away from a marked square on the floor in which the subject stood, and from which he was not allowed to move. Although there were only two possible ways of achieving the goal, the experimenter insisted there was an additional solution -- thereby inducing extreme tensions in her subjects. It is interesting to note that most subjects responded to the examiner's insistence by continuing to produce more responses in spite of the useless and bizarre nature of these responses. These findings lead one to expect that with increased motivation a subject will produce more than he will under conditions of lesser motivation.

The importance of motivation in a recall situation is noted by McGeoch:

> "What is recalled both immediately and after an interval is a function of the motivation of the subject, whether at the time of original learning or at the time of recall or at both, and of the influence of his existent organization of learned material. It is, thus, not the immediate material alone which determines recall, but its interaction with motivation and the retained residue of prior learning" (39, p. 339).

Therefore, after equal practice on given word lists, subjects tested under Forced Conditions will be expected to recall more words from the lists than those tested

under Spontaneous Conditions. However, Dembo's results (9) show that placing a subject under pressure to perform leads him to produce responses inapplicable to the task at hand. Therefore, in a recall situation one would also expect more unrelated (i.e. extra-list) words to be produced under Forced than under Spontaneous Conditions.

Much previous experimentation has shown that anxiety-provoking material is not recalled spontaneously. A question often raised is that this content may be suppressed because of the subject's embarrassment to report socially-unacceptable material to the examiner (31, 52, 73). Investigations by Alexander (2) and Haigh (25) have demonstrated that patients in therapy do suppress what they feel to be objectionable statements. These workers found that with additional encouragement or insistence by the therapist, patients often revealed previously withheld material. Therefore, it is anticipated that subjects tested under Forced Conditions will recall more anxiety-provoking words than those tested under Spontaneous Conditions.

The Experimental Study of Recall Under Forced Conditions. It would seem that the problem under consideration might best be studied in therapy where the questions of repression and suppression and means of securing re-

call for previous experiences are most pressing. Alexander states that:

> "...psychoanalytical theory and practice are in a process of development. To further this development a continuous revision of theoretical assumptions and generalizations, as well as experiments with therapeutic procedures, is imperative" (2, p. 300).

However, the responsibility of the therapist to the immediate needs of his patient precludes such experimentation in light of ethical, if not practical, considerations. Therefore, it is felt that the next best thing would be an experimental situation in which one could approximate the type of material to be recalled, the factors influencing recall, and the type of individual generally dealt with in a therapeutic setting. Although the limited scope and artificiality characteristic of a laboratory experiment leaves much to be desired when relating experimental findings to the therapeutic situation, certain advantages are also gained.

An experimental study is able to control the content of recalled material, and the motivation of the subject to recall. Either of these factors are virtually impossible to control in a therapeutic setting. Also, subjecting a group of normals and anxiety-neurotics to the same experimental conditions permits an assessment of the effects of different levels of anxiety on learning

and recall. This, too, could hardly be undertaken in a therapeutic setting. Each of these features which become possible in an experimental study of recall will be discussed in more detail in the following sections.

Control of the Content of Recalled Material. There is general acceptance of the fact that the method of psychoanalysis does produce memories of anxiety-provoking cues or events. However, no control on the validity of recalled material is available:

> "In psychoanalysis continuous harping on recall, the demand to go further back, to bring up more recollections, can be so harassing as to leave an objective observer in considerable doubt over the validity of the recalled items" (52, p. 110).

In this investigation previously-learned word lists will provide a basis for assessing the amount and accuracy of recall, while the presence of both neutral and anxiety-provoking items in the lists will permit an analysis of what content is best recalled under Forced Conditions. The amount of erroneous recall (i.e. extra-list words) made by subjects may provide some further answer to Sears' question regarding the validity of recollections secured by forcing procedures.

Control of the Subject's Motivation to Recall. One of the major advantages of a laboratory approach is the relative absence of what are traditionally felt to be

therapeutic necessities for motivating recall (i.e. the establishment of a "positive transference," a studied interest in and acceptance of the patient's problems, assurance of the confidential nature of all that is said, as well as the conviction on the part of the patient that the therapist can help him). All these factors are said to lessen the patient's emotional resistance to reveal painful or derogatory material to the therapist, and produce an atmosphere conducive to a continuing positive attitude towards recall (2, 25, 38).

However, in psychoanalytically-oreinted therapy one finds superimposed and intermingled with the general tone for fostering reduced emotional resistance to recall, various direct and indirect methods for forcing recall (26). When viewing these opposing methods for achieving recall, the objective observer is again in considerable doubt regarding their relative effectiveness.

By maintaining a continuous test-oreinted atmosphere, an experimental procedure precludes the variables characteristic of the therapeutic setting. Also, in the laboratory one can better control extraneous factors (i.e. instruction, type and amount of material to be learned, time for learning and recall), and thereby permit a clearer evaluation of the effects peculiar to Forced Conditions on the recall of anxiety-provoking

material.

The Comparative Study of Normal and Neurotic Subjects. The final consideration of this study is with the similarities and differences to be found in the performance of normal and neurotic subjects under Forced and Spontaneous Recall Conditions. Studies by Montague (44), Taylor and Spence (60), Farber and Spence (12), and Malmo and Amsel (37) regarding the effects of anxiety on the learning of verbal material indicated that extremely anxious individuals showed marked learning deficiencies. Farber and Spence concluded: "These results indicate that these particular anxious and non-anxious groups differed with respect to some factor rather than learning ability alone" (12, p. 123). These workers attributed the discrepanices in performance to the disruptive effects of extreme anxiety. The reduced functional efficiency of the extremely anxious individual is also reflected in the clinically familiar "short-circuiting" of the neurotic's attempts at problem-solving due to the urgent demands of first dealing with his own anxiety. Telescoping this observation to the conditions of this investigation, and supported by the experimental evidence noted above, it is presumed that the neurotic group will be less able to learn the stimulus material than will normal individuals of comparable age and

intelligence. The lower level of learning for the patient group should be demonstrated in terms of lesser recall scores.

Sears notes (51, p. 246) that extreme anxiety is one of the conditions leading an individual to verbalize suppressed material. Therefore, an analysis of recall scores should reveal that neurotics give proportionately more suppressed material (i.e., anxiety-provoking words) than do normals under Spontaneous and Forced Conditions.

Rapaport (46) has shown that neurotics tend to produce more unrelated responses to stimuli on a Word Association Test than do normals. This is often interpreted as the subject's attempt to avoid reporting more painful associations. This finding, in addition to the poorer learning ability and greater proneness to disorganization characteristic of extremely anxious individuals, suggests that neurotics would produce proportionately more errors in recall than normals. As noted above, this is measurable in terms of extra-list words which may be produced either as a defense against more painful recall, or in response to the examiner's continued demands to recall more when the subject has exhausted his recollection of list material.

Summary Statement of the Problem. Criticisms of experiments dealing with memory for anxiety-provoking

material have held that the experimental criterion for repression may be inadequate because subjects do not report all they are capable of remembering in a recall situation. Studies in therapy have tended to support the contention that socially-unacceptable material is often consciously withheld from report. Certain methods for encouraging the release of suppressed material have been used in therapy. However, there is disagreement regarding the validity of recollections secured by forcing procedures, particularly in psychoanalysis.

This investigation will attempt to demonstrate that by inducing greater motivation to recall one can secure more recollections of previously-learned material. It is assumed that subjects will be led to report more anxiety-provoking material under Forced than under the traditional Spontaneous Recall Conditions. It is also anticipated that placing individuals under pressure to recall will result in their making more errors in recall than will persons not subjected to such conditions.

The literature on the effects of extreme anxiety on learning suggests that neurotic subjects will be less able to retain previously-learned material than will normals of comparable age and intelligence. Other workers have noted the lesser ability to suppress anxiety-provoking material and the greater proneness to disorgan-

ization characteristic of neurotic individuals. This suggests, then, that neurotics will produce proportionately more anxiety-provoking and unrelated material than will normals in a recall situation.

The problem of testing these assumptions will be approached by the use of word lists consisting of "anxiety-provoking" and "neutral" items which the subjects will learn during a Word Assocation Test. In this manner a control of the content of recalled material is established, since the analysis will be based on the number of words recalled from the lists under Forced and Spontaneous Conditions. A further measure of the validity of recalled material is provided by the number of unrelated (i.e. extra-list) words produced under the two recall conditions.

HYPOTHESES

I.

All individuals will recall more words under Forced than under Spontaneous Conditions.

(a) All individuals will recall more list-words under Forced than under Spontaneous Conditions.

(b) All individuals will recall more anxiety-provoking words under Forced than under Spontaneous Conditions.

(c) All individuals will recall more unrelated (i.e. extra-list) words under Forced than under Spontaneous Conditions.

II

More list-words will be recalled by the normal than by the neurotic group under Forced and Spontaneous Conditions.

III

Neurotics will recall proportionately more anxiety-provoking words than will normals under Forced and Spontaneous Conditions.

IV

Neurotics will recall proportionately more unrelated (i.e. extra-list) words than will normals under Forced and Spontaneous Conditions.

METHOD

Subjects. The sample consisted of twenty-six white male neurotics, and twenty-six white male normals. All subjects were veterans of World War II.

All members of the neurotic sample had been diagnosed as anxiety reaction, moderate or severe. The following describes this type of reaction:

> "In this type of reaction the anxiety is diffuse and not restricted to definite situations or objects, as in the case of phobias. Furthermore, it is neither 'bound' nor controlled by any psychological mechanism, as in the other psychoneurotic disorders" (64, p. 3)

Behaviorally, the condition was manifested by a constellation of psychological and physical complaints including tenseness, tremor, shakiness, excessive sweating, heart consciousness, breathing difficulties, headaches, insomnia, irritability, vomiting, diarrhea, and inability to concentrate. Associated with this was a social history of poor job adjustment and lost time due to symptoms, and general interpersonal difficulties.

The "normals" used in this experiment had never been hospitalized or treated for mental or emotional difficulties.

The design for the comparative study of the normal and neurotic sample was achieved in the following manner.

The normal and neurotic groups were each divided into two subgroups. This provided one normal and one neurotic experimental group, and one normal and one neurotic control group. All four groups were equated for age and intelligence. Fisher's "t" test (41) was used to determine the significance of the difference in age and intelligence within and between the normal and neurotic groups. No significant differences in mean values or sigmas of these variables were found to exist between any of the four subgroups used in this experiment (Table 1).

The neurotic sample consisted of patients at the Veterans Administration's Medical Unit in Detroit, Michigan. The normal sample were employees of the Maintenance Department at Michigan State College, East Lansing, Michigan. The normal group volunteered their services, while the neurotic group was tested as part of their routine pension examination.

Test Materials. The test materials consisted of:

(a) two word association lists composed of 16 anxiety-provoking items each;
(b) two word association lists composed of 16 neutral items each;
(c) the Wechsler-Bellevue Vocabulary subtest, Form I (67);
(d) the Bender-Gestalt Test (5); and,
(e) a stop watch, graduated in tenths of a second.

The "anxiety-provoking material" utilized in this

Table 1

Age, Weighted Wechsler-Bellevue Vocabulary Scores and Pro-rated Verbal Intelligence Quotients for the Normal and Neurotic Subgroups Under Forced and Spontaneous Recall Conditions

(N 13 in each subgroup)

	Normals				Neurotics			
	Spontaneous		Forced		Spontaneous		Forced	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	29.3	6.20	29.0	5.43	30.4	5.60	29.9	5.12
Vocab. Score	11.2	2.57	11.4	2.26	10.8	1.65	11.2	2.25
Verbal I.Q.	111	---	112	---	110	---	112	---

study was drawn from Rapaport's revised Word Association Test (46). The assumption underlying this test is that the items represent a wide range of possible conflict areas, and that one or more of these items will act as an anxiety-provoking cue for any given subject. Rapaport (46) has empirically tested and substantiated this assumption with normal and neurotic subjects.[1] For this reason, and for the following, this particular compilation of items was selected for use in this study: (a) it lends itself to quantification techniques, and (b) because of the wide acceptance of the Word Association Test as a useful clinical tool, the findings of this investigation may be available for ready application, retesting and extension.

The Vocabulary and Bender-Gestalt tests were not an integral part of the experiment, but were used to control other pertinent variables. The Vocabulary Test was used for equating the intellectual capacity of the two groups. The Bender-Gestalt Test was used to fill a ten minute delay between administration of the word association lists and recall. This instrument was selected because

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[1]Analysis of responses to the word association test used in this experiment revealed that subjects had significantly slower reaction times for the anxiety-provoking than neutral items (Appendix B).

it would act to maintain the "testing set", prevent rehearsing of the lists, and because it was sufficiently different from the experimental tasks to assure minimal habit interference.

Procedure. The following procedure was identical for the normal and neurotic groups. The word association test was the ostensible experimental task. Two lists of "anxiety-provoking" (AP_1 and AP_2) and two lists of "neutral" words (N_1 and N_2) comprised the test materials (Appendix A). Before testing began, all participants were given the usual instructions for the word association test, and their understanding of the instructions was ascertained by two practice items. The subject's reaction time and response to each word was noted. Each subject was tested individually.

The sequence of the administration of the test battery was as follows:

(1) Administration of the Word Association Test.

One of four orders of presentation of the anxiety-provoking (A-P) and neutral (N) lists was given to each subject. The order of presentation was systematically varied from subject to subject in the following manner:

Order:	I	II	III	IV
	$A\text{-}P_1$	N_1	$A\text{-}P_2$	N_2
	N_1	$A\text{-}P_1$	N_2	$A\text{-}P_2$
	$A\text{-}P_2$	N_2	$A\text{-}P_1$	N_1
	N_2	$A\text{-}P_2$	N_1	$A\text{-}P_1$

After each sequence of eight stimulus words, the examiner stopped testing and stated, "Now let me check. When I said: (stimulus word), you said: (response word (s))." Each of the eight stimuli and responses were reviewed in this manner, after which the examiner proceeded with the test saying, "Fine. Now let's go on. Remember, give me the first word that comes to mind. Ready . . . ."

(2) Ten minutes delay (administration of the Bender-Gestalt Test).

(3) Five minute recall for the stimulus words of the Word Association Test. Even-numbered subjects were tested under Spontaneous Recall Conditions; odd-numbered subjects were tested under Forced Recall Conditions.

Spontaneous Conditions approximated the usual method of asking the subject to write down as much of a given past event as he could remember. The instructions for this condition were as follows: "Write down as many of the words, that I gave you, which you can remember." No additional comments were made by the examiner. The subject was free to work on his own during a five minute period, and was allowed to stop any time he indicated that he was finished. Note was made of the time each subject spent in recall.

Forced Conditions involved a constant pressure on the subject to produce as much recall as he possibly could. Under these conditions the examiner took an active encouraging-coercing role. Initial instructions for this condition were:

"You have 5 minutes to write down as many of the words, that I gave you, which you can remember. Try to remember as many words as you possibly can."

At the end of the third minute of recall the subject was told:

"Keep trying." You still have two minutes to go. If you are not sure, guess. But try to remember as many words as you possibly can."

At the end of the fourth minute of recall the subject was again told:

"Keep trying. You still have another minute to go. Try to remember as many words as you possibly can."

(4) Administration of the Vocabulary Test.

Total time required for testing was approximately 50-60 minutes.

RESULTS

The recall performance of the groups tested under Forced Conditions was compared with that of the groups tested under Spontaneous Conditions. Comparisons were made on the basis of: (a) number of anxiety-provoking (A-P) words recalled; (b) number of neutral (N) words recalled; (c) number of extra-list (E-L) words produced; (d) total number of list words (A-P plus N) recalled; and, (e) total number of responses made (list plus E-L words). An analysis was also made of the similarities and differences in performance between the normal and neurotic groups tested under each of the recall conditions. Fisher's "t" test (41) was used to determine the significance of the differences between the number and type of word recalled.

The Effects of Forced Conditions on Recall. It can be seen in Table 2 that significantly more total responses were produced by groups tested under Forced than under Spontaneous Conditions. This tends to support the hypothesis that a forced technique can secure more recall than can be gained in a spontaneous situation.

Table 3 indicates that normal subjects tested under Forced Conditions recalled significantly more list words than normals tested under Spontaneous Conditions. A

Table 2

Comparison Between the Total Number of Words Recalled Under the Forced and Spontaneous Conditions by the Normal and Neurotic Groups (N 13 in each subgroup)

	Forced		Spontaneous			
	Mean	S.D.	Mean	S.D.	diff.	t
Normals	27.00	4.21	20.08	4.48	6.92	3.88**
Neurotics	22.38	5.61	17.54	4.43	4.84	2.35*

*indicates a P of less than .05 (one-tailed test)

**indicates a P of less than .01 (one-tailed test)

Table 3

Comparison Between the Number of List Words Recalled Under the Forced and Spontaneous Conditions by the Normal and Neurotic Groups

(N 13 in each subgroup)

	Forced		Spontaneous			
	Mean	S.D.	Mean	S.D.	diff.	t
Normals	22.69	4.16	18.00	4.22	4.69	2.74**
Neurotics	17.38	4.59	14.92	4.57	2.46	1.32
diff	5.31		3.08			
t	2.97**		1.72*			

*indicates a P of less than .05 (one-tailed test)

**indicates a P of less than .01 (one-tailed test)

similar trend is seen in the results of the neurotic sample. However, differences between neurotic groups tested under the two recall conditions fell short of statistical significance. Although not conclusive, the findings summarized in Table 3 offer some support to the hypothesis that individuals will recall more list words under Forced than under Spontaneous Conditions.

A major concern of this investigation was to determine whether more reporting of anxiety-provoking material could be secured when subjects were put under pressure to recall. The findings in Table 4 show that both normal and neurotic groups recalled significantly more A-P words under Forced Conditions than comparable groups recalled under Spontaneous Conditions. This tends to support the hypothesis that individuals will report more anxiety-provoking content in a forced than in a spontaneous recall situation.

An important finding, not anticipated by the author, is noted in Table 5. Here it is seen that normal and neurotic groups recalled significantly more A-P than N words under Forced Conditions. There is no statistically significant difference between the numbers of A-P and N words recalled by comparable groups tested under Spontaneous Conditions. The implications which these findings may have for assumptions regarding the learning of

Table 4

Comparison Between the Number of Anxiety-provoking Words Recalled Under the Forced and Spontaneous Conditions by the Normal and Neurotic Groups (N 13 in each subgroup)

	Forced		Spontaneous			
	Mean	S.D.	Mean	S.D.	diff.	t
Normals	12.46	2.33	9.31	3.48	3.15	2.60**
Neurotics	9.85	2.70	7.69	1.93	2.16	2.26*

*indicates a P of less than .05 (one-tailed test)

**indicates a P of less than .01 (one-tailed test)

Table 5

Comparison Between the Number of Anxiety-provoking (A-P) and Neutral (N) Words Recalled Under the Forced and Spontaneous Conditions by the Normal and Neurotic Groups

(N 13 in each subgroup)

	Forced				Spontaneous			
	A-P	N	diff.	t	A-P	N	diff.	t
Normals	12.46	10.23	2.23	2.25*	9.31	8.69	0.62	---
Neurotics	9.85	7.54	2.31	2.07*	7.69	7.23	0.46	---

*indicates a P of less than .05 (one-tailed test)

anxiety-provoking material will be discussed in a later section.

Table 6 shows that individuals tested under Forced Conditions recalled significantly more extra-list words than those tested under Spontaneous Conditions. This tends to support the hypothesis that more unrelated material will be produced when a forcing procedure is used to solicit recall.

As indicated in Table 7, there are insignificant differences between the number of N words recalled under Forced and Spontaneous Conditions. This suggests that the highly significant increase in list words (i.e. A-P plus N words) recalled by normals under Forced than under Spontaneous Conditions (Table 3) was primarily due to the greater number of A-P words produced in response to the forcing procedure. The same may be said for the neurotics, although the increase in list words recalled by these subjects under Forced Conditions fell short of statistical significance (Table 3). These results, like those noted in Table 5, have interesting implications with regard to the learning of anxiety-provoking and neutral material. They will also be discussed in a later section.

Similarities and Differences in Performance Between the Normal and Neurotic Groups. As was seen in Table 3,

Table 6

Comparison Between the Number of Extra-list Words Recalled Under the Forced and Spontaneous Conditions by the Normal and Neurotic Groups (N 13 in each subgroup)

	Forced		Spontaneous			
	Mean	S.D.	Mean	S.D.	diff.	t.
Normals	4.31	3.29	2.08	1.38	2.23	2.17*
Neurotics	5.00	3.03	2.62	1.44	2.38	2.27*

*indicates a P of over .05 (one-tailed test)

Table 7

Comparison Between the Number of Neutral Words Recalled Under the Forced and Spontaneous Conditions by the Normal and Neurotic Groups (N 13 in each subgroup)

	Forced		Spontaneous			
	Mean	S.D.	Mean	S.D.	diff.	t
Normals	10.23	2.53	8.69	2.54	1.54	1.50
Neurotics	7.54	2.79	7.23	3.06	0.31	0.26

the normal groups recalled significantly more list words than the neurotic groups. Under Spontaneous Conditions differences favoring normals in the number of list words recalled were significant beyond the .05 level of confidence; under Forced Conditions differences favoring normals were significant beyond the .01 level of confidence. This tends to support the hypothesis that normals would recall more previously-learned material than would neurotics of comparable age and intelligence.

Table 8 shows the proportion of anxiety-provoking and neutral words recalled from the lists by the normal and the neurotic groups. It is seen that the number of list words (i.e. A-P plus N) recalled by the neurotics consists of proportionately more A-P words than that of the normals. However, differences between the normal and neurotic groups with reference to the proportions of A-P words recalled were not statistically significant under either of the recall conditions. Table 8 also shows that in terms of total responses made (i.e. list plus E-L words) neurotics produced proportionately more extra-list words than did normals under both conditions of recall. However, differences between the groups again lacked statistical significance. Therefore, the hypotheses that neurotics would recall proportionately more anxiety-provoking material, and produce proportionately more

Table 8

Comparison Between Normal and Neurotic Groups on the Basis of the Proportion of Anxiety-provoking (A-P), Neutral (N), and Extra-list (E-L) Words Produced Under Spontaneous and Forced Conditions (N 13 in each group)

	Spontaneous		Forced	
	Normal	Neurotic	Normal	Neurotic
AP	.51	.52	.54	.57
N	.49	.48	.46	.43
E-L*	(.10)	(.15)	(.16)	(.22)

*E-L proportions were computed on the basis of total responses made.

unrelated material (i.e. E-L words) than would normals were not conclusively supported by the results. However, obtained differences were in the predicted direction.

DISCUSSION OF RESULTS AND THEORETICAL IMPLICATIONS

Implications Regarding the Greater Recall of Anxiety-Provoking Material. The traditional expectation in studies of memory is that "unpleasant" events will be less frequently remembered than "neutral" or "pleasant" events. Consistent, although not unanimous, experimental findings have tended to support this expectation (47, 52). Workers in this area of investigation have generally concluded from their results that unpleasant material was either more poorly learned or, if equal learning was assumed, more poorly retained than neutral or pleasant material. In explaining their results, workers have stated that unpleasant material was "anxiety-provoking" (53), "ego-alien" (70), "socially taboo" (13), embarrassing or disparaging for the subject (31), or simple unfamiliar (29) and, therefore, was less frequently recalled than neutral or pleasant material in a testing situation.

The Word Association Test was used in this experiment so that subjects would have an opportunity to learn the stimulus items which comprised the test's content. Rapaport (46) has shown that the "anxiety-provoking" stimuli in the test cause considerable associative disturbance in normal and neurotic subjects. An analysis

made by the author (Appendix B) showed that the normal and neurotic sample used in this experiment had significantly longer reaction times for the "anxiety-provoking" (A-P) than the "neutral" (N) items on the Word Association Test. A further analysis (Appendix A), based on the Thorndike-Lorge index of word usage (62), indicated that the A-P words in the test were much less familiar than the N words. Therefore, from the traditional point of view one would expect the subjects in this experiment to recall less A-P than N words from the lists.

The results of the Spontaneous Conditions showed no difference in the number of A-P and N words recalled by either the normal or neurotic group. A statistically insignificant superiority of A-P over N words was present, but on the whole these results add little to existing literature which has placed the traditional expectation in question (See Chapter I, p. 5-7). The results of the Forced Recall Conditions, however, were directly contrary to the usual expectation in experiments of this type. Groups tested under Forced Conditions not only produced more A-P words than comparable groups tested under Spontaneous Conditions, but both normal and neurotic groups recalled significantly more A-P than N words under the Forced Conditions. Comparable groups within the

normal and neurotic samples tested under the two recall conditions had equal practice on the lists, and were equated on variables which might have influenced the degree of retention for the material (e.g. age, intelligence, order of presentation, set to learn and elapsed time before recall). Therefore, the greater absolute recall of A-P than N words suggests that anxiety-provoking words were actually better learned than neutral words by these subjects.

> The significantly greater recall of A-P than N words found under the Forced Conditions was not anticipated. It was hypothesized that more A-P words would be recalled under the Forced Conditions by both normals and neurotics. It was also hypothesized that, because of the high level of manifest anxiety characterizing the neurotic group, they would recall proportionally more A-P words than a comparable normal group, But, the greater absolute recall of A-P than N words shown by both groups was a purely empirical finding. No precedent is to be found in experimental studies of memory for "anxiety-provoking" and "neutral" stimuli. Some reasons why workers have previously overlooked the possibility that anxiety-provoking material may be better learned than neutral material will be discussed in a later section. For the present, the writer offers an after-the-fact rationale for the better learning of A-P than N words in this experiment.

In retrospect, one may infer that in the incidental learning situation provided by the Word Association Test, the A-P words had greater novelty and stimulus intensity (i.e. shock effect) for the subjects than the N words. This would tend to facilitate better learning of the

A-P words. This is consistent with the recent finding of Turner (63) that the recollection of pleasant and unpleasant experiences depends more on the intensity, rather than quality, of the affect associated with them. A further explanation of obtained results is that subjects may have found it more difficult associating to the A-P items. This might be attributed to the subjects' infrequent usage and subsequent unfamiliarity with such words, or to the conflicting responses which A-P words are said to arouse (46, 60). Thus, more attention would have to be focused on A-P words than on N words for which associations came easily and more directly. This would also facilitate the better learning of A-P words. These suppositions gain support from:

(a) The related finding that both normal and neurotic groups showed significantly longer reaction times for the A-P than N words during the Word Association Test (Appendix B); and

(b) the Thorndike-Lorge frequency values for the stimulus items in the Word Association Test showed less common usage for A-P than N words (Appendix A). These suppositions may provide hypotheses for further research.

Motivational Factors in the Forced Recall Situation. The groups tested under the two recall conditions were matched on variables which might effect the retention

of previously-learned material. Therefore, it would appear that some additional variable is needed to explain the fact that groups tested under Forced Conditions recalled more than those tested under Spontaneous Conditions. Bartlett (4), McGeoch (39), and Sears (51) have explicitly noted that any measurement of retention for previously-learned material is largely dependent upon the subject's motivation to recall such material in a given situation. In this regard it is felt that the greater amount of A-P words produced by the groups under Forced Conditions in this experiment reflected the more "vigorous and direct set to recall" (39) induced by the examiner. This has implications with regard to the experimental criterion for repression, and the use of forcing techniques in therapy.

Implications Regarding the Experimental Criterion for Repression. The principal criticism of the experimental criterion for repression concerns the method by which recall is secured. Sears (51) has noted that the usual method of "spontaneous" recall may not provide a sufficient measure of what the individual is capable of verbalizing. Absence of verbal report for anxiety-provoking material can be a valid experimental criterion for repression only if unverbalized material is incapable of verbalization, i.e. is unconscious.

The results of this experiment demonstrate that individuals do not report all they are capable of remembering in a spontaneous recall situation, and that more recall for certain material may be secured by a forcing procedure. This would seem to have implications for any experimental procedure in which recall is assumed to measure previous learning. However, the particular concern of this study was with securing recall for anxiety-provoking material, the relative absence of which constitutes the experimental criterion for repression.

Under the Forced Conditions both normal and neurotic groups recalled significantly more A-P words than comparable groups tested under the traditional Spontaneous Conditions. Also, under Forced Conditions both groups recalled significantly more A-P than N words; a finding not observed in comparable groups tested under Spontaneous Conditions. These results suggest that the "Spontaneous" method for securing recall is inefficient, and may even be misleading when results are utilized to support the repression hypothesis. Furthermore, it would appear that the "Spontaneous" method of recall used for measuring previous learning has heretofore obscured the possibility that anxiety-provoking material may actually be better learned than neutral material

The conclusions drawn from a single experiment are,

naturally, limited by the nature of the material and the sample utilized. None-the-less, the results of this experiment suggest the need for a re-evaluation of present methods for securing recall in the laboratory, as well as a reconsideration of assumptions regarding the poorer learning (or retention) of anxiety-provoking material.

Implications Regarding the Use of Forcing Techniques in Therapy. Both normal and neurotic groups recalled significantly more words under Forced than under Spontaneous Conditions. However, the examiner's encouraging-coercing role in forcing recall from the subjects had both positive and negative results. The former was reflected in the greater amount of correct recall, the latter in the greater amount of erroneous recall (i.e. E-L words). Although the neurotic group showed a trend in the same direction, only the normal group showed a significant increase in the recall of previously learned material under Forced Conditions. Both normal and neurotic groups showed a significant increase of extra-list (E-L) words under Forced Conditions. Thus, it would seem that all subjects were somewhat disorganized by being placed under pressure to recall. However, the normal group also produced significantly more correct recall under Forced Conditions, while the neurotic group

did not. This suggests that an important variable may be the difference existing in the level of manifest anxiety between the two types of subjects. It may be speculated that forcing techniques facilitate, as well as disrupt, performance when an individual's level of anxiety is relatively low. On the other hand, when an individual is extremely anxious, subjecting him to additional stress may only disrupt his performance.

Sears (52) states that in psychoanalysis the constant "harping" on recall leaves the objective observer in considerable doubt regarding the validity of recalled material. The findings that neurotic subjects produced significantly more erroneous material under Forced Conditions and did not produce significantly more correct recall tend to substantiate Sears' criticism. This would suggest that in therapy, where the content of previously-learned material is not controlled, one must exercise particular caution in evaluating the validity of recollections gained by forcing procedures.

In support of forcing procedures in therapy is the finding that both normal and neurotic groups under the Forced Conditions recalled significantly more A-P words than comparable groups under the Spontaneous Conditions.

In the final analysis any technique used in therapy for securing recall might be expected to have both negative

and positive aspects. Although a patient's memories should always be treated with reservations, their validity is not the test of their usefulness. The ultimate criterion for the value of a patient's recollections in therapy is whether or not they eventually contribute to some clarification of his problems. This may often be accomplished whether his memories are factual or fabricated (19).

It would seem that the real question about forcing recall in therapy is not with the validity of memories produced by this technique, but whether or not the technique, itself, is warranted. In a limited sense the aim of psychoanalysis is to secure the release of repressed material. If one accepts the proposition that the individual is not conscious of such material, then no amount of direct forcing could secure it (11, 18). In this sense forcing recall in psychoanalysis would be unwarranted. However, Alexander (2) and Haigh (25) have indicated that suppressed material must often be dealt with before further progress may be made in therapy. In this light, the finding that significantly more A-P material was secured under Forced than Spontaneous Conditions from both normal and neurotic groups, and the fact that significantly more A-P than N material was recalled by both groups under

Forced Conditions, lends favorable support to the use of forcing techniques in therapy.

Theoretical Implications Regarding the Processes of Repression and Suppression. It was shown that the greater motivation to recall induced by the examiner under Forced Conditions resulted in more recall for previously learned material. The hypothesis that the additional A-P and N words recalled under Forced Conditions were less well-learned and required greater effort to be reproduced is untenable because:

(a) while significantly more A-P words were recalled by groups tested under the Forced than under the Spontaneous Conditions, no such increase in the number of N words recalled was observed.

(b) More A-P than N words were recalled under both recall conditions. But, groups tested under Forced Conditions recalled significantly more A-P than N words, a finding not paralleled by groups tested under Spontaneous Conditions.

Since it would not be reasonable to expect one type of allegedly less well-learned material (i.e. A-P words) to be better recalled than another (i.e. N words), it was concluded that A-P words were better learned than N words during the Word Association Test.

If, on the other hand, one accepts the premise that A-P words were better learned than N words, one must con-

clude that groups tested under Spontaneous Conditions withheld recall of A-P words, while groups tested under Forced Conditions released recall for these words. The increased motivation to recall induced by the examiner under Forced Conditions may be assumed to have resulted in more recall for A-P words. However, one is left to explain why more A-P words were not reported under Spontaneous Conditions. The traditional explanation for the relative absence from report of A-P words is that they were repressed (43, 52).

If repression (as defined by psychoanalytical theory) is held to be the explanatory principle, one must assume:

(a) that the subject has no conscious awareness of the "missing" A-P words;

(b) that he has no voluntary control over their recall;

(c) that only the utilization of some special technique such as psychoanalysis or hypnosis could recover the allegedly repressed material (43); and

(d) that the anxiety associated with this material is lessened as a function of its being repressed (16, 19).

On the basis of the information available in the Spontaneous Recall Situation, the repression hypothesis and the assumptions underlying it are supported. This is as far as most experiments in this area have gone. One may,

of course, conclude from the same results that the suppression hypothesis has been supported. It might be argued that the subject was aware of the unreported A-P words, but that he consciously withheld verbalizing them because of certain threats to his prestige in the testing situation. By inhibiting this recall the subject would also avoid the anxiety which verbalizing A-P words might produce in the presence of the examiner. In the absence of further data, it is (and has been) a matter of opinion whether one uses repression or suppression to explain the lesser recall of A-P words under Spontaneous Conditions.

Now let us turn to the findings of the Forced Recall Conditions, and test the expectations that would follow from concluding that repression of A-P words was operating in the Spontaneous Recall Situation. This would lead one to surmise that the significantly greater recall of A-P words found under Forced Conditions represented a release of repressed material.[1]

According to the experimental criterion of Zeller (73),

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[1]The following discussion treats the results of the Forced and Spontaneous groups as if a single sample had been examined under the two conditions of recall. It must be borne in mind that differences in performance of comparable, not identical, groups are being discussed.

release of repressed material can only be achieved in the laboratory by the removal of ego-threat. Zeller and others (31, 52) state that a pertinent ego-threat to recall is verbalizing anxiety-provoking material in the presence of the examiner. In this experiment, the author tested the subjects under both conditions of recall, and made no attempt to manipulate ego-threat as such. Therefore, the author cannot agree that the greater recall of A-P words under Forced Conditions represented a release of repressed material. The greater recall of A-P words under Forced Conditions seems to result from the examiner's encouraging-coercing role in soliciting recall. This interpretation gains support from the work of Alexander (2) and Haigh (25) who used similar techniques in therapy, and found that individuals could be induced to give up previously withheld (conscious) material. Therefore, it would appear that the results of the Forced Conditions might better be explained in terms of the release of suppressed, rather than repressed, material.

Any criterion for the release of repressed material necessarily depends on the validity of the assumption that the material in question was previously repressed. Psychoanalytical theory implies that no amount of direct forcing to recall can alone secure the release of repressed material (11). Significantly more recall for A-P words was secured

by direct forcing (i.e. under Forced Conditions). This suggests that the relative absence of recall for A-P words under Spontaneous Conditions was due to some process other than repression. Again, the alternate explanation holding that recall of A-P words was suppressed seems to better suit the facts.

A final assumption made by personality theorists (11, 16) is that the return of repressed material is always accompanied by a marked increase in manifest anxiety. Therefore, if subjects tested under Forced Conditions were actually recalling repressed material they should have exhibited more manifest signs of anxiety than subjects tested under Spontaneous Conditions. No such differences in behavior were observed.

It might be said that the increased production of E-L words under the Forced Conditions reflected increased anxiety. However, it would be difficult to differentiate between the disorganizing effects of demanding increased performance, and the repercussions of recalling allegedly repressed material. Dembo (9) has shown that merely placing a subject under continuous pressure to produce more responses results in erroneous and even bizarre behavior. In Chapter I (p. 19-20) it was noted that any judgment of the presence or absence of a "marked increase

in manifest anxiety" is highly subjective. Unless observable anxiety is extreme, this adjunctive criterion for the return of repressed material loses much of its practical value. In the present investigation the author can do no more than state that no marked differences in anxious behavior were noted under the two recall conditions. As indicated earlier, there is a need for an adequate experimental criterion for anxiety. The development of such a criterion may provide answers for what must presently go unanswered in experiments of the type set forth in this investigation.

The author feels that this experiment cannot settle the question of whether repression or suppression is operating in a given situation. But, it is hoped that the results of this study may contribute to lessen the margin of error involved in present measures of repression in the laboratory.

Comparison of the Normal and Neurotic Sample. The examiner's encouraging-coercing role in the Forced Recall Conditions had a similar effect on the normal and neurotic samples. Both groups tended to recall more previously-learned material than comparable groups tested under Spontaneous Conditions. This suggests that the method of forcing recall may offer a more comprehensive measure of learning than traditional methods have provided.

The finding that normals and neurotics tended to inhibit spontaneous report of A-P words is consistent with the results found by Sharp (53, 54) with similar groups. Heather and Sears (27) assumed that Sharp's list of words was tapping some sources of repression that are fairly common in people with an American background. The author agrees with the formulation that common cultural factors are operating, but he favors a suppression hypothesis. The results of this experiment support Alexander's view that an individual suppresses socially-unacceptable material because of his "natural reluctance to abandon his conventional facade" (2, p. 29).

The normal groups showed evidence of better learning under both conditions of recall than neurotic groups comparable in age and intelligence. This supported the hypothesis that the more anxious individuals (i.e. subjects diagnosed "anxiety-reaction") would be less able to learn the stimulus material. This is consistent with the findings of Montague (44) and others (12, 60). The results of these studies were secured from normal subjects who scored high and low on a manifest anxiety questionnaire (60). The finding that clinically selected subjects show similar learning deficiencies tends to substantiate the assumption that extreme anxiety disrupts conceptual performance.

Although the neurotics tended to recall proportionately more A-P words and produce more erroneous responses than normals, the results were inconclusive. The effects of extreme anxiety on these factors, and further elaboration of the learning and recall performance of normal and neurotic groups must await future research.

SUMMARY AND CONCLUSIONS

A critical survey of experimental studies of repression showed that the technique of spontaneous recall leaves much doubt regarding the difference between what a subject is capable of reporting, and what he does report in a testing situation. This has resulted in speculation that the process of suppression, rather than repression, may explain the relative absence of report for anxiety-provoking material. The availability of theoretical justification for either conclusion, and the dearth of additional facts of observation, has led to an impasse regarding the interpretation of experimental findings.

One major objective of this study was to test the effects of forcing recall in a laboratory situation. If it were possible to demonstrate that more previously-learned, anxiety-provoking material could be secured in a forced situation than could be gained in a traditional spontaneous recall situation, the repression hypothesis would become untenable. This would not clarify all the issues of repression vs. suppression. However, it would provide an experimental criterion for suppression, and a means for reducing the margin of error in conclusions favoring the repression hypothesis.

In this investigation groups of twenty-six normal and twenty-six neurotic adult males were each divided into two subgroups. Several factors which might influence the learning and retention of verbal material were equated among the four groups. All subjects were administered a Word Association Test composed of two lists of anxiety-provoking (A-P), and two lists of neutral (N) stimulus items which they were later asked to recall. One normal and one neurotic group were tested under Spontaneous Recall Conditions, while the remaining groups were examined under Forced Conditions. A comparison was made of the number and type of word recalled by groups tested under the two conditions. A further analysis was made of the performance of the normal and neurotic groups tested under each condition.

It was hypothesized that groups tested under Forced Conditions would: (a) recall more list words and produce more total responses; (b) recall more anxiety-provoking words from the lists; and (c) produce more extra-list words, than comparable groups tested under Spontaneous Conditions. The results tended to support these hypotheses.

A comparison of normal and neurotic performance supported the hypothesis that normal groups would show greater recall for list words than neurotic groups under both experimental conditions. The final hypotheses were that

neurotic groups would recall proportionately more anxiety-provoking words, and produce proportionately more extra-list words than normal groups under the Spontaneous and Forced Conditions. Although in the predicted direction, the results of these comparisons were not statistically significant.

Implications regarding the use of forcing procedures in therapy, the experimental criterion for repression, the effects of extreme anxiety on learning, and the limitations of the method for measuring learning were discussed. It was suggested that the forced technique used in this experiment may be fruitful in further empirical investigations of the effects of motivation on recall.

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APPENDIX A

Table 9

Thorndike-Lorge (T-L) Frequency Values* for the Two Lists of Neutral (N) Words Used as Stimuli in the Word Association Test

(N 16 in each list)

List I		List II	
ITEM	T-L VALUE	ITEM	T-L VALUE
moon	AA	barrel	32
river	AA	cover	AA
box	AA	eagle	38
tray	17	valley	AA
second	AA	wave	AA
forest	AA	leaves	AA
chalk	13	feather	44
morning	AA	echo	42
flower	AA	green	AA
stone	AA	day	AA
mountain	AA	hill	AA
car	AA	paint	AA
grass	AA	string	A
frog	25	mixture	39
white	AA	sheep	A
copy	A	sand	A

(Median T-L Value-AA)

*1-49 indicates the number of times the item appears per million running words.

A indicates an occurrence of 50-100 times per million running words.

AA indicates an occurrence of over 100 times per million running words.

Table 10

Thorndike-Lorge (T-L) Frequency Values* for the Two Lists of Anxiety-provoking (A-P) Words Used as Stimuli in the Word Association Test (N 16 in each list)

List I		List II	
ITEM	T-L VALUE	ITEM	T-L VALUE
bite	33	stomach	30
mud	47	daughter	AA
girlfriend (girl:AA, friend:AA)		cut	AA
		intercourse	8
masturbate	--	husband	AA
cockroach	1	hunger	37
penis	--	spider	24
father	AA	orgasm	--
love	AA	woman	AA
breast	A	suicide	11
bowel movement (bowel:8; movement:AA)		snake	28
		suck	15
wife	AA	mother	AA
homosexual	--	dirt	21
gun	A	fight	AA
pain	AA	vagina	--
brother	AA		
mouth	AA		

(Median T-L Value: 35 per million)

*--indicates an occurrence of less than 1 per million running words.

1-49 indicates the number of times the item appears per million running words.

A indicates an occurrence of 50-100 times per million running words.

AA indicates an occurrence of over 100 times per million running words.

APPENDIX B

Table 11

Comparison Between Median Reaction Times (R.T.) for Anxiety-provoking (A-P) and Neutral (N) Stimuli Made by Normal and Neurotic Groups During a Word Association Test (N 26 in each group)

	Median R.T. A-P sec.	Median R.T. N sec.	diff sec.	t
Normal	83.5	57.3	26.2	3.400*
Neurotic	97.5	71.5	26.0	3.824**
diff.	14.0	14.2		
t	0.915	1.279		

*indicates a P of less than .005 (one-tailed test)

**indicates a P of less than .001 (one-tailed test)