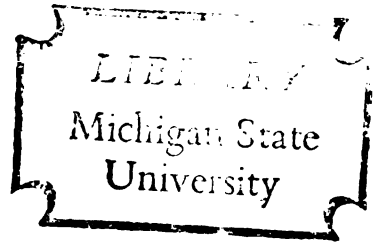


THE EFFECTIVENESS OF  
POSTHYPNOTICALLY-AROUSSED ANGER  
IN PRODUCING PSYCHOPATHOLOGY

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THESIS



## ABSTRACT

### THE EFFECTIVENESS OF POSTHYPNOTICALLY- AROUSSED ANGER IN PRODUCING PSYCHOPATHOLOGY

by Glenn James Veenstra, Jr.

The objectives of this investigation were to determine whether the posthypnotic arousal of anger in contrast to anger with destructive impulse would result in psychopathology and to determine whether a paramnesia would be a more effective method of arousal than direct suggestion. Paramnesia and direct suggestion conditions were given under hypnosis on separate days to 8 female Ss in counterbalanced order, and an amnesia was suggested for the instructions. In both conditions, suggestions were given to arouse overwhelming feelings of anger when particular cue words were presented in a free association test. Each S free associated to a list containing the cue words before hypnosis, once after each condition had been implanted, and once after the amnesia had been removed. Ss' associations and comments were scored for

number of associations, hostility, blocking, upset feelings, and physical complaints. GSR deflections and response latency were also measured. Although all variables changed in a direction indicating conflict on the anger-arousing cue words, only response latency, hostile associations, and hostile feelings showed significant increases. The lack of significant increases in physical complaints contrasts sharply with previous experiments in which a destructive impulse was associated with the anger and suggests that anger alone is not an essential pathogenic variable. No significant differences were found between the paramnesia and direct suggestion conditions. Some evidence suggests that anger per se does not activate the GSR and that removal of the amnesia does not end the conflict.

THE EFFECTIVENESS OF POSTHYPNOTICALLY-  
AROUSSED ANGER IN PRODUCING  
PSYCHOPATHOLOGY

By

Glenn James Veenstra, Jr.

A THESIS

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DEDICATION

To my Molly  
who inspired me to postpone the completion of  
this thesis three months.

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## INTRODUCTION

Though there are many hypotheses derived from clinical experience to explain the origin and dynamics of psychopathology, few of these have ever been experimentally tested because of the difficulty in creating and controlling psychopathology in the laboratory setting. Luria (1932) showed that a hypnotist could make a good hypnotic subject believe that a fictional experience (paramnesia) actually happened to him. By using a paramnesia which aroused strong conflicting emotions, he demonstrated that these induced conflicts caused post-hypnotic disturbances in conditioned motor responses. Using this technique, Eisenbud (1937) and Wolberg (1947) reported several case studies in which psychosomatic symptoms were produced. Bobbitt (1958) and Huston, Shakow, and Erickson (1934) used the paramnesia to study the dynamics of hypnotically-induced conflict, and Counts and Mensh (1950), Moore (1964), and Pruesse (1967) used it to study the effect of personality characteristics on

hypnotically-induced hostility. An experimental procedure developed by Reyher (1958, 1962, 1967) has been particularly effective in producing physical disturbances of such magnitude that they can be considered as manifestations of psychopathology. The effectiveness of Reyher's procedure has been replicated by him (1967) and by a similar experiment by Perkins (1965).

An analysis of Reyher's procedure reveals that there are at least thirteen influencing variables. A good hypnotic subject (S) is told under hypnosis (1. hypnosis) that a true incident from his own past is going to be recalled by the experimenter (E) and re-experienced by him (2. age regression). A story made up by the E (3. paramnesia, a false memory) is then related, and checks are made on whether the S has accepted it as true. Strong feelings of anger are aroused (4. hypnotic arousal of anger) in the story situation which cannot be expressed because of anxiety or conflicting feelings of guilt (5. hypnotic arousal of conflicting emotion) and so are repressed and forgotten. The induced feelings of anger are then associated with a series of critical words (6. anger associated with critical words) and are directed toward

another experimenter working on a different experiment in the same lab (7. anger directed toward an authority figure in the experimental situation). The S is then told that whenever he is presented with the critical words after awakening, he would experience overwhelming (8. loss of control) rage (9. posthypnotic arousal of anger) and also feel an overwhelming urge to tear up some valuable papers belonging to the other experimenter (10. posthypnotic suggestion of a destructive impulse). The S is then given an amnesia for the session (11. amnesia) but told the posthypnotic suggestions of rage and destructive impulse would still be carried out. After the S is awakened, a list of words which includes the critical words are presented tachistoscopically in ascending series to visual recognition (12. the method of posthypnotic presentation of critical words). Upon achieving visual recognition, many Ss do not carry out either the posthypnotic suggestions of the anger or the destructive impulse, but they commonly report physical and psychological symptoms. The E responds to all S's reports in an accepting, nondirective manner (13. experimenter's attitude).

The purpose of this experiment is to begin the exploration of the relative importance of these variables in the posthypnotic production of psychopathology. One way of proceeding is to reduce the number of variables in the procedure to a small and reasonable group. If the reduced procedure still produces psychopathological symptoms, then there is evidence that the included variables were essential. If the reduced design fails to produce symptoms, then this is an indication that the excluded variables are essential. Then by adding the excluded variables singly to this reduced design and by comparing the amount and intensity of symptoms produced, the relative importance of these variables can be assessed.

Reyher (1969) has tentatively concluded from his research that 1) hypnosis, 4) hypnotic arousal of intense anger, 7) anger directed toward an authority figure, 8) loss of control, 9) posthypnotic arousal of anger, 10) posthypnotic suggestion of a destructive impulse, 11) amnesia, and 12) tachistoscopic presentation of the critical words are the necessary variables for producing psychopathological symptoms. However, the experimenter

hypothesized that the arousal of anger alone without directing it toward an authority figure or without coupling it with a destructive impulse might be sufficiently anxiety-producing to activate the subject's defensive mechanisms and produce psychopathology. Based on this assumption, the following variables were chosen for the reduced design: 1) hypnosis, 4) hypnotic arousal of intense anger, 6) association of anger with critical words, 8) loss of control, 9) posthypnotic arousal of anger, 11) amnesia, 12) posthypnotic presentation of critical words in free association task, 13) accepting, nondirective experimenter attitude.

Variable 11 was changed from recognition of tachistoscopically-presented words to free association to auditorially-presented words because of ease of administration and the hope that this method would prolong the conflict and provide more information about it.

Variable 3 (paramnesia) was included as one of two methods of hypnotically arousing the anger.

The variables excluded were: 2) age regression, 5) arousal of conflicting emotion, 7) anger directed toward an authority figure, 10) posthypnotic suggestion



of a destructive impulse. The primary objective of this research was to determine if this reduced design would produce psychopathology.

The second objective of this investigation was to determine the relative effectiveness of a paramnesia and direct suggestions as methods of hypnotically-arousing anger and creating posthypnotic conflict. Although the paramnesia has been most frequently used in this type of study, Gidro-Frank and Bull (1950) and Levitt, Den Breeijen, and Persky (1960) have shown that emotional moods can be aroused under hypnosis simply by direct suggestion. Since direct suggestions are easier to construct than paramnesias, if they were found to be as effective as paramnesias, future experiments could be simplified by using direct suggestions. However, the content of the paramnesia might intensify the induced emotions by bringing in associations from the subject's past experiences. Since the subjects are lead to believe the paramnesia was something that did happen to them, they might also accept the emotions aroused as their own more readily than if the emotions were simply suggested to them. For these reasons, it was hypothesized that the paramnesia would be

more effective than the direct suggestion in producing posthypnotic conflict.

### Hypotheses

1. The reduced design will produce psychopathology.
2. A paramnesia is more effective than direct suggestion in arousing anger and producing posthypnotic conflict.

## METHOD

### Subjects

Eight female undergraduate volunteers were chosen as subjects according to the following criteria:

- a. complete amnesias;
- b. successful execution of posthypnotic suggestions;
- c. absence of emotional disorders which might interfere with the experiment.

On the Stanford Hypnotic Susceptibility Scale, Form A, four of these Ss scored 12 (highest possible), three scored 11, and one scored 9.

### Materials and Experimental Setting

The S was seated in a comfortable reclining chair in a soundproof laboratory. Galvanic skin response (GSR) was recorded on a Grass Model #5 polygraph using finger

electrodes manufactured by Yellow Springs Equipment Co. A Revere tape recorder was used to record the sessions, and a stop watch was used to time the association periods.

### Procedure

Each S was given both the paramnesia and direct suggestion treatments in a counterbalanced design. In the first session, S first free associated for 20 seconds to each word on a list (Trial 1). Next S was hypnotized (Hypnosis 1), and given either the paramnesia (p) or the direct suggestion (ds). The anger aroused by the paramnesia was associated with a critical group of words (paramnesia group) within the list, and, similarly, the anger aroused by the direct suggestion was associated with a different critical group (direct suggestion group). After an amnesia was suggested, S was awakened and free associated to the same word list again (Trial 2). One of these critical groups served as cues for the posthypnotic arousal of anger while the other critical group and the remaining words (neutral group) were not cues. S was

then hypnotized again (Hypnosis 2), and the conflict-producing suggestions were removed.

In the second session, S was hypnotized (Hypnosis 3) and given the other treatment in the same manner as Hypnosis 1. This time when S was free associating (Trial 3), the other critical word group served as cues for anger. Next S was rehypnotized (Hypnosis 4) and both critical word groups were made cues for anger. After all amnesias for the experiment were removed and S was awakened, S free associated once again (Trial 4). Finally, under hypnosis (Hypnosis 5), all suggestions were removed. The design is represented schematically as follows:

#### First session

Trial 1--all word groups non-anger-arousing.

Hypnosis 1--implanting of paramnesia (or direct suggestion).

Trial 2--paramnesia (or direct suggestion) words anger-arousing.

Hypnosis 2--removal of paramnesia (or direct suggestion) conflict-producing instructions.

Second session

Hypnosis 3--implanting of direct suggestion (or paramnesia).

Trial 3--direct suggestion (or paramnesia) words anger-arousing.

Hypnosis 4--both paramnesia and direct suggestion reactivated and all amnesias removed.

Trial 4--both paramnesia and direct suggestion words anger-arousing; no amnesia.

Hypnosis 5--removal of all suggestions.

First Experimental Session

First, the GSR electrodes were placed on S to allow ample time for hydrolization, and the tape recorder was started. S was told only that the experiment was investigating the effects of hypnosis on the GSR and thought processes, and was asked to simply follow directions until the end when the purpose and design would be completely explained.

Free Association Instructions--The following instructions for free association were given:

As you sit comfortably in the chair, I will ask you to close your eyes, and then I will say a word. With your eyes closed tell me as quickly

as you can the first thing that comes to mind and then continue to report everything that comes to mind until I tell you to open your eyes. Everything might mean thoughts, feelings, images, and sensations. I know it is hard to report everything, but please do your best. Report everything even if it is not related to the word I said. If you don't understand what I say, immediately ask me to repeat it. After a short while I will ask you to open your eyes. Open your eyes and report how you felt as you were associating. While your eyes are closed, do not move the arm and hand to which the electrodes are attached. If you have to move, wait until you open your eyes.

After E presented the stimulus word, he waited 20 seconds before asking S to open her eyes. During this association period, E said nothing. In the interval before the next word (comment period), the E occasionally reflected the S's feelings or asked for a clarification of them. These instructions were designed to focus the S's attention on her intrapsychic processes during the association period and then provide an opportunity to bring out additional information during the comment period.

The S was then given practice in free association using special practice words until it was clear that she understood the directions and until the GSR had leveled off, indicating that the anxiety caused by unfamiliarity

with the procedure had decreased. Then the words on the word list were administered for the first time (Trial 1).

Word List.--The word list consisted of 30 words of AA frequency (100 or more per million words) according to the Thorndike-Lorge word count (1944). High frequency words were used to facilitate free association. These words were divided into three groups of ten words each. The neutral words were chosen essentially randomly (words associated with anger and prepositions and adverbs were not used) from the Thorndike-Lorge list of AA words and consisted of: food, music, heavy, walk, valley, narrow, flower, glass, wish, and travel. The paramnesia words were chosen from the story and consisted of: book, store, stand, line, tired, fellow, crowd, drop, broken, and laugh. The direct suggestion words were also chosen essentially randomly from the Thorndike-Lorge list and consisted of: chair, money, sweet, box, game, house, boy, look, yellow, and milk. The paramnesia and direct suggestion word groups were called critical word groups since they were used as cues for the posthypnotic arousal of anger. The word list was constructed in such a manner that there was a word from each group in each successive block of three positions



on the list. The order within each block was randomly varied.

The list as presented to the subjects was:

1. food		16. valley	
2. tired	P	17. fellow	P
3. chair	DS	18. money	DS
4. game	DS	19. store	P
5. music		20. look	DS
6. book	P	21. narrow	
7. stand	P	22. drop	P
8. sweet	DS	23. house	DS
9. travel		24. flower	
10. milk	DS	25. boy	DS
11. crowd	P	26. glass	
12. heavy		27. laugh	P
13. line	P	28. wish	
14. walk		29. yellow	DS
15. box	DS	30. broken	P

P = paramnesia words

DS = direct suggestion words

On the first free association trial, all the words on the list were non-anger-arousing (none were cues for the posthypnotic arousal of anger) in order to determine whether there were any initial differences between the word groups on the experimental measures.

Next the subject was hypnotized (Hypnosis 1) and given relaxing and deepening suggestions for approximately ten minutes. At this point half the subjects were given the paramnesia, and the other half the direct suggestion.

Paramnesia.--The paramnesia began with an adaptation of Erickson's method (Erickson, 1944) for introducing a paramnesia. The story part was designed to be a believable experience for a college student from the recent past in order to eliminate the variable of age regression. In it the subject does nothing wrong but is clearly wronged so the variable of conflicting emotions such as guilt was minimized. The story was constructed to provide a slow build up of anger with frequent checks (S raising hand to answer E's questions) to determine whether the subject was responding as desired. The E related the paramnesia mainly from memory to heighten realism, at a pace determined by S's responses. Near the end he increased the tempo and emotion in his voice in order to intensify the anger as much as possible.

The text of the paramnesia is as follows:

Now as you continue to rest in a deep sleep-like state, I'm going to recall to your mind an event which occurred not long ago. As I recount this event to you, you will recall fully and completely everything that happened. You have had a good reason to forget this occurrence, but as I recall it, you will remember each and every detail fully. Now bear this in mind that while I repeat what I know of this event, you will recall fully and completely everything just as it happened, and more than that you will

remember the emotions which you had at this time and you will feel as you did while this occurrence was taking place. Raise your right hand if you understand.

Now the particular event of which I am going to tell you happened at the bookstore. The bookstore was very busy, crowded with people. As soon as you see the bookstore, let me know by raising your right hand. Raise your right hand to let me know when you see the large number of people that were milling around. You had picked up a full arm load of books. On top you had a hardbound book you had really been looking forward to buying. Raise your right hand when you see that special book. Having picked up all the books you needed, you walked to the end of the checkout line. Raise your right hand when you reach the end of the checkout line.

The line was long and inched forward slowly, so slowly that you wondered at times whether it was moving at all. You grew tired of waiting, tired and impatient. Raise your right hand when you re-experience the feelings of impatience you felt then. The line moved so slowly you grew tired of holding your books. The books became heavier and heavier. Your arms ached from holding them. Raise your right hand when you feel the aching in your arms. Other people had fallen in line behind you as you waited. You waited and waited, and grew more and more tired and impatient; your arms ached more and more. The person behind you shoved you which irritated you. Raise your right hand when you recall the shove. It irritated you that people were so inconsiderate and rude. Out of the corner of your eye you saw a fellow walking toward you. He pushed his way through the line right in front of you, bumping you and almost making you drop that special book you had really been looking forward to buying. Raise your right hand when you re-experience the fellow cutting through the line and bumping you. That really made you irritated and mad. You were thinking that you had had just about enough. It

would take just one more thing like that to make you feel like boiling over. Just then a fellow tapped you on your shoulder and asked you to step back. Raise your right hand when you recall a fellow tapping you on your shoulder. Assuming he wanted to go through, you stepped back bumping into the person behind you who snapped at you crossly, "Watch it." Raise your right hand when you recall the person behind you say "Watch it." To your astonishment, the fellow stepped into line taking your place. That did it. Anger surged up within you. You thought to yourself, Who does he think he is.

Just then his buddy started to step into line. Determined to stop him from crowding, you stepped forward to close the gap. Raise your right hand when you have stepped forward to close the gap. The buddy bumped into you sending your books spilling to the floor. As you stooped to pick them up, he stepped into your place. That made you furious. The first book you picked up you noticed the binding was broken, the pages crumpled and smudged with dirt. It was your favorite book, the special one you had been looking forward to reading. Raise your hand to let me know when you see the broken book. Just boiling inside, fuming and seething with anger you knelt picking up the books, and as you did so, you heard the second fellow comment snidely, "You dropped something." Those words really burned you, infuriated you.

As if that were not enough, he turned to his buddy and snickered, "You want to see something funny, look." Then you heard them both laughing at you, laughing and laughing, really enjoying your predicament. With every laugh your anger surged up, uncontrollably. You were swept up in overwhelming feelings of anger and rage. You hated those fellows. Once again you find yourself feeling those powerful emotions. You feel them right now through your whole body.

Paramnesia Conflict-Producing Instructions.--While

S was still experiencing the intense anger aroused by the paramnesia, the following instructions were given:

As I mention the following words you are reminded of that event, and your anger will become even more intense. With each word the rage will be even greater. (paramnesia word group repeated).

Next a series of relaxation suggestions were given along with the suggestion that "the memories of that incident are passing away, fading away like a forgotten dream."

After a 30-second silence, the instructions continued as follows:

You have been relaxing. Remain relaxed and listen carefully to what I am going to say. In a while I will awaken you. After awakening, I will say a word and you will tell me whatever comes into your mind right afterwards as I have instructed you before. Raise your right hand if you understand. Whenever I say one of the following words (paramnesia word group repeated) you will experience the intense anger you felt when I mentioned these words to you just a while ago. You will feel again the feelings of anger and rage which were caused by the incident with the two fellows at the bookstore. Even though you will not remember anything about the session after I awaken you, you will feel overwhelming feelings of anger and rage well up whenever I say one of those words. Everything that happened in this session will be like a forgotten dream. Trying to recall anything that happened in this session will be as impossible as recalling a long forgotten dream. Raise your right hand if you understand.

You will not be able to remember anything about this session until I rehypnotize you and ask you to recall it. Then you will be able to remember clearly and completely everything that happened in this session.

These instructions were repeated to make sure S understood them. S was then awakened by counting to 5.

Direct Suggestion.--The direct suggestion (ds) was constructed to avoid the fault that Reyher (1962) has pointed out in earlier studies using direct suggestion to investigate psychopathology. That fault was making posthypnotic suggestions of pathological behavior and then studying that behavior as if it were valid pathology. As Reyher (1962) stated in his paradigm for determining the clinical relevance of hypnotically induced psychopathology, hypnotic suggestions should only be used to induce a process which produces other processes culminating in psychopathological behavior. The hypnotist should in no way give cues as to how the subject is to respond posthypnotically. In this design, direct suggestion was used only to arouse a feeling of anger and not to specify any posthypnotic behavior. If any symptoms were produced they would be the result of the subject's own defensive responses to the anger. Used in this manner, the design complies with Reyher's paradigm.

The direct suggestion was constructed following the principles outlined by Levitt, Den Breeijen, and Persky (1960). It contained nothing personal nor anything based on anamnesis nor anything that would lead the subject to believe she was in an artificial situation. The suggestion was kept short and used a number of repeated synonyms for anger. The E related the direct suggestion mainly from memory at a pace determined by S's responses. Near the end he increased the tempo and emotion in his voice in order to intensify the anger as much as possible. The text of the direct suggestion is as follows:

Now as you continue to rest in a deep sleep-like state, you will notice in a little while that a certain feeling will arise in you. You will experience it only slightly at first, but it will gradually grow stonger and stronger until your whole person, your whole body, every fiber of yourself vividly experiences this feeling and emotion. Though you will experience the emotion vividly and intensely, you will not awaken in the slightest. You will not awaken until I tell you to do so. Raise your right hand if you understand.

The emotion you will begin to experience is that of anger. At first there will be just a feeling of mild anger, of something like annoyance, impatience, or irritation. Let me know when you feel mild anger by raising your right hand. Then gradually the feelings of anger will grow, grow more and more intense. You will begin to feel madder and madder. You feel more and more angry and mad. Let me know when you feel

angry and mad by raising your right hand. You will soon feel yourself boiling inside, fuming and seething with anger. You will feel more and more enraged and infuriated. You will soon experience a state of rage in which you are so mad that you feel an almost overwhelming anger and rage.

Direct Suggestion Conflict-Producing Instructions.--

The direct suggestion conflict-producing instructions were essentially the same as the paramnesia instructions.

Phrases mentioning the bookstore incident were replaced by phrases mentioning the feelings you felt just a while ago.

After S was awakened, she was asked how she felt and what she remembered about the session. Then the word list was administered for a second time (Trial 2) using the same procedure as before. This time two word groups were non-anger-arousing while the other critical group was anger-arousing (cues for the posthypnotic arousal of anger). Following the free association, S was rehypnotized (Hypnosis 2) and told there was no longer any anger associated with the previously anger-arousing critical words. This was checked by repeating the words and having S raise her hand if she felt any anger. When there was no anger, S was given an amnesia for the session and awakened. Once



awakened, S was asked how she felt, and then the session concluded.

### Second Experimental Session

One week later, the S returned and was hypnotized again (Hypnosis 3) following the same procedure as in Hypnosis 1 except this time she was given the direct suggestion if she had previously been given the paramnesia or vice versa. Thus each S received both methods of arousing anger. After awakening, the word list was re-administered for the third time (Trial 3) using same procedure as before. This time the critical word group which had previously been non-anger-arousing was anger-arousing, while the other word groups were non-anger-arousing. Then S was hypnotized again (Hypnosis 4), and after a few minutes of relaxing suggestions, told she could now recall what happened in Hypnosis 1. S was asked to relate all she could remember about that session, and she was prompted if necessary until all important parts were completely recalled. Next E suggested that the anger she felt then would again be associated with the appropriate critical word group

and that she would feel it posthypnotically just as before except this time she would remember everything that had happened in Hypnosis 1. These suggestions were repeated, and a check made to see if the words did arouse anger. Following this, E suggested that S could recall everything that happened in Hypnosis 3. Again S was asked to relate her memories. E emphasized that the conflict-producing suggestions of Hypnosis 3 were still in effect. E suggested that S would remember everything that happened under hypnosis in the experiment and then awoke S. Without a delay for discussion, the word list was re-administered for the fourth time (Trial 4). In this trial both critical groups were anger-arousing and only the neutral group was non-anger-arousing. This trial was not needed to test the experimental hypotheses and was included only to provide some information for future research on the effect of no amnesia on the suggestions.

Following this trial, S's questions were answered, and the experiment was explained and discussed. Then S was hypnotized for the final time (Hypnosis 5). S was told that all suggestions given in the experiment were removed, that none of the critical words were any longer

associated with anger, and that the paramnesia story was not true. S's responses to the critical words was checked to make sure there was no anger. Then S was awakened, asked how she felt, and her waking response to the critical words tested to be certain that the suggestions had been completely removed. After thanking her for her cooperation, the session and experiment was concluded.

#### Dependent Variables

The following dependent variables were measured during each 20-second association period:

- I. Galvanic Skin Response (GSR). This was used as a measure of anxiety and physiological arousal. The number of deflections over 1000 ohms were counted during the period. The greater the number of deflections, the greater the anxiety.
- II. Response Latency (RL). The time lapse in seconds between the presentation of the stimulus word and the subject's first spoken word was measured. Long latencies were presumed to be indications of conflict.

III. Number of Words (NW). The number of words spoken during the period were counted and used as an indication of blocked associating. The fewer words spoken, the more the blocking.

IV. Number of Associations (NA). The number of distinct and coherent groups of words within the period were counted and used as another indicator of blocking. Fewer associations indicate more blocking.

V. Classification of associations. Each association was assigned by raters to one of the following categories:

A. Hostile Associations (HA). Associations expressing hostility were assigned to one of three levels of socialization and directness following the scoring system developed by Pine (1960) and to one of two levels of psychological distance. This measure was included to determine whether the anger was being expressed and how directly it was being expressed.

1. The levels of directness and socialization were:

a. Level 1 (HA 1). Direct-unsocialized.

Directly expressed hostility in a way contrary to social values such as murder, robbery, rape, and anger only if it involves the physical expression of violence.

b. Level 2 (HA 2). Direct-socialized.

Anger expressed without physical violence such as arguments, swearing, and derogatory statements.

c. Level 3 (HA 3). Indirect-disguised and

weak. Associations connected with anger but where the underlying hostile impulse is neither explicitly thought nor acted upon such as mentioning police, soldiers, illness, accidents, natural or accidental deaths. Also weak and highly derived expressions of anger such as mentioning strikes and militant unions.

2. The levels of psychological distance were:
  - a. Personalized (HA-P). Associations in which S explicitly mentions herself or reports her own feelings and opinions.
  - b. Nonpersonalized (HA-N). Associations which S reports in detached objective manner with no indication of personal involvement.
- B. Upset or anxious feelings. Reports by S that she feels upset, uneasy, anxious, apprehensive, or frightened during the association period.
- C. Physical Complaints (PCa). Reports by S that she is experiencing uncomfortable, distressing, or unusual physical sensations during the association period.
- D. Mental Blocking (MBa). Incomplete unfinished associations. Reports by S of blank mind, of forgetting, of being confused. Reports of attempts to control, clear up, or understand the associations.

E. Other Associations. All associations which do not fall in the other categories.

VI. Characterization of Comments. Another variable was based upon S's comments following the association period when she had her eyes open. One or more of the following categories were checked by the raters as characterizing the S's reported physical, mental, and emotional state during the association period:

- A. Hostile Feelings (HF). Reports of hostile, angry, or irritated feelings.
- B. Upset or Anxious Feelings. Reports of upset, uneasy, anxious, apprehensive, or frightened feelings.
- C. Physical Complaints (PCc). Reports of uncomfortable, distressing, or unusual physical sensations while associating.
- D. Mental Blocking (MBc). Reports of being unable to think normally, of being confused, of having blank minds.

- E. Pleasant or Neutral Feelings. Reports of pleasurable emotions or the lack of any emotions.
- F. Other Feelings. Reports of emotions not included in other categories such as sympathy and guilt.



## RESULTS

Using transcripts of the experimental protocols, the E and another rater uninformed about the experimental hypotheses assigned all of the subjects' associations and comments into the categories delineated in the dependent variables section. Reliabilities were calculated by dividing the number of identical assignments by the total number of assignments within a category. The reliability of the hostile associations category was calculated first, and then reliabilities calculated for each level within the category. The reliabilities for each category are shown in Table 1. The categories of upset feelings and physical complaints during the association period and of upset feelings, mental blocking, and other feelings during the comment period were not statistically analyzed because of their low reliabilities. The assignments of the uninformed rater were used in the statistical analysis.

To determine whether there were any initial differences between the word groups, a two-way analysis of variance with a single observation per cell was calculated

TABLE 1  
Reliabilities of Assignments

Category	Total No. of Assignments	Reliability
<b>A. Associations</b>		
1. Hostile assoc. (HA)	572	.653
a. Level 1	47	.787
b. Level 2	368	.625
c. Level 3	175	.611
2. Upset feelings	11	.272
3. Physical complaints (PCa)	8	.000
4. Mental blocking (MBa)	339	.599
5. Other associations	3135	.915
<b>B. Comments</b>		
1. Hostile feelings (HF)	202	.713
2. Upset feelings	62	.371
3. Physical complaints (PCc)	53	.698
4. Mental blocking (MBc)	73	.384
5. Pleasant or neutral feelings	486	.847
6. Other feelings	74	.176

for each measure on the first trial. The results, summarized in Table 2, show that only physical complaints during comments ( $p < 0.025$ ), number of associations ( $p < 0.025$ ), and hostile associations ( $p < 0.05$ ) were significantly different.

To determine whether the paramnesia and direct suggestion conditions had any posthypnotic effect the following calculations were made. For each subject on each measure her score for the critical word group on the first trial was subtracted from her score for the neutral word group on the trial when the critical group was anger-arousing. This difference for the neutral group was then subtracted from the difference for the critical group to obtain a net difference. This difference is expressed algebraically:

$$\text{Formula 1: } ND = (CT_{aa} - CT_1) - (NT_{aa} - NT_1)$$

where: ND = net difference for S for a word group  
 CT = score for critical word group on a trial  
 NT = score for neutral word group on a trial  
 aa = trial when critical word group was anger-arousing  
 1 = first trial

TABLE 2

Analysis of Variance: First Trial Measures

Source	Means, Word Groups			MS	F
	N	P	DS		
Physical complaints (PCc) (complaints/group)	.75	1.13	.38	1.125	5.114**
GSR (deflections/group)	8.88	9.50	8.75	1.292	.282
Response latency (seconds/word)	2.65	2.97	2.54	.400	.084
Mental blocking (MBa) (blocks/group)	3.38	2.00	2.38	4.042	1.830
Number of words (words/word)	27.1	25.0	28.8	19.57	2.97
Number of associations (associations/word)	6.04	5.66	6.33	1.010	6.095**
Hostile associations (associations/group)	4.00	8.13	5.13	36.375	4.110*
Hostile feelings (feeling/group)	1.13	1.00	.88	.125	.121

\*\*p &lt; 0.025

\*p &lt; 0.05

N = neutral

P = paramnesia

DS = direct suggestion

This net difference corrects for any initial differences between groups and any order effects. It is a measure of whether the arousal of anger produced any significant increase or decrease as compared to the non-anger-arousing neutral words. The mean net difference for all subjects on each dependent variable was then calculated, and a t-test was performed to see if this net difference was significantly greater than zero. The results for all variables as summarized in Table 3 show that the arousal of anger resulted in significant increases in response latency ( $p: p < 0.002$ ;  $ds: p < 0.02$ ), hostile associations ( $p \text{ \& } ds: p < 0.05$ ), and hostile feelings ( $p: p < 0.002$ ;  $ds: p < 0.02$ ), for both the paramnesia and direct suggestion and in a significant decrease in the number of associations only for the direct suggestion condition ( $p < 0.05$ ). All variables except number of words in the paramnesia condition changed in the direction expected which shows that significant ( $p < 0.001$  for one-tailed sign test) posthypnotic disturbance was produced.

To determine whether there were any significant differences between the paramnesia and direct suggestion

TABLE 3

Effectiveness of Anger-Arousal: Differences  
between Anger-Arousing and Neutral Words

Measure	Mean Net Difference	SD	t
Physical complaints (PCc)			
P - N	.13	.93	.372
DS - N	1.13	2.26	1.317
GSR			
P - N	2.25	6.18	.963
DS - N	3.25	4.58	1.879
Response latency			
P - N	1.37	.75	4.878***
DS - N	1.60	1.35	3.135**
Mental blocking (MBa)			
P - N	4.00	6.36	1.663
DS - N	1.88	5.42	.916
Number of words			
P - N	.34	3.59	.249
DS - N	-2.33	3.46	1.776
Number of associations			
P - N	- .31	.93	.890
DS - N	-1.26	1.40	2.381*
Hostile associations			
P - N	5.63	5.12	2.906*
DS - N	9.75	10.74	2.401*
Hostile feelings			
P - N	6.25	3.23	5.118***
DS - N	4.63	3.57	3.429**

\*\*\*p < 0.002

\*\*p < 0.02

\*p < 0.05

P - N = comparison of paramnesia to neutral words

DS - N = comparison of direct suggestion to neutral words

conditions, a net difference between these two word groups for a subject was calculated according to the following formula:

$$\text{Formula 2: } ND = (PT_{aa} - PT_1) - (DT_{aa} - DT_1)$$

where: ND = net difference for S for a word group  
 PT = score for paramnesia word group on a trial  
 DT = score for direct suggestion word group on a trial  
 aa = anger-arousing trial  
 1 = first trial

This is same as the formula 1 except that it compares the two critical groups with each other rather than with the neutral group. None of the measures show any significant difference as illustrated in Table 4. Though the disturbance is greatest on six of the variables for the direct suggestion condition, this trend is not significant according to the sign test.

To show even more clearly the effect of the experimental treatment a breakdown of the scores of individual subjects on selected measures is shown in Table 5. The average change in a measure was calculated according to the formulae:

TABLE 4

Difference between Paramnesia and Direct  
Suggestion Conditions

Measure	Mean Net Difference	SD	t
Physical complaints (PCc)	-1.00	1.73	1.53
GSR	- .88	6.15	.376
Response latency	- .95	1.53	1.644
Mental blocking (MBa)	1.88	7.15	.694
Number of words	4.79	5.70	2.223
Number of associations	.74	1.36	1.438
Hostile associations	-4.50	10.21	1.166
Hostile feelings	.625	2.69	.615



TABLE 5  
Patterns of Individual Distrubance

Subj. No.	Hostile Feelings		Hostile Associations		GSR	Response Latency	MBa	NA	PCc
	HFaa Naa	First Aware	HAaa NAaa	AC	AC	ACw	AC	AC	AC
S1	.95	1	.500	9.5**	7.5**	1.88**	1.5	-11.5*	1.5
S2	.95	1	.201	14.0	0	1.52	- 4.5	- 9.5	1.0
S3	.90	1	.570	22.5**	6.0	.79	- 2.0	9.0	0
S4	.90	1	.137	5.0*	1.5	2.44*	15.0**	- 9.5	0
S5	.55	1	.228	2.0	2.5	1.76	8.5**	0.5	1.5
S6	.55	3	.108	4.0*	-3.0	- .03	4.0	- 6.5	4.5**
S7	.40	4	.272	0.5	6.5*	2.84	1.0	-26.5**	0
S8	0	Never	.179	3.0	1.0	.70	0	- 5.0	0

Naa = number of anger-arousing trials.

aa = score on anger-arousing trials.

First aware = first aa trial in which anger acknowledged.

AC = average change per critical group.

ACw = average change per critical word.

\*\*p < 0.01

\*p < 0.05

$$\text{Formula 3: } Nd_x = (Ct_{aa} - Ct_1) - (Nt_{aa} - Nt_1)$$

where:  $Nd_x$  = net difference for S for word x  
 $Ct$  = score for critical word x on a trial  
 $Nt$  = score for neutral word x on a trial  
 $aa$  = anger-arousing trial  
 $1$  = first trial  
 $x$  = order of presentation of word within word group

$$\text{Formula 4: } AC = 1/2 \left( \sum_{x=1}^{10} N'd_x + \sum_{x=1}^{10} N''d_x \right)$$

where:  $AC_1$  = average change for both critical word groups  
 $N'd_x$  = net difference for S for word x in p condition  
 $N''d_x$  = net difference for S for word x in ds condition

Table 5 is arranged in the order of decreasing acknowledgement of hostile feelings during the anger-arousing trials. The first four Ss (S1, S2, S3, S4) reported hostile feelings on 90 per cent or more of the anger-arousing trials and were aware of hostility on the first such trial. They showed the largest increases in hostile associations (for 3 a significant increase). Two of these Ss (S1 and S4) had significant changes in some measures of conflict. The next 3 Ss (S5, S6, S7) reported hostile feelings on 40 to 55 per cent of the anger-arousing trials, and two of these Ss (S6 and S7) took 3 or more

trials before they acknowledged angry feelings. These 3 Ss showed small increases in hostile associations (significant for S6), and all showed significant changes in some measures of conflict. One S (S6) did report significantly more physical complaints (of tension), and another (S7) had significant changes of GSR deflections and number of associations. The last S (S8) never reported any hostile feelings though she did have a small increase in hostile associations. She had no large nor significant changes in any measures of conflict. Since all Ss had positive average changes in the number of hostile associations, this trend was significant ( $p < 0.004$ ), one-tailed sign test). There was also a significant trend toward increased response latency ( $p < 0.035$  one-tailed sign test), but no significant trends for the other variables.

To determine whether there were correlations between the individual scores on the measures in Table 5 and several other measures, Spearman rank order correlation coefficients were calculated and summarized in Table 6. The total number of hostile associations (HA) for all trials divided by the total number of associations overall

TABLE 6

## Correlations between Dependent Variables

A. Correlations between Categories of Hostility

Category	Coefficients for correlated category	
	HA overall total	HF aa total
HA aa total	.833**	.292
HA personalized	.233	.738*
HA nonpersonalized	-.220	-.690*
HA level 1	-.119	-.328
HA level 2	.239	.490
HA level 3	-.332	-.755*
HA average change	.453	.804*
HF overall total	.358	.982**
HF aa total	.387	

B. Correlations of Measures of Hostility and Conflict

Measure of Conflict	Coefficients for hostile measures	
	HA overall total	HF aa total
GSR	.500	.435
Response latency (RL)	-.118	.185
Mental Blocking (MBa)	-.477	-.112
No. Associations (NA)	-.184	.203
Physical complaints (PCc)	.150	.322

C. Correlations between Measures of Conflict

Measure	Coefficients for correlated measures			
	RL	MBa	NA	PCc
GSR	.667*	.048	.411	-.160
Response latency (RL)		.310	.661*	-.232
Mental blocking (MBa)			.090	.340
Number assoc. (NA)				.042

\*\*p &lt; 0.01

\*p &lt; 0.05

(HA overall total) significantly ( $p < 0.01$ ) correlates (.833) with the total number of hostile associations on anger-arousing trials divided by the total number of associations on the anger-arousing trials (HAaa total). Similarly the total number of hostile feelings on anger-arousing trials (HFaa total) significantly ( $p < 0.01$ ) correlates (.982) with the total number of hostile feelings overall (HF overall total). HFaa total also correlates significantly ( $p < 0.05$ ) and positively with personalized HA (.738) and the average change in HA (.804) and significantly ( $p < 0.05$ ) and negatively with nonpersonalized HA (-.690) and level 3 HA (-.755). The only other significant correlations are between response latency and GSR (.667) and response latency and number of associations (.661). There is neither a consistent pattern nor a significant correlation between the measures of hostility and the measures of conflict.

A tabulation of E comments during the comment period was made to determine whether the E was biased in any direction. The results summarized in Table 7A showed that E made significantly more comments ( $p < 0.002$ ) after the anger-arousing words than after the neutral which

indicates a strong bias in favor of the experimental hypotheses. Another tabulation of S comments summarized in Table 7B showed that the Ss also made significantly more comments ( $p < 0.002$ ) after the anger-arousing words than after the neutral words.

TABLE 7

## Analysis of Experimental Bias

A. Grand mean number of experimenter comments per word

Word Group	Grand Mean	SD	t
Paramnesia (aa trial)	3.56	.826	4.414*
Neutral (corresponding trial)	1.91	.657	
Direct suggestion (aa trial)	2.63	.474	7.139*
Neutral (corresponding trial)	1.25	.331	

B. Grand mean number of subject comments per word

Word Group	Grand Mean	SD	t
Paramnesia (aa trial)	7.04	1.757	4.851*
Neutral (corresponding trial)	3.76	1.007	
Direct suggestion (aa trial)	7.73	1.530	6.388*
Neutral (corresponding trial)	3.84	.997	

\* $p < 0.002$

Since physical complaints was the most important variable, a tabulation of the actual complaints rated by the uninformed rater is shown in Table 8.

TABLE 8

## Physical Complaints Rated by Uninformed Rater

Complaint	Number
Tenseness	21
Tiredness	11
Food sensations (hunger, sweetness)	5
Not good feelings	3
Sickening (disgusting) feelings	3
Complaints about finger electrodes	2
Funny sensation	1
Headache	1

## DISCUSSION

### Psychopathology Produced

The experimental treatment did produce a significant amount of posthypnotic disturbance (Table 3). The pattern of disturbance varied with individual subjects as expected (Table 5). All but one of the Ss acknowledged angry feelings which strikingly contrasts with Reyher and Perkins research in which most Ss did not acknowledge the posthypnotically-aroused anger. The major disturbance was in response latency rather than in GSR activity and physical complaints, and thus the results resemble more closely those of Huston, Shakow, and Erickson (1934) rather than the results of Reyher (1958, 1967) and Perkins (1965). Because there was no significant increase in physical complaints during the anger-arousing trials, the first hypothesis, i.e. the reduced design would produce psychopathology, was not supported. Most of the complaints rated (Table 8) were not even accepted psychopathology. Some are more emotional feelings (not good or sickening



feelings) than physical sensations. The complaints about the finger electrodes are clearly not the result of any induced process. Nor are most of the tired feelings and food sensations probably the result of an induced process but were more likely elicited by the associational content of the stimulus words (food, sweet, tired). Most likely it was the reports of tired feeling after the word tired that caused the significant difference between the word groups on the first trial. The tenseness and the headache are the only complaints which clearly can be accepted as psychopathological symptoms. Only 13 of the 21 reports of tenseness were during the 160 anger-arousing trials and 14 of the 21 reports were made by one subject. This S did have a significant increase in physical complaints on the anger-arousing trials. This is an indication that anger alone can cause physical symptoms, but overall this design clearly did not produce the number or type of symptoms that Reyher (1958, 1967) and Perkins (1965) reported.

There are several possible explanations of this failure. The first is that the small sample was an unusual population, and that if more Ss were used, more Ss like the one who did report a significant number of

physical complaints would have been included. The fact that in previous studies there were not many more Ss and they were selected in the same manner as this study tends to refute this possibility.

The second is that Ss were simply not reporting their physical sensations. This is contradicted by the fact that Ss did report physical sensations. Possibly more symptoms would have been reported if Ss were clearly asked to report physical sensations. However this was not necessary in the previous research of Reyher (1958, 1967) and Perkins (1965) in which Ss reported symptoms essentially spontaneously. The Ss were deliberately not asked to report physical sensations since any symptoms reported could then be accounted for simply as compliance with the E's demand rather than the result of the treatment. Even though there was no explicit demand, Table 7A illustrates that E made significantly more comments after the anger-arousing words than the neutral words. Thus there was a strong implicit demand favoring the experimental hypotheses. Given this bias, it would seem most likely that the reporting of symptoms would be preferentially reinforced. This suggests strongly that Ss were simply not experiencing any symptoms to report.

A third possibility is that the experiment was ineffective in arousing anger. This is contradicted by the increased number of both hostile associations and hostile feelings elicited by the anger-arousing words. If measures of facial, vocal, and gestural expression were obtained, this evidence would be even stronger. Some Ss turned red, grimaced, or gritted their teeth when presented with the critical words. Some pounded the arm of the chair or gripped it tightly. Anger was clearly aroused. However, it could be argued that the anger was not intense enough and more emphatic suggestions might have raised it to a pathogenic level. The observations noted above tend to refute this contention. It is also challenged by the fact that more emphatic suggestions were not required in previous research by Reyher (1958, 1967) and Perkins (1965) to produce physical symptoms.

The fourth and most likely possibility is that the reduced design eliminated elements in Reyher's original design which are essential for producing a pathogenic conflict. One important change was from tachistoscopic to auditory presentation of the critical words with a change in the experimental task from perceptual

recognition to free association (Variable 11). With the tachistoscope, the words are presented suddenly, and Reyher (1967) has pointed out this may catch the S off guard causing a temporary disequilibrium in his defensive mechanisms. However there was the same element of suddenness in the spoken presentation of the stimulus word in this experiment, so this cannot account for the change. The tachistoscopic task requires long periods of concentration which is physically demanding and also involves the psychological pressure to make the correct choices. Anger in this situation would probably disrupt most Ss' performance, increasing their frustration and possibly intensifying physical complaints. In the free association task the physical and psychological pressures are minimal which might account for the lack of symptoms. However, research presently in progress is showing that psychopathological symptoms can be produced in a task involving nothing more than pronouncing the stimulus word. This suggests strongly that these elements of physical and psychological stress are not essential to a pathogenic conflict. Another difference between the tasks is the lack of an acceptable outlet for anger in the tachistoscopic

task. Since feelings can be more easily and acceptably expressed in the guise of free associations and since it is widely believed that the expression of feelings reduces conflict, this could account for the lack of symptoms.

Still another change was a change in experimenters. Though this E used the same nondirective, reflecting approach used by Reyher, there were undoubtedly differences in the way he accepted the Ss' feelings (Variable 12). If Reyher and Perkins acted or were perceived as more rejecting authority figures this might have intensified the conflict for their Ss. Though Reyher's transcripts suggest this was not the case, this possibility cannot be refuted without further experimentation.

Another change was the elimination of strong conflicting emotions such as guilt (Variable 5) coupled with the anger. The stimulus words could recall the guilt aroused in the paramnesia which S would rather not admit to either herself or E and could cause the posthypnotic conflict rather than the anger. In Bobbit's (1958) and Huston, Shakow, and Erickson's (1934) experiments, there were strong feelings of guilt but no anger, and conflict

was produced. However the conflict consisted of delayed response latencies, blocking, and interruption of conditioned motor responses. Compared to the pathology produced by Reyher, the conflict was milder as was the conflict produced in this experiment which suggests that this variable is possibly a contributing but not a critical factor in producing pathogenic conflict.

Still another change was not directing the anger toward an authority figure supposedly present in the lab (Variable 7) and coupling it with a destructive impulse (Variable 10). The S might well fear to express anger with either of these variables included because of the fear of antagonizing the E and provoking his retaliation. Hokanson (1959) has shown that Ss in an anger-arousing situation who are informed that the E has punitive powers (electric shock) exhibit more anxiety as measured by GSR. Reyher (1967) has tentatively concluded that these variables, particularly the destructive urge, are probably necessary to make the anger pathogenic.

Which of these possible factors or combinations of factors is required to produce a conflict resulting in psychopathological symptoms will have to be resolved by

further research. This experiment has opened the way by providing evidence that in this experimental situation, anger aroused by itself is not pathogenic.

#### Comparison of Paramnesia and Direct Suggestion Methods

The second hypothesis was not supported since there were no significant differences on any of the measures between the paramnesia and direct suggestion methods as shown in Table 4, nor was there any significant trend according to the sign test.

Possible reasons for the similarity between the methods can be explored by an analysis of the differences between the methods. First, there is a difference in the arousal of the emotion itself. In the paramnesia, the situation is supposed to arouse the emotion (though in this experiment direct suggestions of the emotion were also included in the paramnesia), while in the direct suggestion method the emotion is simply suggested. This experiment demonstrates that both methods work and, therefore is in agreement with the work of Gidro-Frank and Bull

(1950), and Levitt, Den Breeijen, and Persky (1960) which showed that emotions and moods can be aroused under hypnosis simply by suggestion.

Second, there is a possibility of a difference in the intensity of the emotion aroused. The paramnesia was presumed to be more effective since it could establish associational links with experiences from the person's own past. Several Ss in talking about the experiment afterwards stated that the paramnesia had reminded them of past incidents. They also reported that some words seemed to arouse more feeling than others. The paramnesia word laugh for example aroused very strong feelings for one S because of the association with the ridicule in the story. However, the direct suggestion words also became linked to past experiences. One S for example had a strong reaction to the direct suggestion word boy and recalled a recent experience with a male. These observations suggest that calling upon the S's own experiences produces stronger emotions, and though the paramnesia is specifically designed to do this, the E observed Ss also doing this in the direct suggestion method.



Third, there is a possible difference in whether the emotion is accepted by the S as her own. In this experiment, one S had difficulty accepting the paramnesia. Huston, Shakow, and Erickson (1934) and Reyher (1958, 1967) has also reported similar difficulties. However, overall the E noticed no difference in the Ss reactions under hypnosis while the methods were being used, nor did the Ss report any difference in the postexperiment interview. With hypnosis small and subtle changes in phrasing can make important differences. This experiment indicates that both paramnesias and direct suggestions can be designed to lead the S to believe that their emotions are real.

Fourth, there is a possible difference in the complexity of the emotions aroused. The paramnesia can arouse more complex emotions in a more natural way. In this experiment, both methods were designed to produce as pure an anger as possible. However, one S cried while the paramnesia was being presented when she was told her special book was damaged which indicates other emotions were aroused by the paramnesia. Most Ss reported only

feelings of anger, and thus any difference due to this factor was probably minimized.

Fifth, there is a possible difference in the establishment of associational links between the emotions and the words of the list. In the paramnesia, these links can be established naturally as Huston, Shakow, and Erickson (1934) did. They merely lead the subject to accept the paramnesia and did not suggest that the feelings aroused by it would be associated with particular words as was done in this experiment. The posthypnotic disturbances they reported were due to associations the S himself formed between the paramnesia and the stimulus words. A similar phenomena occurred with the neutral word heavy in this experiment. It was mentioned in the paramnesia, but not associated with anger by any suggestion. Yet several Ss reported angry feelings to it on the trial after the paramnesia. In the direct suggestion method, there are no natural associations between the anger and the critical words and so it is necessary to associate them by suggestion. By suggesting the associational links in both methods, this possible source of difference was minimized.

Six, there is a possible difference in the post-hypnotic suggestions which arouse the anger. In this design the conflict-producing instructions were identical for both conditions so this difference was eliminated.

Seventh and finally, there is a possible difference in the breakdown of the amnesia. If the amnesia broke down in the paramnesia method, the S might recall parts of the story but still believe that it had happened to them as Reyher (1958, 1967) has reported. Thus it might take longer to discover that the emotion was artificially aroused in the paramnesia method, therefore, prolonging the conflict. In Reyher's study, there was a breakdown of the amnesia for a few Ss. In this study there was none. None of the Ss recalled the paramnesia nor the E's instructions. Since there was no breakdown this difference was also minimized. It seems strange that there was no breakdown since it seems plausible that free associating would facilitate the recovery of the forgotten memories. Possibly the longer time and more presentations in Reyher's tachistoscopic recognition task facilitated the breakdown.

This experiment has shown that direct suggestion can be used as effectively as paramnesia in the investigation of clinically induced psychopathology. This indicates that future designs could be simplified by the use of direct suggestion. However the differences between the two methods should not be overlooked in designing experiments. A paramnesia would probably be most effective in investigating the effect of psychotherapeutic techniques on artificial neuroses since it can arouse complex emotions, provide natural associations, and provide a more realistic breakdown of the amnesia. In investigating psychopathology, direct suggestion might be more effective in studying the effects of a single emotion.

#### The Relationship Between Anger and GSR

Another interesting finding is that the posthypnotic arousal of anger did not seem to significantly activate the GSR as shown in Table 3. Possibly more Ss would have made the results more significant. There is an indication in Table 6 that Ss who express more

hostility also show more change in GSR activity on the anger-arousing trials. Possibly a different sampling would have given more significant results. Since the statistics in both tables are based on all anger-arousing trials and since the Ss acknowledged hostile feelings for only 104 of the 160 such trials, there is also a possibility that the results would be more significant if the 56 other trials were not included. To correct for this, an overall mean net difference in GSR activity was calculated for individual words using only the 104 anger-arousing trials in which hostile feelings were acknowledged. This overall mean net difference was 0.173 deflections per word (variance = 2.30) which is not significantly different from zero ( $t = 1.16$ ). The overall mean net difference for the other 56 trials was 0.465 deflections per word (variance = 1.53) which is significantly greater than zero ( $t = 2.79$ ) at the 0.01 level. This indicates that the anger-arousing trials in which hostility is not acknowledged are responsible for most of the increase in GSR activity. This suggests that anger itself does not activate the GSR.

This finding supports Reyher's (1969) observations during therapy that clients expressing anger do not necessarily show GSR activity. However, it contradicts the findings of Ax (1953) that anger is differentiated from fear by a greater number of rises in skin conductance. Ax's study is one of several investigating the physiological concomitants of the emotions of anger and fear. All of these studies use a design in which anger is aroused by having an E unjustly insult, degrade, and mistreat the S. The problem with these studies is that the anger which is aroused is directed toward an authority figure who is present in the situation. This is variable 7 which was eliminated from this design because it was expected to create anxiety. Ax's study probably aroused not only anger but also anxiety which would confound the results.

This experiment was not designed to test the hypothesis that pure anger does not activate the GSR but it does suggest that more research does need to be done in this area. An experiment such as the one done by Levitt, Dan Breeijen, and Persky (1960) investigating the physiological correlates of pure anxiety could possibly be

performed using hypnosis to arouse pure anger in a situation designed to minimize anxiety.

Observations after the  
Removal of the Amnesia

At the end of the third trial, Ss were rehypnotized, all previous amnesias were removed, and both the paramnesia and direct suggestion conflict-producing suggestions were reactivated. The following general observations were made of their behavior on the fourth trial with both critical word groups anger-arousing and no amnesia. For all the Ss the conflict-producing suggestions were effective posthypnotically. All Ss acknowledged the angry feelings including Ss S5, S6, S7, and S8 who only partially acknowledged them on trials 2 and 3. Although the Ss understood the cause of their anger, surprisingly enough for most of the Ss their conflict seemed intensified rather than diminished. S1 continued producing the same type of associations as she had in earlier trials as did most of the other Ss. None did more than briefly mention the paramnesia which the E thought would be a

major part of their associations. However, S1 became increasingly suspicious of E (accusing him, for example, of "looking into her soul"). For two other Ss, the anger became interpersonal. S3 tried to control her anger, but she did break out and swear at E. She said she experienced a state of continuous tension broken only by the neutral words which brought a momentary chance for relaxation. S7 reported a similar phenomena and became so angry with E that she would not associate and finally refused to continue with the experiment. S4 continued her prior associational pattern, but some of the images became more primary process (snakes for example). S6 expressed anger more openly in her associations and her GSR activity also increased. These observations suggest that the strong feeling of anger was difficult for the Ss to handle even though they had insight into its cause. The nature of the conflict was changed by removal of the amnesia, but the conflict was not removed. Since the data from the fourth trial was not analyzed, no conclusions can be drawn, but because the general observations differ markedly from what was anticipated, there is an



indication that the effect of the amnesia on the conflict deserves further investigation.

#### Discussion of Design and Possible Improvements

Because of the wide variety of individual reactions, one obvious improvement in the design would be a larger number of Ss to provide a better sampling and hence, more conclusive results. Including male Ss would increase the generalizability of the results since there are probably sexual differences in the handling of hostility.

A second major improvement would be the use of control Ss. Part of the Ss, without E's awareness, should be told to fake hypnosis in order to establish a control group. Compared to a control group, some of the findings of this experiment might have been more pronounced. It was noticed, for example in some of the Ss, that hostile feelings seemed to spread over into the neutral and non-activated critical groups particularly on the third trial. Reyher (1958) reported a similar phenomena. Possibly this was due to a breakdown of the suggestion that the

critical words on the second trial would not be anger-arousing on the third trial. Since these words were used as a base against which to compare the anger-arousing words, the spread of hostility to these words would reduce the apparent change. This spread of hostility could be determined by comparing the changes in experimental measures between trials for the neutral words in both the experimental and control groups.

To control for the effect of experimenter differences, it would be advisable to have each E administer a standard procedure such as Reyher's original procedure to a group of his Ss. This group could be compared to similar groups in other experiments and thus would provide a more valid basis for comparing the experiments.

Still another major improvement would be a refinement of the experimental measures. The reliabilities of rating many categories was very low as shown in Table 1. The biggest difficulty in rating the category of hostile associations seems to have been the use of inferred material or the context rather than the manifest material. The E because of his experience with the Ss tended to rate more associations hostile than the uninformed rater.

The category of upset feelings during association had a very low reliability because its definition was not clear enough and because the raters had difficulty deciding whether the feelings were actually being experienced (which was part of the definition of this category).

There was low reliability in scoring physical complaints during association since the uninformed rater rated any mention of physical distress while the E rated only those associations in which the S was clearly experiencing the distress. The difficulty in rating mental blocking during association seems to have come from difficulty in deciding whether an association was complete or not. The reliability of the other associations category was high, but it was not used to test any hypotheses. It was included merely to make the raters rate each association, and hence, pay closer attention to their rating.

There were similar difficulties in rating the categories of post-association comments. The hostile feelings category had high reliability because assignments were usually not made unless a hostile word was actually mentioned. However, upset feelings had low reliability because too many inferred feelings were rated. This

category also had a nebulous description, and the raters had difficulty deciding whether the feeling was experienced during the association period or not (part of the category definition). Reliability of physical complaints was adequate for the experimental purposes, but lower than it should have been because the uninformed rater tended to rate any physical sensation while E tended to rate only those which were distressing or abnormal. Mental blocking had low reliability because of difficulty in deciding whether the blocking was experienced while associating or not. The category of neutral or pleasant feelings was included because it might have shown the absence of hostile feelings. Though this category could be scored with high reliability, it was not used in the testing of hypotheses. The other feeling category had low reliability because a little bit of everything was assigned to it. Lacking a clear definition, it could just as well have been eliminated.

More protocols and more practice would probably have improved the reliability of the ratings. A big difference would probably have been made if the raters used the tapes themselves instead of transcripts of them. The

Ss vocal expressions would have made it easier to decide whether they were hostile, upset, or blocking. A new measure of the level of hostility expressed during the association period could also be obtained on the basis of the person's feeling tone. If video taping were available, ratings of facial features and physical movements would provide a measure of physical distress which was not dependent on the Ss verbal report.

The Spearman rank order correlation coefficients (Table 6) indicate that the categories of hostility have some construct validity. The relative number of hostile associations over all trials is significantly and positively correlated with the relative number on the anger-arousing trials; just as the number of hostile feelings over all trials is significantly and positively correlated with the number of anger-arousing trials. This suggests that the relative amount of hostility expressed and the relative awareness and acknowledgement of the hostility are rather stable characteristics of the person which is what would be anticipated based on general personality theories. The correlations also show that those Ss who readily acknowledge hostile feelings tend to express

hostility in personalized and direct, socialized ways while those Ss who tend not to acknowledge hostile feelings tend to express hostility in nonpersonalized and indirect ways. This agrees with the theory that people who have inhibitions about acknowledging hostile feelings also have inhibitions about directly expressing hostility. Furthermore, there was a positive correlation between expressing and acknowledging hostility and the increase in hostile associations on the anger-arousing trials. This agrees with the theory that the people with fewer inhibitions associated with hostility should express more hostility in an anger-arousing situation.

Still other improvements in the measures would include the dropping of the number of words since it is a redundant measure given the number of associations. A hypnotic suggestion for immobilization of the electrode hand might have eliminated the noise in the GSR data of a few subjects caused by physical movement. Since Ax (1953) found that the number of rises in skin conductance was greater for his anger than his fear condition and that the maximum skin conductance increase was greater for fear than anger, it would probably be advisable to use both

measures in future studies. It also might be advisable to measure GSR activity during the comment period since Ss who only partially acknowledged hostility had large peaks occasionally during this period.

A more careful word choice could also improve the design. Words chosen should really be neutral. Some of the neutral words such as boy and milk (see Reyher (1967) p. 7) tended to elicit stronger reactions in the first trial than others. The paramnesia word tired seemed to elicit tired feelings which probably caused the increase in physical complaints for the paramnesia words on the first trial (Table 2). Similarly, the paramnesia words, crowd, drop, and broken, seemed to elicit more hostile associations resulting in an initial difference between the word groups in this category. The reduced number of associations to the paramnesia group could possibly have been due to this hostility or to the lower mean frequency of usage of these words. Words which provide possible links with the paramnesia such as heavy should not be included in the neutral group.

Finally, there should be better control of the demand characteristics of the experiment. The E should

have either reflected the S's comments according to a schedule or should not have reflected at all in order to eliminate the bias clearly shown in Table 7.



## CONCLUSIONS

1. The reduced design involving the posthypnotic arousal of anger did produce posthypnotic disturbance, but not of the pathogenic proportions reported in previous research by Reyher (1958, 1967) and Perkins (1965).
2. The first hypothesis, that the reduced design would produce psychopathology, was not supported since there were no significant increases in physical complaints on the anger-arousing trials.
3. The second hypothesis, that the paramnesia would be more effective than the direct suggestion in arousing anger and producing posthypnotic conflict, was not supported since both conditions were equally effective.
4. There was some evidence that it is the anxiety produced by the anger which is responsible for GSR activation rather than the anger per se.

5. Quite surprisingly, there was an indication that the removal of the amnesia did not end the post-hypnotic conflict, but in some cases transformed and intensified it.

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APPENDIX A

A SUMMARY OF RELEVANT ARTICLES PERTAINING  
TO THIS EXPERIMENT

This is a review of studies using hypnotically aroused emotions to induce posthypnotic conflict. Though one of the most comprehensive reviews of the literature was made by Deckhart and West (1963), Reyher (1958, 1962, 1967) and Gordon (1967) review in more detail, some of the studies which will be discussed in this article.

In his reviews (1962, 1967) Reyher has pointed out that most of the hypnotic investigations of experimental psychopathology can be criticized for several reasons. First, there were many deficiencies in experimental design. Second, few studies included control groups to assess the demand characteristics of the research. This is important because Orne's research (Reyher, 1962) has demonstrated that hypnotized Ss are particularly sensitive to E's expectations. Third, Reyher stated that it is doubtful that the mechanisms of direct hypnotic suggestion, which some studies used

## Appendix A (Cont.)

to produce psychopathological behavior, are similar to the naturally occurring defense mechanisms, and therefore it is doubtful that the psychopathology produced in such studies is analogous to actual psychopathology. He shows by citing several of the studies reviewed in this article that hypnotic suggestions can be used to activate the Ss own defensive mechanisms and produce non-suggested psychopathology. Reyher maintains that this psychopathology is closely analogous to actual psychopathology. Based on his analysis, Reyher formulated a paradigm to determine the clinical relevance of experimental psychopathology consisting of these five principles:

- a. the hypnotically induced process must in no way include cues as to how E expects S to respond in terms of the dependent variables,
- b. the induced process must produce other processes and behavior,
- c. some of the responses must satisfy the criteria of psychopathology,
- d. some of the Ss must be asked by a co-experimenter to fake hypnosis,
- e. hypnotic instructions should be presented in the passive voice.

## Appendix A (Cont.)

Though Reyher's 1962 article led to a controversy between Levitt (1963) and Reyher (1963), the paradigm has been accepted and followed by the most recent experimenters (Moore (1964), Perkins (1965), Pruesse (1967)) in this field.

The first investigations using hypnosis to induce a process which produced posthypnotic disturbance were made by A. R. Luria (1932) who explored the disorganizing effects of conflict-associated stimuli on verbal response --motor response linkage, activity of the nonpreferred hand, and latency and content of the associations. Using at first people who had experienced real trauma, he later turned to hypnotically induced conflicts because they could be controlled while only inferences could be made about real conflicts. Luria used four different paramnesias involving the commission of a reproachable act (performing an illegal abortion in which the woman died, stealing money, and beating a child). He concluded that the disturbances in breathing, verbal associations, and hand pressure responses produced by the paramnesic traumas



## Appendix A (Cont.)

were analogous to those obtained from nonhypnotically traumatized Ss. Luria also produced conflicts by giving posthypnotic suggestions for performances which would be experienced by S as illogical or embarrassing. Though lacking in sophisticated controls, standardized procedures, and statistical analysis, Luria showed the possibility and value of using hypnotically induced conflicts to investigate psychopathological behavior.

Huston, Shakow, and Erickson (1934) replicated some of Luria's findings and investigated the hypothesis that if affect is not discharged verbally then the motor system would be involved. They also used a paramnesia involving the commission of a reproachable act (accidentally burning a hole in a woman's dress but not admitting it) and tested for disturbances on a verbal association test using Luria's measures. Like Luria, they did not associate the paramnesia with any special words, but allowed Ss to form their own links. They also tested before, during, and after the conflict was implanted both in the waking and hypnotic states. This is the only

## Appendix A (Cont.)

study reviewed which explored disturbances in the hypnotic state. Their general findings were a preponderance of verbal disturbance under hypnosis and nonverbal disturbance in the waking state. Though the disturbances in reaction time were not statistically significant, the trends were in the right direction. They also noticed that the number of motor disturbances decreased with repeated trials. As other studies have reported only those Ss who accepted the paramnesia as a true event in their lives seemed to have disturbed reactions.

Still another investigation using both Luria's style of paramnesia and measures of conflict was done by Bobbit in 1947 but not published until 1958. Bobbit was testing the Freudian theory of repression and hypothesized that the amount of disturbance was directly related to the breakdown of repression. Implanting a paramnesia involving a hit and run accident in 6 medical students, she measured various aspects of verbal and motor response to word association stimuli under conditions of prehypnotic control, posthypnotic amnesia, partial awareness, full

## Appendix A (Cont.)

awareness, and after removal of the paramnesia. This is the only study reviewed in which the degree of amnesia was varied. Though disturbances were found in most of her measures, the maximum disturbance occurred in the partial awareness condition rather than complete awareness as she had hypothesized. She proposed several possible explanations for this failure but did not come to any conclusions. A second hypothesis was not supported since there was no generalization of the conflict to postcritical or neutral words. According to Reyher's paradigm (1962), Bobbit's equating of a posthypnotic amnesia with repression is questioned since a valid repression should be spontaneously produced as the result of another induced process rather than directly suggested.

All these studies with Luria's techniques have used paramnesias in which S committed a reproachable act arousing guilt feelings. They let their Ss form their own associations between the stimulus words and the paramnesia and did not give posthypnotic suggestions of any particular feelings nor of any action the person should

## Appendix A (Cont.)

take. In all these respects, these studies differ from later studies by Reyher (1958, 1967). The effect of the induced conflict was assessed by measuring objective characteristics of the verbal-motor response such as response latencies. While this may provide a more reliable method of discovering conflict than depending on S's self-report, the data is not the type of psychopathology of which patients usually complain. Huston, et al. mentioned that one S became irritable, could not sleep, and gave away cigarettes. Unfortunately though this type of data was not systematically collected and so no comparison can be made with later studies such as Reyher's (1958, 1967). A major weakness in the preceding studies was a lack of control Ss.

Eisenbud (1937) reported an interesting case study of a hospitalized patient suffering from severe headaches and spontaneous amnesias. Eisenbud was using hypnosis in treating the patient and decided to give him short paramnesias involving different emotions such as hostility and sexuality one at a time and then, to observe the effect

## Appendix A (Cont.)

on the patient's behavior as reported in his routine diary. By suggesting amnesias for the paramnesias, Eisenbud kept the patient from knowing he was being studied. In agreement with his clinical hypotheses, Eisenbud discovered that paramnesias involving hostile, aggressive impulses were followed by more severe and prolonged headaches. Though not a controlled experiment, it showed that hypnotically induced conflicts could result in psychosomatic symptoms and showed how this method might be useful in diagnosis.

Erickson also implanted in one of his neurotic patients a paramnesia constructed to parallel the patient's probable dynamics. Though he did not report on the case, in 1944 he wrote an article giving a detailed explanation for his wording of the hypnotic instructions. His introductory instructions have since been used in most investigations employing paramnesias.

Another series of case studies is reported by Wolberg (1947) in which unconscious conflicts, deliberately or accidentally produced during hypnosis, .

## Appendix A (Cont.)

spontaneously produced both somatic and psychological reactions including such marked symptoms as dizziness, tachycardia, and a negative hallucination. These symptoms disappeared when the conflict was removed or resolved. Wolberg did not use paramnesias but instead made posthypnotic suggestions which would be embarrassing or conflict-producing in the waking state. For example, in several cases he used the following suggestion:

When you awake, you will find next to you a bar of chocolate. You will have a desire to eat the chocolate that will be so intense that it will be impossible to resist the craving. At the same time you will feel that the chocolate does not belong to you and that to eat it would be very wrong and very bad. You will have no memory of these suggestions when you awaken, but you will, nevertheless, react to them. (p. 377)

Wolberg concluded that psychosomatic symptoms could be traced directly to the induced conflict and in some cases were random physiological manifestations of tension and anxiety and in other cases were purposeful reactions which served a symbolic function as an expression of a conflict or as a defense against it. Wolberg's case studies made two important contributions. First, they demonstrated

## Appendix A (Cont.)

that rather severe psychopathology could be produced in normal Ss, and second, they showed that simple embarrassing or anti-social suggestions could create conflict as well as paramnesias.

Reyher's doctoral research (1958) was the first experiment to produce severe psychopathology in normal Ss. Though he originally intended to investigate the effect of induced conflict upon visual recognition thresholds, he produced such vivid psychopathology in a pilot study that he expanded his experiment to include recording of the Ss' comments and GSR activity. As in previously discussed designs, the posthypnotic conflict was based upon paramnesias in which S committed a reproachable act (accidentally breaking an expensive art object or stealing some coins) and was unjustly criticized or exploited. (See introduction of thesis for more complete description of Reyher's method.) In contrast to Luria's method, his paramnesias were designed primarily to arouse feelings of anger rather than guilt. He suggested that the feelings of anger would be overwhelming and directly associated

## Appendix A (Cont.)

this anger with certain classes of words mentioned in the paramnesia. He also suggested the anger was directed toward another experimenter who had left some valuable papers next to S and further suggested that when the cue words were presented, S would experience an overwhelming urge to tear up those papers. This last suggestion is very similar to those used by Wolberg to produce posthypnotic conflict. In all these respects, Reyher's method differed from Luria's.

Reyher's most important finding was that the majority of his 11 Ss did not acknowledge nor carry out the posthypnotic suggestions of anger and rage, but instead spontaneously reported many psychopathological reactions of the magnitude Wolberg produced. A few Ss did tear up the valuable papers which ended their psychological and somatic complaints. Using a self-devised index of repression, he found (1961b) that there was a correlation of .74 (significant at .05 level) between the degree of repression and the proportion of somatic complaints. Thus Reyher concluded that the suggestions had been



## Appendix A (Cont.)

spontaneously repressed and that the psychopathological reactions were manifestations of this process. This was some of the first experimental evidence of the concept of repression and its relationship to psychopathology.

Reyher replicated his study (1967) using essentially the same design except that the intensity of the hostile impulse was progressively increased from mild to overwhelming by posthypnotic cues. Nineteen Ss were used, 7 of whom were instructed by a co-experimenter to fake hypnosis and thus served as a control group. This was the first of the studies reviewed here to use a control group. As in the original study, a wide variety of psychological and somatic reactions were produced in most of the experimental Ss but none in the control Ss.

Reyher also studied certain characteristic patterns of disturbance by dividing the experimental Ss into a poor represser group who verbalized awareness of both the anger and the destructive impulse and a good represser group who verbalized awareness of one or neither of these aspects of the conflict. The poor repressors all displayed

## Appendix A (Cont.)

symptomatic behavior. As the intensity of the hostility was increased to the overwhelming level, the GSR activity increased to its highest value for the poor repressor group, a significantly higher value than for the good repressor group whose GSR activity tended to decrease as the level of hostility was increased. From this Reyher concluded that the good repressors were actually repressing and not suppressing the conflicting suggestions. Over all levels of hostility, the poor repressors had significantly lower visual recognition thresholds. He attributed the differences in reactions between these groups to differences in personality dynamics, and speculated that the good repressors could be viewed as having strong superegos according to the Freudian model, while the poor repressors had weak superegos. (1961a, 1967)

Perkins (1965) using Reyher's procedure found essentially the same results. However, by using TATs administered before the experiment, Perkins was able to substantiate some of Reyher's speculations. The poor repressors (8 of 20 experimental Ss) were found to have

## Appendix A (Cont.)

significantly greater drive content and drive integration and significantly lower drive socialization than the good repressers when the TATs were scored using Pine's system (1960). However the poor repressers had more rather than less derivatives of conscience as had been predicted. He concluded that the differences between these groups observed in his experimental situation corresponded to differences which had been reported in the literature.

Though not designed to investigate psychopathology, three other studies have posthypnotically-aroused hostility by means of a paramnesia. Counts and Mensh (1950) investigated the effect of hypnotically-induced hostility on the Rorschach test. Their 5 Ss were first administered the Rorschach and then hypnotized and a paramnesia implanted which aroused hostile feelings toward the Rorschach administrator. The paramnesia involved having the administrator bump into S almost knocking him down, then become sarcastic toward S, blaming him for the incident and threatening official reprisal. As is typically done, an amnesia was suggested for the paramnesia and instructions, and a suggestion was given that S would feel angry

## Appendix A (Cont.)

at the administrator without knowing why. After awakening, Ss were administered the Rorschach by both the original administrator and E and then interviewed by E. All Ss reported feelings of tension and discomfort during the Rorschach examination, even one S who was not amnesic for the hypnotic session. No reliable changes were found in the Rorschach protocols which Counts and Mensh attribute to the characteristics of the Rorschach rather than the failure of the paramnesia which they concluded was effective. As all the other early studies, this study included no control Ss.

Moore (1964) aroused hostility in an interview situation as Counts and Mensh (1950) had done in order to study the personality differences between high and low n-achievers. Thirty-two high school students were divided into equal groups of high and low n-achievers and were interviewed twice by E. Before one interview the hostility was hypnotically induced according to a counter-balanced design by using a paramnesia in which S was taking a difficult exam from a disliked teacher. It was

## Appendix A (Cont.)

suggested that Ss would feel strong (but not overwhelming) feelings of anger toward E who reminded them of the disliked teacher. Ten of the 32 experimental Ss reported symptoms during the interview after the hostility was induced, while only 1 of 6 control Ss did, and there was evidence he had become hypnotized. Moore found as he had hypothesized that low n-achievers expressed significantly more hostility in the interview than the high n-achievers. He concluded that, in agreement with the literature, high n-achievers tended to be intro-punitive, whereas low n-achievers tended to be extrapunitive.

Pruesse (1967) investigated the hypothesis that hypnotically induced conflict could generate differential defensive responses, repressors, and sensitizers. He divided 40 good hypnotic Ss into equal groups of repressors and sensitizers using Byrne's Repression-Sensitization Scale and then administered the Buss Hostility Scale (BHS), Holtzman Hostility Scale (HHS), and a tachistoscopic recognition task to each S. Then under hypnosis, he implanted a paramnesia arousing hostility and suggested that it

## Appendix A (Cont.)

would be on S's mind and govern his actions after awakening even though he would have no conscious recollection of it (partial amnesia). Next the 3 tests and a questionnaire were administered again. Pruesse reports greater hostility on all 3 measures for the hypnotic Ss as compared to the control Ss; however, the differences were not significant. He attributed this lack of significance to the effect of a group of control Ss who made themselves angry in compliance with the demand characteristics of the experiment. No psychopathological symptoms were reported. As predicted, on the self-report measure (BHS), repressers presented themselves as less hostile than sensitizers; on the projective measure (HHS), the evidence suggested that repressers reflect more hostility than sensitizers; and on the tachistoscopic task, repressers had higher recognition thresholds.

Moore's (1965) and Pruesse's (1967) studies along with Reyher's (1958, 1967) and Perkin's (1965) studies indicate that personality characteristics determine the manner in which the hypnotically induced conflict is

## Appendix A (Cont.)

manifested. It is interesting that somatic complaints were obtained by both Counts and Mensh's (1950) and Moore (1965) even though they were not investigating psychopathology. In both these experiments, the anger was directed toward an experimenter which might have made it more conflict-producing. In Pruesse's study (1967), the anger was not directed toward an experimenter and no physical complaints were reported. The somatic complaints reported by Counts and Mensh (1950) and Moore are not nearly as pathogenic as those reported by Reyher (1958, 1967) and Wolberg (1947) who used suggestions of a destructive or anti-social impulse. This suggests that this is one of the essential factors in producing experimental psychopathology.

Another experiment by Levitt, Den Breeijen, and Persky (1960) which is relevant to the present experiment differs markedly from the studies reviewed so far. Levitt and associates were interested in determining the psychological and physiological correlates of "pure anxiety." They began by administering the Manifest Anxiety Scale,

## Appendix A (Cont.)

an adjective checklist, and two TAT cards to deeply hypnotized Ss. A psychiatrist rated Ss' level of anxiety, and measurements were made of systolic and diastolic blood pressure, pulse rate, and plasma hydrocortisone level. Then a carefully devised direct suggestion of anxiety was given. In devising their suggestion they analyzed previous research and in particular a study by Gidro-Frank and Bull (1950) who investigated methods of hypnotically arousing emotions. Though no statistics were presented, Gidro-Frank and Bull concluded that simple one word suggestions (such as anger) produced as strong emotions as short paramnesic statements (such as a bully is maliciously ridiculing your brother) and were capable of greater standardization. Levitt concluded though that the most effective suggestion for inducing an emotional state was characterized by:

- a. content which was not personal nor based on amnesia,
- b. short duration (no longer than 2 minutes),
- c. a number of synonyms for the emotional state,
- d. repetition and paraphrasing of key words and phrases,



## Appendix A (Cont.)

- e. no clues which would lead to believe he was in an artificial state.

Using such a suggestion to arouse anxiety, they retested their Ss while still hypnotized. They found as they predicted significant changes in all psychological and physiological measures except plasma hydrocortisone level and concluded that they had successfully aroused anxiety.

Levitt, Den Breeijen, and Persky's study is not an example of psychopathology created by activating the Ss own defensive mechanisms as Reyher (1962) points out. However their type of direct suggestion could be used just as a paramnesia to arouse strong emotions. The post-hypnotic arousal of these emotions might well produce psychopathology. A direct suggestion used in this manner would conform to Reyher's paradigm.

APPENDIX B

GUIDE FOR SCORING CATEGORIES OF MENTAL  
BLOCKING DURING ASSOCIATIONS AND  
HOSTILE ASSOCIATIONS

The definitions are illustrated with examples  
chosen from actual experimental protocols.

I. Mental blocking during association.

A. Incomplete, unfinished associations:

my roommate, oh she's just, my old roommate

B. Repeated words:

walking around, around, around campus

C. Reports of blank minds, confusion, trouble remembering or associating:

waiting outside Jensen, I forget what we were  
going to see

that's funny, I just thought it doesn't seem  
to associate the I want it to nothing, just  
nothing

all mixed up, don't know whether it's good  
or bad

## Appendix B (Cont.)

## II. Hostile Associations.

## A. Hostility Level 1: Direct, unsocialized.

Directly expressed hostility in a way contrary to conventional social values and anger only if it involves the physical expression of violence.

## 1. Pushing, bumping people:

push, above, crowd, bump, squeeze

people getting bounced around like cattle  
going to the slaughter house

when I was coming over here I about got  
run over by a football player

## 2. Fighting, injuring, killing:

a mass of Chinese soldiers, running  
chaotically, killing

boxers pounding the hell out of each other  
for no good reason, just up there pounding  
away, being stupid, cutting each other up,  
and killing each other, and knocking what  
brains they have out

I'd like to kick my sister square on the ass  
  
kids fighting

## 3. Crimes being committed:

A kid pushing over a bookstand, completely  
wrecking a bookstore

somebody stealing money from someone's purse

Appendix B (Cont.)

4. Antisocial acts:

yesterday in one of my classes the professor got all excited . . . and he started throwing pencils

somebody throwing out a safety line to someone who is drowning and pulling it in before he reaches it and just leaving that poor guy out there

somebody pulling the chair out from behind someone trying to sit down

B. Hostility Level 2: Direct, socialized.

Anger expressed without physical violence.

1. Angry words:

annoyed, hateful, anger, mean

2. Acknowledgement of angry feelings:

great big feeling of hate here

3. Expressions of dislike:

fresh milk from a cow . . . I didn't like it

my sorority house, wish I could get out of it

4. Derogatory statements:

baseball games with all those silly people sitting there

watch all the stupid people in the middle of the field

Appendix B (Cont.)

some of the weirdest boys over there  
something that is sickeningly sweet

5. Ridicule:

laughing at someone, ridicule

6. Swearing:

my roommate and that stupid ass she is  
going with, Oh God.

obnoxious asses, just obnoxious males

7. Arguing and complaining:

my father and me arguing

8. Anger directed toward the experimenter:

wish the Hell I could get out of this  
chair

I'm going to tell you and your experiment  
where to go in a minute

C. Hostility Level 3: Indirect-disguised and weak.

Associated with drive of anger but underlying  
hostile impulse is neither explicitly thought  
nor acted upon.

1. Competition, opposing teams, sports:

sport boxing

a bullfight

completion, opposing teams

Appendix B (Cont.)

2. Police, soldiers:

police siren

soldiers standing in line at attention

3. Disasters, accidents:

a fire in a field of sugar cane

Negro workers revolting

my roommate's house got ripped up by a  
tornado

volcanoes erupting

4. Illness, injury, natural or accidental deaths:

all I can see is somebody getting sick

cattle going to a slaughter house

5. Dropped, broken, damaged:

tear, break, damaged, break, shatter

I dropped my necklace down the sink

It seems like every 3 days someone is  
putting a baseball through the window  
at the dorm.

6. Remote expressions of conflict, destruction,  
or violence:

traffic jams

dollar bills flying out of the window

somebody pushing a boulder off a cliff.