

THE EFFECTS OF STIMULUS DEPRIVATION ON STORIES
TOLD TO THEMATIC APPERCEPTION TEST DESCRIPTIONS

by

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B.A., University of British Columbia, 1959

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS

in the Department

of

Psychology

We accept this thesis as conforming
to the required standard.

THE UNIVERSITY OF BRITISH COLUMBIA

September, 1960

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Abstract

The purpose of this study was to investigate the hypothesis that stimulus deprivation leads to anxiety which, in turn, causes cognitive behavior to become impaired and disorganized. This hypothesis, which is derived from a model recently developed by Kenny (1959), assumes that anxiety produces a disruption in a person's schema (imaginative trains or sequences of thought) causing his schemata to be more constrictive and his cognitive functions, therefore, more disorganized. In addition, it is predicted that, as TAT pictures become more drive-structured (and, therefore, less ambiguous), anxiety will constrict the schemata of strong drive subjects, and the richness of their stories for a given drive should consequently decrease.

In this study twenty female subjects in an experimental group were completely deprived of pattern vision and audio and tactual stimulation was partially eliminated. At the end of a twenty minute accommodation period members of both the experimental and the control groups were asked to tell stories around descriptions of six TAT cards which were arranged into three groups according to the amount of aggression found in each description (i.e. low, medium and high in aggressive content).

The anxiety aroused by the experimental conditions was expected to be manifested in the stories of the experimental group. These stories would show greater disorganization, conflict and stereotypy than those given by a control group. Subjects in the experimental group would

also introduce more aggression in stories given in response to medium aggressive cards, less aggression on high aggressive cards and the same amount as the control group in response to low aggressive cards. In addition, they would rate themselves higher on an anxiety questionnaire than would the subjects in the control group.

Since eight out of fifteen predictions were borne out by the analysis, the results are interpreted as being partially in support of Kenny's model - that is, since experimental subjects rated themselves higher on the anxiety questionnaire, and introduced more aggression in their stories to the medium aggressive descriptions, it is believed that the condition of stimulus deprivation was successful in producing anxiety, which, in turn, caused a disruption in cognitive functioning. This disruption was witnessed in the organization and presentation of the stories given by the subjects in the experimental group.

ACKNOWLEDGMENT

I would like to express my sincere appreciation to Professor D.T. Kenny who not only proposed the subject of my thesis to me and suggested the methods by which to proceed with the research but also gave me a great deal of guidance and encouragement during the course of this study. I am also extremely grateful to Professor E.S.W. Belyea, Professor Reva Potashin and Professor W.H. Read for their help and valuable suggestions, and to Professor D.L.G. Sampson, Mr. A.E. Cox, and Mr. A.F. Shirran for their time, and assistance in obtaining subjects for various phases of the study. I wish to thank these, and other members of the Faculty and Staff in the Department of Psychology for their interest and kind support while I was doing this research.

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CHAPTER I

STATEMENT OF THE PROBLEM

Although a few pioneering studies have investigated the relationship of stimulus deprivation to performance, little has been done to provide a model for prediction, linking the particular conditions of stimulus deprivation to intervening variables and thence to level of performance on a task. There is, indeed, some evidence which gives support to the idea that given a condition of external stimulus deprivation, a decline in performance on a specific task will ensue, but because of the nature of the studies producing this evidence it is still very difficult to make any definite statements about the crucial variables influencing performance and, consequently, to make any clear-cut predictions.

The purpose of this research is to investigate the hypothesis that stimulus deprivation will lead to anxiety, and as a consequence of the anxiety, cognitive behaviour will become impaired and disorganized. The model from which this hypothesis is derived is one recently developed by Kenny (1959).

This model is primarily designed to provide the impetus for a series of integrated studies on the stimulus properties of the Thematic Apperception Test cards. The

central core of this model consists of stating two interdependent problems: (1) "...the critical relevance of the stimulus properties of the pictures in the determination of the thematic stories", and (2) "...the level of personality functioning reflected in thematic apperceptive stories." Several hypotheses, as well as suggestions for the means of studying these hypotheses, result from awareness of these two problems. One assumption, that sensory stimulation (i.e. a TAT picture) after being categorized ("perceived" or "identified") is assimilated into schema (imaginative trains or sequences of thought), has been expanded into a theory of "personality revealingness" and becomes pertinent to the study presented here.

It is assumed by the model that anxiety can produce a disruption in a person's schema making his schemata more constrictive. As a direct result of the constriction, therefore, cognitive behaviour will be disorganized. In addition, the model makes some interesting predictions concerning the interaction effects of anxiety and the cue properties of TAT cards. Specifically, the theory predicts that high-drive subjects will reveal themselves more on a set of medium-drive structured TAT cards than on either low-or high-drive structured cards. The rationale for this prediction rests on the supposition that there is a curvilinear relationship between stimulus ambiguity and

personality revealingness for high-drive subjects. In other words, as picture stimuli become more drive-structured (and therefore, less ambiguous), anxiety will constrict the schemata of strong drive subjects and the richness of their stories for the given drive should decrease.

In the present experiment, subjects in the experimental group are deprived of normal pattern vision, and auditory and tactual stimulation. According to the model, this experimental operation should arouse anxiety and the constriction in the experimental subjects' schemata should be witnessed in terms of: (1) greater difficulty in organizing and presenting stories told to descriptions of six TAT cards (relative to a control group) and (2) in comparison with the low-drive control group, greater manifestation of aggression in their stories to medium-drive structured cards, relatively less on the high-drive structured cards and the same amount on the low-drive structured cards.

More specifically, the stories told by members of the experimental group, when compared to the control group are predicted to show:

A. Greater disorganization and stereotypy through the following measures:

- (1) More disorganized, as measured by: -
 - (a) uncertainty of story or its outcome
 - (b) loosely structured stories

- (c) little elaboration
 - (d) slower reaction time to begin first stories
 - (e) slower reaction time to begin all stories
- (2) More conflictful, as measured by: -
- (a) ratings of distressing and conflictful elements in the story
 - (b) number of ambivalent constructions
- (3) More stereotyped, as measured by: -
- (a) briefness - fewer number of words in each story
 - (b) use of short sentences - number of words per story divided by number of sentences
 - (c) number of word and phrase repetitions
- B. More aggression, in response to medium aggressive cards.
- C. Less aggression, in response to the highly structured cards, and no difference between their stories and those of the control group in response to the low aggressive cards.
- D. They would also rate themselves higher on a questionnaire designed to measure anxiety.

CHAPTER II

REVIEW OF THE LITERATURE

In spite of the great interest shown in the McGill studies on deprivation, there are actually few published studies that have been conducted on the relationship of stimulus deprivation to behaviour change.

The first study (Bexton, Heron & Scott, 1954) to appear from the McGill laboratory was designed to investigate the effects of prolonged perceptual isolation on cognitive functioning. Twenty-two subjects were paid \$20 to lie on a comfortable bed in a partially sound-proofed cubicle 24 hours a day. They wore translucent goggles which transmitted diffuse light, gloves and cardboard cuffs extending from below the elbow to beyond the fingertips. They were therefore completely deprived of pattern vision, and auditory and tactual stimulation were partially eliminated. The length of time that the subjects remained under these conditions varied from two to three days.

As a result of these conditions, the average performance of these subjects, as compared with a control group, was inferior on such tasks as problem solving, block design and the Wechsler Digit Symbol Test. They also reported both auditory and visual hallucinations, a feeling of "otherness"

and bodily "strangeness", some disturbance of visual perception, as well as an unpleasant restlessness and a marked inability to think systematically and productively.

Two very similar studies were conducted at McGill in 1954 and 1956. The first, by Hebb, Sheath and Stuart was designed "to determine the generalized effects of a sharp loss in the auditory sphere alone", and to study "the extent of individual differences in response." (p. 152). The six subjects were paid to wear earplugs for three days and to keep a diary recording changes they observed in themselves during this period. The physical irritation from the plugs, which was observed to affect only one person considerably, was discounted as having any major effect on other members of the group.

As a result of the partial deprivation of audio stimulation, one subject felt a lowering in motivation to study. Other subjects experienced irritability and personal inadequacy, as well as a desire to keep to themselves and difficulty in gauging the loudness of their voices.

In the latter study made by Heron, Doane and Scott, the experimenters themselves served as subjects. Making use of the same apparatus as that employed by the 1954 study of Bexton, Heron and Scott, the three experimenter-subjects experienced the following effects after three days of deprivation of pattern vision: "(1) there was fluctuation,

drifting and swirling of objects and surfaces in the visual field; (2) the position of objects appeared to change with head or eye movements; (3) shapes, lines, and edges appeared distorted; (4) after-images were accentuated; (5) colours seemed very bright and saturated, and there seemed to be an exaggeration of contrast phenomena." (p. 18)

Walters and Karal (1960) were interested in examining "the claims by some psychologists that there are social drives analogous to physiological deficit states in their effect on human behaviour." (p. 105) (Initially, then, they were more interested in the effects of social deprivation than in the effects of sensory deprivation found in the preceding studies.) One of the predictions they derived from the claim concerning social drives was that if social deprivation gives rise to a drive state, which has an energizing factor, the rate of verbal responsiveness (an indice of social responsiveness) would increase. Socially deprived subjects would then emit opinion-statements faster than socially satiated subjects. They also investigated the hypothesis that social reinforcement would be more effective following social deprivation than following social satiation and that, therefore, socially deprived subjects would condition more rapidly than socially satiated subjects. This would be manifested through an increase in the rates at which deprived subjects gave opinion statements.

As a third means of studying the claim, the following rationale was used: - "There is some evidence - by no means conclusive - that habit strength, at least when biological functions are involved, is influenced by the amount of prior deprivation (Bindra, 1959). If the analogy between social deprivation and food or sex deprivation is pushed to its limits, one might expect a specified number of reinforcements to increase the habit strength of the conditioned responses of deprived Ss more than that of the conditioned responses of satiated Ss." (p. 93) An extinction period was included to provide some measure of habit strength, therefore, where deprived subjects were expected to respond more rapidly than satiated subjects.

Perhaps the best way to present the procedure used by Walters and Karal to test these hypotheses, and the results obtained, is to quote from the summary of the experiment: (p. 105-106)

In the first experiment, 12 adult Ss were interviewed three times, once under each of the following conditions: social deprivation, social satiation, and non-deprivation (an uncontrolled condition). Ss rate of verbal response, both over the total period of the interview and while speaking, were selected as indices of verbal responsiveness. No confirmation was obtained of the prediction that the mean rate of response of Ss under the three conditions would vary as follows: deprivation > nondeprivation > satiation.

In the second experiment, 36 freshmen were interviewed concerning their reactions to university life. Before the interview commenced, 18 Ss were exposed to a brief period of social deprivation; the remaining Ss were engaged in conversation by two graduate students. After the operant level of each S for making statements of opinion had been estimated, half the deprived

and half the satiated Ss were reinforced each time they gave an opinion statement. During this phase of the interview, all Ss gave 20 opinion statements. During Phase 3 of the interview, all Ss gave 10 unreinforced opinion statements. Each S was then left alone for 5 min. After this interval, the interview was resumed for a further 5 min. period, during which no opinion statements were reinforced.

Deprived and satiated Ss did not differ in their operant level of making statements of opinion. During the second phase of the interview, satiated Ss responded in the predicted manner; those who were reinforced gave opinion statements at a faster rate than those who experienced no reinforcement. Results for later phases of the interview seemed to be primarily a function of the phase during which the reinforcement variable was introduced.

The results did not substantiate the concept of social drive; the authors suggested, therefore, that "an analogy between social deprivation and sensory deprivation might be more profitable than one between social deprivation and organic deficit states." (p. 106)

The foregoing studies were designed only as observational studies investigating the general effects of stimulus deprivation on cognitive and perceptual functions. However, for the sake of clarifying the stage reached by this area of interest, some of the methodological problems raised by these studies should be mentioned. First of all, only one of the McGill studies employed a control group. Secondly, these studies made no systematic attempt to investigate the influence of degrees of deprivation on various tasks. Thirdly, the studies did not isolate the crucial variables in the deprivation situation which produced the results.

About all one can say, therefore, is that the total experimental situation in some way or other produced the obtained results.

In summary, a great deal more investigative work on various kinds of deprivation conditions is required before the detailed relationships between stimulus deprivation and behaviour change are isolated.

CHAPTER III

METHOD

Procedure prior to the experiment

Because of the nature of the experimental conditions, it was necessary to give verbal descriptions of the TAT cards to both the experimental and control groups rather than present the cards themselves. Lebo and Harrington (1957) found that method of presentation (verbal or visual) made little difference in the emotional tone, level of response and common themes given by subjects under these conditions. Prior to the experiment proper, therefore, fifteen of Murray's descriptions of TAT cards were selected from the total number as containing a certain amount of aggression. Each member of a class of 131 first year Psychology students was asked to rank order these descriptions according to the amount of aggression shown in each. The descriptions, which were arranged (to prevent position effects) so that there were four complete sets of differently and randomly presented scenes, were of pictures 1, 3BM, 4, 6BM, 8BM, 8GF, 9BM, 9GF, 11, 12M, 15, 17GF, 18BM, 18GF and 20. As there were four sets, it was so arranged that each student received a differently ordered series of fifteen from his neighbour to make copying and comparing difficult.

The instructions (see Appendix A) asked the subjects to rank order the verbal descriptions in terms of the amount of hostility expressed in each. A list was provided of thoughts or attitudes illustrating hostility. These were categorized as physical hostility acts, hostile attitudes and verbal hostility. Since the class of 131 students was composed of ninety-seven males and thirty-four females, a study was made to determine whether there was sufficient correlation in the median rankings given by the two sexes to justify combining their data. The correlation between the rankings of males and females was .98, significant at less than .01 level of significance. The rankings of the two sexes, which are reported in Table 1 were therefore combined. The rank order of the cards, from least aggressive to most aggressive, was as follows: 9BM, 8GF, 1, 20, 11, 6BM, 9GF, 17GF, 15, 12M, 3BM, 4, 8BM, 18BM, 18GF. Table 2 reports the median values for the rankings of the cards along with the first and second quartile figures, and the differences between these quartiles.

Six descriptions were chosen from the fifteen: the two which were ranked as showing the least hostility, (9BM - "Four men in overalls are lying on the grass taking it easy."; and 8GF - "A young woman sits with her chin in her hand looking off into space."), the two which ranked highest in hostility, (18BM - "A man is clutched from behind

TABLE 1

Rank Order Given by 131 Subjects (34 females, 97 males)
According to Amount of Aggression Expressed in
Each of Fifteen TAT Card Descriptions

Card No.	Rank order given by females (n = 34)	Rank order given by males (n = 97)	All (n = 131)
9BM	15	15	15
8GF	14	14	14
1	13	13	13
20	12	12	12
11	9	11	11
6BM	11	10	10
9GF	8	9	9
17GF	10	8	8
15	7	7	7
12M	6	6	6
3BM	5	4	5
4	3	5	4
8BM	4	3	3
18BM	2	2	2
18GF	1	1	1

N.B. The rank order reports descriptions of cards showing
least aggression to cards showing most aggression.

TABLE 2

Median Values for Card Rankings, First and Third
 Quartile Values, and the Differences Between
 First and Third Quartiles

Card Number	Median	Q ₁	Q ₃	Q ₃ - Q ₁
11	9.36	6.33	11.83	5.50
1	12.03	9.55	13.28	3.73
4	5.21	2.58	6.59	4.00
18BM	2.43	1.77	3.79	2.02
6BM	9.53	7.55	11.25	3.70
17GF	8.14	5.72	11.69	5.97
18GF	1.18	.84	1.52	.68
12M	6.04	4.04	8.73	4.68
8BM	5.47	3.36	7.73	4.36
9GF	9.07	6.75	11.38	4.63
20	10.14	8.02	11.83	3.81
15	7.09	5.22	9.43	4.21
8GF	13.66	12.61	14.20	1.60
3BM	4.70	3.11	8.75	5.14
9BM	14.87	14.55	15.19	.63

by three hands. The figures of his antagonists are invisible."; and 18GF - "A woman has her hands squeezed around the throat of another woman whom she appears to be pushing backwards across the banister of a stairway."), and two, which fell in the seventh and eighth places, which were considered to be between these two extremes, (17GF - "A bridge over water. A female figure leans over the railing. In the background are tall buildings and small figures of men."; and 15 - "A gaunt man with clenched hands is standing among gravestones."). That is, the rank order of the six descriptions that were chosen for the study was, from least to most aggressive, 9BM, 8GF, 17GF, 15, 18BM and 18GF.

Having thus determined the six cards that were to be used, the descriptions of these cards were given to a different class of fifty-one students who were asked to rank them according to the amount of aggression present in each. This was to provide a check on the stability of the ordering when the other nine TAT card descriptions were removed. Instructions given to this group were identical to those used previously. (See Appendix A) The rank order obtained from this class corresponded exactly with the previous ranking, (i.e. 9BM, 8GF, 17GF, 15, 18BM, and 18GF.)

Subjects

The subjects were forty female volunteers from first year Psychology classes at the University of British Columbia

who were assigned, at random, to the experimental and control groups. The mean age and standard deviation of members of the experimental group were 18.25 and .85, respectively. Similar values for the control group subjects were 18.03 and 1.06.

Apparatus

In order to achieve a homogeneous visual field similar to that achieved by Hochberg, Triebel and Seaman (1951), each member of the experimental group was required to wear eyecaps which were cut from table-tennis balls to fit the shape of the eye socket. These were held in place with Elastoplast Adhesive which also eliminated visual cues from the edges of the eyecaps. A light was projected through a red filter from SVE Skyline Model B (with 300 W. bulb and f3.5 lens) at a distance of four feet from where the subject was seated. Light diffusion effects were decreased through the use of black screens which extended from either side of the projector to the cushioned, foam rubber headrest. The subject placed her chin on this headrest, which was then adjusted according to her height. Tactual stimulation was cut down as much as possible through holding the limbs away from the body by using foam rubber cushioning under the arms, which fell just away from the side of the body, and placing the feet on blocks which were spaced in such a way as to keep the legs from touching each other; the fingers were fanned

apart. Audio stimulation was effectively eliminated through the use of Elnahar Antiphones - a plastic which can be molded to fit the outer ear space.

The stories told by both groups were recorded by a concealed wire recorder.

Experimental procedure

In order to keep the situation itself as ambiguous as possible, subjects in both groups (who were introduced into the experimental situation one at a time), were advised that no information about the procedure or aim of the experiment would be given to them.

The subjects in the experimental group were seated at a table and the necessary apparatus, i.e. eyecaps, ear-plugs and cushioning, was put on them. To allow time for the condition of stimulus deprivation to have its full effects, members of this group were then asked to sit as still as possible and to keep their eyes open for twenty minutes during which time they were not allowed to talk. (See Appendix B for exact instructions). Every possible step was taken to insure a minimum amount of noise and distraction. The room was darkened and the projector was turned on simultaneously. The "accommodation period" of twenty minutes was timed from this point.

For the same length of time, twenty minutes, each

member of the control group was required to rate pictures of various types of fashions - dresses, coats, suits, etc., according to their desirability. This particular task was designed to allow the same conditions, extraneous to the experimental conditions, which were affecting the experimental group to affect the control group in the same way. As it was meant to be as engrossing and yet as anxiety-free as possible, the subjects were informed that there were no right or wrong answers and that they were to take their time. Appendix D contains these instructions.

At the end of the twenty minute accommodation period, members of both groups were given further instructions concerning their approach to the TAT stories. Members of the experimental groups were still under conditions of stimulus deprivation, except that they were spoken to in a loud voice so that hearing the instructions was possible. Subjects were required to make up as dramatic a story as possible for each of the descriptions, incorporating into them (1) the events leading up to the scene, (2) what is happening at the moment, (3) what the characters are feeling and thinking, and (4) the outcome. They could make up any kind of story they pleased, speaking their thoughts as they came to mind. The exact instructions are given in Appendix E.

Each description of a TAT card was read twice to the subject and, at the end of the second description, she

was told to begin her story. The card descriptions were presented in random order, each subject having a different order so as to minimize serial position effects. The subject's stories were wire recorded. In order to eliminate questions by the control subjects concerning method of recording, the experimenter appeared to be jotting down notes as the subjects told their stories.

After completing the six stories, the subjects in the experimental and control groups were asked to rate themselves on an anxiety questionnaire which was designed to assess the following aspects of anxiety: fear, tension, and desires to escape or avoid the experimental situation. A copy of the questionnaire is found in Appendix F.

As a further means of obtaining additional cues and information regarding their reactions to the experiment, subjects were asked questions regarding such things as their thoughts during the experimental accommodation period, the length of time they thought they were sitting there, what they thought the experiment was about, and so forth.

CHAPTER IV

ANALYSIS OF THE DATA AND DISCUSSION OF RESULTS

This research was an attempt to discover whether (1) conditions of stimulus deprivation produce anxiety, and (2) as a result of this anxiety, difficulty in organizing and presenting their stories will be more evident in those stories given by the experimental group than in those given by the control group. The analysis of the data and a discussion of the results will therefore be reported under the following headings:

- A. Questionnaire analysis
- B. Analysis of the stories for organization and presentation
- C. Analysis of the stories for aggression

A. Questionnaire analysis

Before the results of the experiment proper are examined, it is desirable to see if the experimental operation of stimulus deprivation actually did arouse anxiety in the experimental situation. The anxiety questionnaire results provide a check on this matter.

(1) On the basis of the total scores to the twelve statements significance of the mean differences was computed and the results as given in Table 3.

TABLE 3

Significance of the Difference Between the
Experimental and Control Subjects on the
Anxiety Questionnaire

Measure	Exp Mean	Con Mean	SE Diff	t	p
Individual scores on the anxiety questionnaire	31.20	21.15	2.28	4.41	.01

The experimental subjects manifested significantly more anxiety than the control subjects, offering some support for the belief that the experimental operation of stimulus deprivation did arouse anxiety.

(2) A chi-square analysis was performed to test for the significance of differences between the two groups in their ratings on the individual items of the anxiety questionnaire. For each question the rating scores from the experimental and control groups were combined and dichotomized at the median. Table 4 presents the obtained chi-squares for each of the questions, along with the frequencies below and above the median anxiety rating. It will be observed from Table 4 that six of the twelve items produced significant chi-squares. Amongst those questions which showed no significant differences between the two groups are questions 2, 3, 8, 9, 11, and 12. The questions which evoked significantly different ratings from the two groups were questions 1, 4, 5, 6, 7, and 10. The level of significance for this study, which was a one-tailed test of significance was at .05 with 1 degree of freedom.

Discussion of results of questionnaire analysis

In view of the fact that half of the statements on the questionnaire were able to discriminate between the two groups, the question arises whether there was a difference in the type of statements that discriminated from those

TABLE 4
Significance of Differences on the Individual
Items of the Anxiety Questionnaire

Question		Above Median	Below Median	Chi-Square
1	Exp	15	5	6.42
	Cont	6	14	
2	Exp	6	14	.13
	Cont	4	16	
3	Exp	10	10	.41
	Cont	7	13	
4	Exp	5	15	3.58
	Cont	4	16	
5	Exp	17	3	12.22
	Cont	5	15	
6	Exp	7	13	3.91
	Cont	1	19	
7	Exp	14	6	6.42
	Cont	5	15	
8	Exp	14	6	.94
	Cont	10	10	
9	Exp	9	11	.43
	Cont	6	14	
10	Exp	19	1	8.03
	Cont	10	10	
11	Exp	12	8	2.53
	Cont	6	14	
12	Exp	11	9	2.60
	Cont	5	15	

that did not. To some extent, perhaps, there was. It may well have been the differences in tone of the crucial word or words contained in each sentence which determined the way in which each subject ranked herself. That is, within the statements which evoked no significant difference between the groups in their ratings, there may have been a stronger or more definite meaning conveyed to the subject than those which achieved significant differences. Table 5 lists the two sets of statements with the crucial words underlined for easy comparison.

The ratings may have been strongly influenced, for example, by the social desirability variable, that is, the desire to give socially acceptable answers. This can be exemplified by questions 1 and 3, 2 and 4, and 5 and 9 where the word "terminate" is probably associated less with "undesirable" elements in everyday life than "avoid." Words like "nervous", "worrying", and "restlessness" have a much more acceptable connotation - and are probably found more frequently in everyday conversation, than words like "anxiety", "fear", "emotional feelings" and "tension". The difference in definiteness between statements 6 and 12 (although they are similar in meaning) might account for the fact that one allowed for significant differences in responses and the other did not. "I would not mind being a subject in a similar kind of experiment" may have meant

TABLE 5

Statements on the Anxiety Questionnaire
Which DID and DID NOT evoke significant
Differences Between the Two Groups

Question No.	Statements evoking significant differences	Question No.	Statements NOT evoking significant differences
1.	I <u>liked</u> participating in this experiment.	3.	I <u>disliked</u> some of the things I had to do in this experiment.
4.	I believe I was more <u>nervous</u> than others during this experiment.	2.	I experienced some <u>anxiety</u> or <u>fear</u> during the experiment.
7.	I found myself <u>worrying</u> about something during the experiment.	11.	I feel that my performance in the experiment was affected by my <u>emotional</u> feeling at the time.
5.	I had a desire to <u>terminate</u> the experiment before it was over.	9.	I would have <u>liked</u> to <u>avoid</u> certain parts of this experiment.
6.	I <u>would not mind</u> being a <u>subject</u> in a similar kind of experiment.	12.	I <u>would volunteer</u> for a similar kind of experiment.
10.	I had periods of <u>restlessness</u> during the experiment when I found it hard to sit still.	8.	I performed under some <u>tension</u> during the experiment.

to the subject that to show no objections could mean that she would be asked to participate in a similar kind of experiment. Whereas "I would volunteer" gives the subject the opportunity to give a socially commendable answer - without the actual commitment to participate in another experiment.

Assuming the construct validity of the questionnaire, it is believed that members of the experimental group did experience anxiety as a result of the experimental conditions. This was shown through the analysis of both the total scores to the twelve statements and the individual statements. The fact that six of the twelve statements were unable to produce significant differences between the responses of the two groups was possibly the result of the influence of social expectancies causing the subjects to "pull in their horns" on certain of the questionnaire items. Of course, this latter speculation needs to be verified before its plausibility can be accurately assessed.

B. Analysis of the stories for organization and presentation

Based on the expected difference in performance efficiency between the experimental and control groups, the analysis of the stories was designed to discover whether the stories obtained from the experimental group, compared

with the control group stories, would be: (1) more disorganized, (2) more conflictful, (3) more stereotyped.

The following categories were analyzed through the use of the t test for significance between means at the .05 level of significance and the results are given in Table 6. Since the predicted direction of the mean results were made in advance of the data collection, a one-tailed test of significance was used.

(1) More disorganized, as measured by:

(a) Uncertainty of story or its outcome

The scoring procedure was simplified by dividing the stories into (1) body, and (2) outcome. One point was given for every uncertain element occurring in the body of the story (each uncertain element, however, was counted only once even though it recurred), and one point for an uncertainty in the outcome. Also omission of outcome was scored with one point, as was the inclusion of alternative outcomes. (See Appendix G for amplification of scoring procedure). It was expected that the mean of the experimental group would exceed the mean of the control group.

(b) Loosely structured stories

It was required of the subjects that they incorporate certain elements into their stories: i.e. what the events were that led up to the scene, what is happening at the moment, what the characters are feeling and thinking, and the outcome. A well-structured story, therefore, would

TABLE 6
Significance of Differences Between
Experimental and Control Subjects

Measure	Exp Mean	Con Mean	SE Diff	t
Uncertainty of story or its outcome	1.43	.81	.23	2.71**
Loosely structured stories	3.82	4.72	.39	2.34**
Little elaboration (transcendence)	6.84	8.78	1.73	1.12*
First story reaction time	16.55	6.05	4.01	2.68**
Reaction time of all stories	8.12	6.61	1.52	.99
Number of words per second	1.94	1.73	.62	.34
Distressing and conflictful statements	.57	.29	.15	1.91**
Ambivalent constructions	.06	.04	.03	.57
Number of words in each story	66.71	88.37	23.32	.93
Average number of words per sentence	15.76	15.31	1.07	.42
<u>Number of word repetitions-</u> <u>number of words</u>	.061	.039	.0187	1.18*

* Significant at less than .05 level of significance
** Significant at less than .01 level of significance

have each of these elements incorporated in logical sequence, with "what is happening at the moment" and "what the characters are feeling and thinking" as interchangeable elements. Thus, one point was given for each element that was present in the story, the maximum number being five points (a separate point each for "feeling" and "thinking"); and one point was awarded for having the events leading up to the situation followed by what is happening at the moment (and/or what the characters are feeling and thinking) and one point for the latter elements being followed by the outcome. The maximum number of points for the category, therefore, was seven (five for incorporating all elements, two for logical sequence). Appendix G contains a more detailed discussion of scoring procedure. Here the mean of the control was expected to be greater than that of the experimental group.

(c) Little elaboration

Following a transcendence scheme laid down by Edith Weisskopf (1950), a count was made of the number of statements which went beyond pure description. These were statements which referred to past or future events, the relationship between the two or more people, the ascribing of emotions, thoughts and desires as well as verbalizations to the story characters, etc. Weisskopf's criteria were modified only slightly to account for the fact that the subjects were unable to see the pictures and therefore any

pictorial descriptions related by them which went beyond Murray's descriptions were also considered as transcendent. For example, a story given to 18BM begins with - "This man's probably walking along the street. Probably quite well dressed." Although "quite well dressed" would not be included as a transcendent statement in Weisskopf's index, which was designed for visual presentation, it is in this study as it goes beyond the description already given to the subject. The control group mean for this category was expected to be greater than the experimental group mean.

(d) Slower with regard to reaction time to begin first story

A note was made of the time that elapsed between the last word of the first description which was read to the subject and the first word uttered by the subject - whether it was the first word of the story or the first word of an extraneous comment or question preceding the story.

(e) Slower with regard to reaction time to begin all stories

The amount of time which elapsed between the last word of each description read to the subject and the first word uttered in response to each of these descriptions was recorded.

(f) Longer time to tell stories - fewer number
of words per second

Further note was made of the time it took the subject to tell her story - this time length including the first to last words of the story per se. Extraneous comments made before the beginning of the story were not considered part of the story. This time length was divided into the number of words per story to obtain the number of words per second.

(2) More conflictful, as measured by: -

(a) Ratings of distressful and conflictful
elements in the story

A point was awarded for each element of distress found in a story. "Distressing" elements were of two sorts: (1) comments and interjections which showed distress - (for example, "I don't really have any thoughts, that's the trouble."), corrections and inability to complete sentences, and (2) obvious distress manifested by the subject through her main character - (for example, "She doesn't know why she feels this way." - the main character is not enjoying herself at a party and there is a vague feeling of uneasiness for which the subject is unable to account), and apparent inability to resolve problems - ("He doesn't know what kind of outcome to have.").

Another count was made of the number of conflicting elements that is, the number of mutually incompatible

situations - which were found in a story. The total score for this category was the result of adding distressful and conflictful elements together. The experimental group, therefore, was expected to receive the higher mean score.

(b) Number of ambivalent constructions

"Ambivalence" is defined by Webster as "simultaneous attraction toward and repulsion from...an action." One point was given, therefore, for every construction which showed a desire, on the part of the subject, to avoid a situation in the story that she has stated and which, in addition, fits well into the sequence and content of the story. For example, "And this first woman - although she appears to be strangling the other woman, she could be, perhaps, is either holding her back, or maybe she's dragging her....This one that's falling over the banister is losing her balance and the other woman's either strangling her or trying to save her." "Strangling" is an unpleasant word and the subject is obviously trying to avoid using it. The experimental group, it was predicted, would have the greater number of ambivalent constructions in their stories.

(3) More stereotyped, as measured by: -

(a) Briefness - fewer number of words in each story

A count was made of the number of words in each story. Because it was expected that subjects in the

experimental group would show greater proneness to repetition than control subjects, repeated words were excluded from this count as were corrections and statements which were extraneous to the story. Apostrophed words, i.e. nouns plus abbreviated verbs, were counted as two words. (Appendix G contains an example of a "word" count and a "repeated word" count.)

(b) Use of short sentences - average number of words per story divided by average number of sentences.

Owing to the run-on nature of the stories, two devices were used to determine what constituted a sentence - (1) the voice inflections used by the speaker, and, if these weren't helpful, (2) the idea of the sentence as "a complete thought". A point was awarded for each of the sentences, and here, again, as far as the word count was concerned, extraneous comments, and repeated words were excluded from the word count.

(c) Number of word or phrase repetitions

For ease, and clarity in determining what was to be included in this count, every word (except those found in the extraneous comments), which was not included in the "number of words" count was included in this analysis. (See Appendix G for example.)

Discussion of the results of the analysis of the stories
for organization and presentation

The means for the experimental and control group scores obtained in the preceding categories were analyzed through the use of the t test for significance at the .05 level of significance (one-tailed test) and the results are summarized in Table 6. The general finding is that there was some degree of difference shown by the experimental group relative to the controls in their ability to organize and present their stories.

The six predictions which were borne out by the analysis were that members of the experimental groups would show (1) greater uncertainty in telling their stories and in giving outcomes, (2) greater difficulty in structuring their stories, (3) less inclination toward elaboration, (4) that they were more prone to include distressful and conflictful elements in their stories, (5) that they were more inclined to repeat words and phrases, and that they would show (6) a longer reaction time before telling their first story.

It is believed, then, that the condition of stimulus deprivation did have some effect on the organization and presentation of the stories given by the control group. The fact that some of the predictions were not supported by the analysis can be interpreted as a fault in the predictions

and/or in the measuring devices. In addition, it may be that members in the experimental group itself, though perhaps reacting in a disorganized manner in a general way, showed individual differences in the nature of this disorganization. Thus, for example, the author observed that while there seemed to be no great difference in the speed with which subjects in the control group presented their stories from a "normal" presentation, some members of the experimental group spoke in an almost trance-like fashion and others raced through their stories. This probably accounts for the lack of significance between the two groups in the mean number of words per second - even though there was an apparent difference between the two groups at the time of presentation of stories.

It is difficult to account for the lack of significance between the two groups in the other categories i.e. (1) fewer number of words in each story (2) fewer number of words per sentence and (3) reaction time for all stories, although examination of the content of the sentences and stories suggests that perhaps rambling rather than short, curt sentences and stories resulted from the experimental condition. This rambling, while it was not predicted, might be expected as a residue of the free association which, by their own admission, the experimental subjects experienced during the accommodation periods (see Appendix H for the comments given by this group).

The fact that there was a significant difference between the two groups on the reaction time for the first story has some bearing on the interpretation of the lack of significance in reaction times for all the stories. It suggests that the effects of the accommodation period had a greater influence on the first reaction time than on the other five.

The reason for lack of significant differences between the means for the two groups in "the number of ambivalent constructions" category may be because the number of occurrences of ambivalent constructions for both groups was small. (The model, therefore, may have been wrong in predicting a greater number of ambivalent construction for the experimental group.)

C. Analysis of the stories for aggression

Following Kenny's model, it was expected that the stories given by the experimental group would show, relative to the controls:

(1) More aggression in response to the medium aggressive cards, (2) less aggression in response to the highly structured aggressive cards and (3) the same amount in response to the low aggressive cards.

Following Stone's TAT Aggressive Content Scale (1956), each story was considered individually, and placed in one of the following categories:

Category 0: non-Aggressive responses

Category 1: Verbal Aggression

Category 2: Physical Aggression

Category 3: Death Concepts

The story received a point which was equivalent to the category number. Thus, a story falling into Category 3 was awarded three points. If a story had a number of alternative themes, the theme falling into the highest single category was considered. Often the aggressive action is only implied, or is potential rather than actually carried out. In such an instance, a "P" (for Potential) is added to the category number and the point score that would have otherwise been attributed to the Category is cut in half. Appendix G contains an example of the scoring procedure.

To determine the reliability of the aggression ratings, story protocols of five experimental subjects and story protocols of five control subjects were selected at random and independently scored by the author and Dr. D. Kenny. In order to prevent identification of the group into which the subject fell, all stories were coded and randomly arranged for scoring. The Pearson correlation coefficient between the two raters was .88, significant at the .01 level. As a consequence of this high degree of reliability, Dr. Kenny's ratings on all the stories were used in the final analysis of the data.

Discussion of the results of the analysis for aggression

As a result of this analysis it was found that, following prediction, the experimental group manifested more aggression than did the controls on the medium aggressive cards - ($t = 1.81$). However, no significant differences between the means of the two groups was found on the high and low aggressive content cards as the t values were .59 and 1.28 respectively. Table 7 reports these results.

Since the most crucial prediction concerning the analysis for aggression, (i.e. that the experimental group would manifest more aggression than the controls on the medium-drive structured cards) was borne out in the analysis suggests, according to the model, that they were a high-drive group. That the other two predictions were not substantiated does not necessarily weaken this argument. It may be that the prediction to less manifestation of aggression on high-drive structured cards in the experimental groups stories should have taken into account the nature of the TAT description and its effect on the subject. Thus, the high aggressive content in the descriptions of the two high-drive structured cards might have caused members of the control group to become anxious which would have resulted in a constriction of their schemata. This, again according to the model, would in turn lessen the amount of aggression the control group would show in their stories to these cards and

TABLE 7
Significance of Differences on Aggression

	Exp Mean	Con Mean	SE Diff	t
High aggressive descriptions (Cards 18GM and 18GF)	3.40	3.55	.25	.59
Medium aggressive descriptions (Cards 17GF and 15)	3.03	2.47	.30	1.81**
Low aggressive descriptions (Cards 9BM and 8GF)	.20	.60	.31	1.28*

* Significant at less than .05 level of confidence
** Significant at less than .01 level of confidence

therefore would bring their mean score in this category close to that of the experimental group. Of course such a speculation would suggest that the model is not sufficiently refined to make unambiguous predictions in the absence of some independent means of assessing the degree of anxiety on the high-drive structured cards.

CHAPTER V

CONCLUDING REMARKS

As half (eight out of fifteen) of the individual predictions were borne out by analysis of the data collected in this research, the results of this experiment are interpreted as being partially in support of Kenny's model. To begin with, the conditions of stimulus deprivation were successful in inducing a decrement in performance efficiency on a verbal task. Six of the eleven predictions made as a result of the performance efficiency hypothesis were substantiated by the data. A second hypothesis was also substantiated. This was that if the experimental conditions aroused a high drive, and, consequently a restriction of schemata, this latter phenomenon would cause a dirth in expressions of aggression in experimental group stories told to medium-drive structured cards.

That this high drive was anxiety, which was the subject of a third hypothesis, was partially borne out by the questionnaire analysis. This third hypothesis was that anxiety is at least one of the crucial intervening variables which affects performance when the independent variable is stimulus deprivation. Since, however, the questionnaire was

constructed with a view to abstracting anxiety, and nothing else, other factors such as boredom or hostility may have influenced performance. For example, upon completion of their questionnaire, most of the members of the experimental group expressed feeling of restlessness and timelessness (they had an exaggerated idea of the length of time of the accommodation period). (Their reactions are included in Appendix H.) Consequently, while some of the subjects experienced anxiety as a result of stimulus deprivation, others might have experienced only a sense of boredom. Both conditions produce restlessness, as does the feeling of hostility which may have been another factor influencing their performance. There seems no reason to doubt that all three factors, anxiety, boredom, and hostility may have influenced performance in some way, affecting some subjects in an individual way, or interacting to affect other subjects in a different way.

In conclusion, however, it can be said with some degree of confidence that anxiety was produced by the condition of stimulus deprivation, and that, as a result of schematic restriction, it was manifested through (1) poor performance efficiency and (2) greater aggressive content in stories given to medium-drive structured TAT cards.

CHAPTER VI

SUMMARY

The purpose of this study was to investigate the hypothesis that stimulus deprivation leads to anxiety which, in turn, causes cognitive behaviour to become impaired and disorganized. This hypothesis, which is derived from a model recently developed by Kenny (1959), assumes that anxiety produces a disruption in a person's schema (imaginative trains or sequences of thought) causing his schemata to be more constrictive and his cognitive functions, therefore, more disorganized. In addition, it predicts that as TAT pictures become more drive-structured (and, therefore, less ambiguous), anxiety will constrict the schemata of strong drive subjects, and the richness of their stories for a given drive should consequently decrease.

In the present experiment twenty female subjects in an experimental group were deprived of stimuli in the following way:

- (1) A homogeneous visual field, similar to that achieved by Hochberg, et al, was induced through having the subjects wear eyecaps carved from table-tennis balls. A light was projected through a red filter and transmitted to the subject, who had her eyes open, through these eyecaps.

(2) Audio stimulation was eliminated through the use of a plastic which was molded to fit the outer ear space.

(3) Tactual stimulation was cut down as much as possible, even though the subject was seated in a chair, by keeping the arms, legs, and fingers apart, and extended away from the body by foam rubber cushioning.

The subjects in the experimental group were kept under these conditions for twenty minutes.

For the same length of time, twenty minutes, the twenty female subjects in the control group were required to rate fashions according to desirability - a task which was meant to be as anxiety-free as possible. This was in order to allow the same conditions, extraneous to the experimental conditions, which were affecting the experimental group, to affect the control group as well.

At the end of the twenty minutes members of both groups were required to tell stories around descriptions of six TAT cards (9BM, 8GF, 17GF, 15, 18BM and 18GF) which had previously been rank ordered, and assigned to three groups according to the amount of aggression found in each description (i.e. 9BM and 8GF in the low aggressive group, 17GF and 15 in the medium aggressive group, and 18BM and 18GF in the high aggressive group.)

The anxiety aroused by the experimental conditions was expected to be witnessed in terms of:

- A. Greater disorganization, conflict and stereotypy in the stories.
- B. More aggression, in response to medium aggressive cards.
- C. Less aggression, in response to the highly structured cards, and no difference between their stories and those of the control group in response to low aggressive cards.
- D. They should also rate themselves higher on a questionnaire designed to measure anxiety.

As a result of the analysis, six of the eleven predictions made around organization and presentation of the stories were borne out. The questionnaire analysis showed that the experimental group manifested significantly more anxiety through their total scores, and rated themselves higher on six out of twelve of the individual statements. They also manifested more aggression, as was predicted, in response to the medium aggressive cards. Since eight of the fifteen predictions made from Kenny's model were substantiated by the experiment, the results are interpreted as giving partial support to the model. The fact that some of the predictions were not borne out may be due either to certain weaknesses inherent in the model, or to the measures used to test the hypotheses.

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APPENDIX A

INSTRUCTIONS GIVEN TO A CLASS OF FIRST YEAR PSYCHOLOGY
STUDENTS ON RANKING FIFTEEN DESCRIPTIONS OF TAT CARDS

GENERAL INSTRUCTIONS

The purpose of this study is to scale a set of written descriptions of six different pictures along a dimension of hostility (aggression). For the purposes of the scale you will be asked to rank order the verbal descriptions in terms of the amount of hostility expressed in them.

You are to regard the written descriptions as descriptions of social pictures or scenes illustrated in a picture book.

Any of the following acts, thoughts or attitudes should be viewed as illustrating what we mean by hostility:

Physical hostility acts such as killing, assaulting, combative, destructive, shooting, hitting, self-injury;

Hostile attitudes such as being malicious, embittered, hating, quarrelsome, domineering, irritable, scorning, grouchy, surly, resentful;

Verbal hostility such as being venomous, abusive, threatening, over-critical, argumentative, quarreling, cursing, blaming, ridiculing and lying.

SPECIFIC DIRECTIONS FOR RANKING DESCRIPTIONS

The written descriptions have been arranged in a random fashion on the next sheet. You are to rank order them according to their degree of hostility. You first must read carefully the whole series of picture descriptions before making any rankings.

You may have a difficult choice to make between certain of the descriptions. Sometimes the ranking of one description before another will be easy. However, take your time and make your best ranking.

Now examine the descriptions and select the description which expresses the most hostility, anger or aggression. Before the description which possesses the most hostility place the number 1 in the brackets at the left. Examine the descriptions again, and decide which description you consider to be the next most expressive of hostility. Give this description a rank of two by writing 2 in the brackets before its description.

Please complete the following: Age: _____ Sex: _____
No. of yrs. of university: _____
(2)

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Continue this process for the remaining card descriptions until you have rank ordered them all from 1 to 15. Remember, please re-examine all the descriptions before you assign a rank.

After you have rank ordered all of the cards, you may wish to change your order. You may change your order. But cross out your old ranking and write your new rank number so that it may be easily identified.

Thank-you for your co-operation.

DESCRIPTIONS

- () A young woman with a magazine and a purse in her hand looks from behind a tree at another young woman in a party dress running along a beach.
- () Four men in overalls are lying on the grass taking it easy.
- () A woman is clutching the shoulders of a man whose face and body are averted as if he were trying to pull away from her.
- () A road skirting a deep chasm between high cliffs. On the road in the distance are obscure figures. Protruding from the rocky wall on one side is the long head and neck of a dragon.
- () An adolescent boy looks straight out of the picture. The barrel of a rifle is visible at one side, and in the background is the dim scene of a surgical operation, like a reverie-image.
- () A young man is lying on a couch with his eyes closed. Leaning over him is the gaunt form of an elderly man, his hand stretched out above the face of the reclining figure.
- () A short elderly woman stands with her back turned to a tall young man. The latter is looking downward with a perplexed expression.
- () A young boy is contemplating a violin which rests on a table in front of him.
- () On the floor against a couch is the huddled form of a boy with his head bowed on his right arm. Beside him on the floor is a revolver.
- () A bridge over water. A female figure leans over the railing. In the background are tall buildings and small figures of men.
- () A woman has her hands squeezed around the throat of another woman whom she appears to be pushing backwards across the banister of a stairway.
- () A gaunt man with clenched hands is standing among gravestones.
- () A young woman sits with her chin in her hand looking off into space.
- () A man is clutched from behind by three hands. The figures of his antagonists are invisible.
- () The dimly illumined figure of a person in the dead of night leaning against a lamp post.

APPENDIX B

INSTRUCTIONS GIVEN TO EXPERIMENTAL GROUP

Would you sit here, please.

Before we go any further I must explain that there is very little about what goes on in this experiment that I can tell you about now. But if you like, I will try to explain to your class, once the experiment is over, what took place. Meanwhile, about all I can do is give you directions and ask that you follow them exactly.

First, I want you to sit on this chair with your feet placed on those two black blocks. Now, I will put some eyecaps over your eyes and I must ask you to keep your eyes open at all times. This is very important. Next, I will put these rests under your arms. Now, will you please let your arms rest easily without touching your sides and fan your fingers open. Let your chin rest on this (chin-rest).

Keep perfectly still and remember: not to close your eyes, not to move your feet or arms, to keep your fingers fanned part and your head completely still. Please do not talk at any time during this phase of the experiment. When I want you to talk I will make this explicit.

Now I will put the ear plugs on.

APPENDIX C

INSTRUCTIONS GIVEN TO CONTROL GROUP

Would you sit here, please.

Before we go any further I must explain that there is very little about what goes on in this experiment that I can tell you about now. But if you like, I will try to explain to your class, once the experiment is over, what took place. Meanwhile, about all I can do is give you directions and ask that you follow them exactly.

Here are some instructions (See Appendix D) that I want you to read and here is a questionnaire to be filled out. Take your time with this and please do not talk during this phase of the experiment. I will probably stop you before you are through to give you more instructions.

(20 minute accommodation period)

FURTHER INSTRUCTIONS

Now, we have finished that part of the experiment. You can just leave the book as it is. I will put the questionnaire here.

APPENDIX D

INSTRUCTIONS GIVEN TO CONTROL GROUP
WITH REGARD TO ADAPTATION TASK

You will be shown several pages of fashions, each page representing a different kind of clothing article. (Page 1, for example, shows summer cocktail dresses.) Each article is numbered.

After you have looked the fashions over carefully, decide what you yourself would buy if price were no object. Put the number of your choice beside "1st choice" on the questionnaire sheet. Then decide which would be your second and third choices. Put the number of your choices beside "2nd choice" and "3rd choice".

EXAMPLE: Supposing Page 30 shows summer sports wear.

You would buy number 7.

Number 3 is your second choice.

Number 6 is your third choice.

Thus: on the questionnaire sheet you would put:

PAGE 30: Summer sports wear.

1st choice: 7 2nd choice: 3 3rd choice: 6

Remember, take your time and be frank and honest in your choices as there are no right or wrong answers.

APPENDIX E

INSTRUCTIONS FOR GIVING STORIES

(For both experimental and control group)

I am going to describe to you some scenes, one at a time, and I want you to make up as dramatic a story as you can for each. *I want you to tell me what the events were that led up to the scene, describe what is happening at the moment, what the characters are feeling and thinking, and then give me the outcome.** (Repeat from * to **) You can make up any kind of story you please. Speak your thoughts as they come to your mind. Let yourself go freely. I will describe each scene twice and after the second description you are to tell me the story. Do you understand? I want you to speak clearly so I can hear every word.

Well, then, here is the first scene.

APPENDIX F

QUESTIONNAIRE GIVEN TO SUBJECTS AS A MEANS
OF TAPPING ANXIETY

REACTIONS TO THE EXPERIMENT

DIRECTIONS: Read each of the sentences presented below and decide where you would rate yourself on each of them. Draw a circle around the number which best describes your reaction to the experiment referred to in the statement. Be frank and honest because there are no right or wrong ratings. Do not skip any statement.

1. I liked participating in this experiment.
- | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Did not like participating in it. | | | | Enjoyed participating in it a great deal. | | |
2. I experienced some anxiety or fear during the experiment.
- | | | | | | | |
|---|---|---|---|-----------------------|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| A fair amount of experienced fear or anxiety. | | | | Calm and non-chalant. | | |
3. I disliked some things I had to do in this experiment.
- | | | | | | | |
|---|---|---|---|--------------------------------------|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Were some things I definitely objected to doing in this experiment. | | | | There was no thing I disliked doing. | | |
4. I believe I was no more nervous than others would be during this experiment.
- | | | | | | | |
|--|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Quite a bit more nervous than others would be during the experiment. | | | | No more tense than others would be during the experiment. | | |
5. I had a desire to terminate the experiment before it was over.
- | | | | | | | |
|-------------------------------------|---|---|---|--|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Wished to terminate the experiment. | | | | No desire to terminate the experiment. | | |
6. I would not mind being a subject in a similar kind of experiment.
- | | | | | | | |
|--|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Objections to being a subject in a similar kind of experiment. | | | | No objections to being a subject in a similar kind of experiment. | | |

(2)

7. I found myself worrying about something during the experiment.

7	6	5	4	3	2	1
Worried about something during the experiment.			Did not worry about anything during the experiment.			

8. I performed under some tension during the experiment.

7	6	5	4	3	2	1
Some tension during the experiment.			No tension during the experiment.			

9. I would have liked to avoid certain parts of this experiment.

7	6	5	4	3	2	1
Quite a few parts of this experiment I would have liked to avoid.			No parts I would have liked to avoid.			

10. I had periods of restlessness during the experiment when I found it hard to sit still.

7	6	5	4	3	2	1
Restless during most of the experiment.			Composed throughout.			

11. I feel that my performance in the experiment was affected by my emotional feeling at the time.

7	6	5	4	3	2	1
Affected a great deal.			Not affected at all.			

12. I would volunteer for a similar kind of experiment.

7	6	5	4	3	2	1
Definitely no.	Probably no.	Not sure	Probably yes.	Definitely yes.		

APPENDIX G

ELABORATION OF SCORING PROCEDURES

1. More disorganized, as measured by:-

(a) Uncertainty of story or its outcome.

One point was given for every statement that raised a question that was not answered later on in the story. For example, to the statement, "The man with clenched hands is angry." the question is asked, "Why is he angry?" If this question, and others like it - "What sort of 'harm' did she commit." "If she is 'sitting thinking', what is she thinking about." - was not answered in some way throughout the course of the story, one point was awarded. Often there was uncertainty with regard to an element in the story because the subject herself showed indecision through the use of "or" between two elements. "...the other woman's either strangling her or trying to save her." This left it up to someone else to decide which course the story should take.

Rather than giving a point for every recurrence of the same uncertain element, only one point was awarded no matter how many times it occurred.

More indecision and uncertainty was manifested in the outcomes of stories. In some stories, the outcome had no pertinent relation to the preceding events, and therefore could not be considered as what would have been the real outcome of these events. For example, in one story (to picture 8GF), the girl, who has just been to a party, is very discouraged because she didn't meet anyone interesting.

"She'll probably look at herself later and wonder what's the matter with her and what sort of man she would be attractive to. She'll probably end up going to bed and sleeping very soundly." Does she find the "right man?" In many of the stories given to card 15 ("A gaunt man with clenched hands is standing among gravestones"), the end of the story consisted of the man simply leaving the graveyard. This is considered an "end" to the story rather than an "outcome." An "outcome" to the graveyard scene would be, for example, "He'll find there are other things to live for - (his wife and child have just been killed in a car accident). He'll go on to do what's required of him."

What appears to be an exception to this rule, but really carries it out is the type of story given to card 9BM. (Four men lying on the grass). Quite often the "stories" given to this card were merely accounts of a series of events - "These men are construction workers on their lunch - hour. They're lying on the grass because it looked nice to them. They ate their lunch there and now they're just sitting around relaxing. Soon they'll - when one o'clock comes - they'll get up and go back to work." This type of outcome, for card 9BM, was awarded a point.

In another type of situation, the outcome is stated but not satisfactorily elaborated. Thus, a man is attacked on the street. "They pull him to the ground and he hits his

head very hard and they run away and he stays there - he does not move." Question: Is he dead or just unconscious? Where the outcome was stated as a negative - "She does not push her over (the banister)", and the alternative was not supplied, another point was awarded. Some outcomes were blatantly uncertain - "There won't necessarily be any definite - one outcome, you know, to solve the problem."

A point was also given if no outcome was stated.

Example:

(?)

"Well, again something has come between these women.

It must have been some very strong force that would cause one woman to be, well, appear to be choking another and pushing her over the stairs - perhaps someone that they have both loved or something has happened to their children.

Something has come between them. I don't know if the woman would come to her sense soon enough to realize what she was doing. It would depend on how enraged she was."

(?) - outcome.

What has come between the two women?

Was it someone they both loved?

Or has something happened to their children?

Would the woman come to her senses soon enough to realize what she was doing?

How enraged was she?

What is the outcome?

Number of points awarded = 6

(b) Loosely structured stories.

Scoring for "Events leading up to the scene" was fairly straightforward. Any reference made to the past which explained, in part, the reason for what was happening at the moment was included in this category, as was any past imperfect action - that is an action which is continuing into the present. "He was walking along the street when..." is an example of the latter.

"What the characters are feeling" was exemplified by any reference to emotion - "regret" (feeling sorry for something one has done), "being startled" (feeling suddenly shocked or afraid), "loneliness", or to a physical state such as "tiredness" or "sickness" was considered as exemplifying what the characters were feeling.

"She was just sitting thinking." was not given a point for the next category - what the characters are thinking - as it did not answer the question "what". Statements like "She didn't know quite what to do or how to get him back.", "She's determined to murder her.", and "She can't quite believe." were scored as one point as they constitute a certain line of thinking.

"What is happening at the moment" excluded "feeling" and "thinking" so that a story such as the following was given no score for this category. "This man has probably lost his wife, his son, or somebody very close to him. It

struck him very - it was a great blow to him. Possibly he feels a sense of - a sense of guilt because he might have contributed toward their unhappiness - he might have, in fact, to their death - very slightly. He's very - very lonely and has this feeling of remorse."

The above story received a score of three - one point for "events leading up to the scene", one point for "what the characters are feeling", and one point for the correct sequence of events (past followed by present.)

(c) Little elaboration

Example:

"These two women have had an argument. One woman is slightly older than the other. And the woman who is being pushed backwards over the stairway has violated the rules of the older woman - that the older woman has for living by. And the older woman has lost her temper and now she wishes to destroy the younger one because the younger one is so sinful in her mind. She does not push her over.

Number of points = 7

(3) More stereotyped, as measured by:-

(a) briefness - fewer number of words in each story

(b) number of word and phrase repetitions

EXAMPLE:

(I really don't have any thoughts - that's the trouble. I can't think of anything.) The woman - the mother-in-law is strangling the - the - her - her. (No.) The daughter is strangling her mother-in-law because, just before, they were downstairs and there was a fight....And she grabbed her throat to pull her back because she didn't - wasn't going to - wasn't really going to do anything to her.

Number of words - 37

Number of repeated words - 17

- N.B. (1) Parentheses indicate extraneous comments.
 (2) Underlined words are counted as repeated words.

B. and C. More aggression as measured on low and medium aggressive cards, and less aggression on high aggressive cards.

EXAMPLE:

"A woman has found that her husband has been having an affair with this other woman. And when they next come into contact her first reaction is to eliminate her rival. So she does this apparently by strangulation and at the same time trying to push her over the banister. The woman does not succeed, however, because the husband comes in, finds the two and separates them."

Category 3 (Potential), therefore

number of points = $1\frac{1}{2}$

APPENDIX H

REACTIONS TO EXPERIMENT
(GIVEN VERBALLY BY E GROUP)

Subject 1: "I thought I'd die, I got so restless. Could that mean how uncomfortable I felt? I don't know if I'd go into psychology if you torture people like that."

Subject 2: "I nearly fell asleep."

Subject 3: "I was wondering why I had to do those things - what it had to do with psychology."

Subject 4: "I felt as though I was going to sleep. I was expecting something to happen to me."

Subject 5: "Was I sitting there very long? (How long do you think you were sitting there?) About half an hour. Do most people sit there that long or do they refuse. I had the feeling that you (Experimenter) weren't in the room. I didn't know how long I was sitting there. I thought about my boyfriend after wondering what was going on. Was it an endurance test."

Subject 6: "I felt as though I had been sitting there for half or three-quarters of an hour."

Subject 7: "I thought I was going to go to sleep. I felt as though I had been sitting there for an hour. It was probably ten minutes."

Subject 8: "I lost track of the time. I wondered if I had my eyes open. Felt a loss of feeling. Felt like falling asleep. Thought if I was going to be sitting there, I might as well be thinking about something. It certainly had a startling effect."

Subject 9: "I felt quite tired. I didn't know whether my eyes were open or shut. I found it harder to breath, felt shut in. Wanted to move, to shift. I found the time dragging - it felt like half an hour or more. I wondered if you (Experimenter) had forgotten me - I was mystified. My thoughts weren't organized. I found it hard to think in continuous thoughts - couldn't keep directions (instructions) in mind. I felt afraid and tensioned up.

Subject 10: "Wondered what the experiment was about. I felt sleepy - my mind wondered. It felt longer than it probably was. At first thought it was a test of patience. Probably a test on your outlook on life."

Subject 11: "I wondered what the thing was about. I didn't like having to tell stories."

Subject 12: "I kept thinking what it meant. I was perspiring - my hands were cold. Has it anything to do with the experiment. Wanted to swallow - but couldn't - like being asleep. Wondered what it would be like to be in aeronautic experiment where you cut off feeling. I free-associated. May have taken twenty minutes. Probably an endurance test. I wasn't aware of the time - might have gone crazy if over an hour. Related stories to myself. I was probably over-cautious. I didn't want to reveal myself. My thoughts were happy."

Subject 13: "Repeated poems I could remember. I wasn't restless - I was able to sit and think. Some of my ideas were far-fetched. I didn't feel sleepy - although I was up late the night before. It probably took about ten minutes."

Subject 14: "I enjoyed the experiment."

Note: The other six members of the experimental group were asked simply if there was anything they wanted to say about the experiment. These subjects made no significant comments.