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AN INVESTIGATION OF THE GALVANIC SKIN RESPONSE
IN A PERCEPTUAL DEFENSE SITUATION

by

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B. A. Montana State University, 1955

Presented in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts

Montana State University

1956

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May 29 1956
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CHAPTER I
INTRODUCTION

INTRODUCTION

The purpose of this study was to investigate the perceptual defense hypothesis and the galvanic skin response (GSR) in a perceptual defense situation. The GSR was chosen primarily for four reasons: (a) it has been shown to be related to emotional behavior, (b) it is readily available for study, (c) it is an involuntary reaction, and (d) it may be easily quantified. The stimuli were words which had been assessed for affective value to the S and which were tachistoscopically presented at subliminal speeds. The S chose from a list the word he believed to have been presented.

The term perceptual defense (an unconscious, i.e., non-verbalizable, mechanism of resistance to recognition of threatening stimuli) was introduced by Postman, Bruner, and McGinnies (16) as a perceptual principle to account for variations in the recognition thresholds for tachistoscopically presented value words. Using the Allport-Vernon Study of Values, they found that an S's recognition thresholds were inversely related to his scores in the different value areas of the test. Ss who scored high in an area had low tachistoscopic recognition thresholds for words representing this area. On the other hand Ss who scored low in an area of the test had high tachistoscopic recognition

thresholds for words representing this area. The S's reactions to the words were influenced even though the words were presented for a length of time which was too short for verbal discrimination. The concept was meant to be descriptive of a process which seemed to Postman et al to be an unconscious motivational defense mechanism which heightened the individual's recognition threshold to threatening stimuli.

It seems clear that Postman et al were drawing upon the concept of "defense mechanisms" as conventionally used in the areas of personality development and psychopathology. One interpretation of their findings is that a person's perceptual environment is determined in part by needs, wishes, etc., that may be operative at the time of perception. A person may adjust to stimulus conditions by a denial of the existence of the stimulus situation. This defensive process may not be evoked on the conscious level, but may represent an unconscious motivational mechanism.

In order to understand this perceptual possibility and some of its implications, it is necessary to consider briefly the role of defense mechanisms in personality theory. Coleman (6) states that defense mechanisms tend to disguise or hide painful facts or unpleasant situations from consciousness. They are learned ways of avoiding anxiety

that arises from certain specified sources which are threatening to the individual's self-esteem. Anxiety, as defined by Sappenfield (18) is "any motivational excitation or tension that occurs without conscious representation of a gratifying instrumental act, and without conscious cathexis of a gratifying object." An implicit assumption underlying the theories of defense mechanisms concerns the ability of the human organism to detect the presence of threatening stimuli at the unconscious level. This unconscious detection of threatening stimuli seems necessary if defensive responses are to serve their hypothesized role of preventing the spread of anxiety to more conscious levels of awareness. Thus, if we can demonstrate the operation of defense mechanisms in perceptual recognition behavior, it becomes possible to use perceptual behavior as a means of bringing the general class of defense mechanisms under experimental observation.

Before the perceptual defense hypothesis can be adequately tested, there are, according to Eriksen (8), certain methodological requirements that the experiment must satisfy. It is necessary to show (a) that the stimuli to be perceived are anxiety provoking for the particular subject and (b) that the S has learned to handle the anxiety created by the stimuli by avoidance behavior. The observations under which the perceptual defense hypothesis was formulated explain these requirements. For example, Postman et al (16)

observed that value orientation contributed to the non-recognition of percepts which were not congruent with the S's values. Conversely, if the stimulus objects were congruent with the S's value orientation, perceptual sensitization, the reciprocal of perceptual defense, occurred. That is, depending on the stimulus, either perceptual defense or perceptual facilitation can occur. That perceptual defense is dependent upon the nature of the stimulus object and a predisposition to avoidance reactions has been experimentally verified by Blum (1) who states, "apparently the S makes an unconscious visual discrimination which somehow cues off an avoidance reaction. The threatening stimulus must actually be provided by the environment in order for this defensive response to be instigated. With respect to antecedent conditions, we now know that it takes a combination of conflict in an area plus a predisposition to repress that conflict to produce the avoidance. Conflict alone has no discernible effect." The assumptions are made by Blum (1) that anxiety-relevant stimuli will activate a conflict and that the necessity to verbalize the conflict area will elicit avoidance behavior.

A study by McGinnies (13) may be criticized for deficiency in design with respect to the above requirements. Socially taboo words such as penis, whore, kotex, etc., were exposed tachistoscopically together with socially more

acceptable words such as glass, sleep, stove, etc. McGinnies' Ss reacted with GSR's of significantly greater magnitudes during the prerecognition presentations of critical words than they did before recognizing the neutral words. McGinnies offers his findings as evidence for a perceptual defense concept. However, considering the criteria as stated above, his experiment has a number of methodological pitfalls. As Howes and Solomon (9) have pointed out, the interpretation of the study is confused because of the possibility that the Ss may have deliberately delayed their reports due to embarrassment of incorrectly reporting the stimulus words. In other words, McGinnies' Ss may have been able to recognize the words when the GSR appeared but have avoided doing so because of the experimental situation. According to Eriksen (8) there is a more fundamental criticism of McGinnies' work. The methodology and logic of the procedure are such that the method as a whole is incapable of testing the perceptual defense hypothesis. The implicit assumption that the taboo stimulus words chosen were anxiety-arousing for all or even a majority of the Ss was extremely gratuitous. It is questionable whether McGinnies' critical stimuli aroused anxiety or suppression. In this connection, a study by Whittaker, Gilchrist, and Fisher (22) gives supporting evidence to the criticisms of Eriksen, Howes and Solomon. But even if the assumption of anxiety were true, McGinnies

made no provision for individual differences among Ss in terms of how they handled the anxiety.

In the present study the attempt was made to avoid the above mentioned experimental deficiencies. First, in order to minimize the possibility of response suppression, words conventionally considered socially taboo were not used. Second, a word-association test was used to determine the affective nature of the stimuli for individual Ss and to indicate the presence of an avoidance reaction to certain of these critical stimuli.

Some clinical evidence for the adequacy of word-association test for the detection of areas of anxiety comes from Schafer (19). Schafer states that associative disturbances will occur when highly emotionally charged ideas are touched upon by a stimulus word and that all words, but especially traumatic words, mobilize a number of deep-lying affects or ideas which then seek conscious representation. If the ideas become represented in consciousness, a response with a highly personal, or even unique, significance is usually the result. If a repressive reaction against any such representation occurs, the result is usually a long delay in reaction time, complete blocking, or some other form of close reaction. These reactions are indications that the stimuli have successfully detected a sore spot. They do not directly represent or express unconscious ideas or deep-lying affects;

rather they serve merely as symptoms of the presence of conflict.

That long reaction time is directly associated with traumatic stimulus-words has been shown by Rapaport (17) in a clinical comparison of reaction times of normals, neurotics, schizophrenics, and depressives to traumatic stimulus-words. He also found that the greater the incidence of delay on traumatic words, the greater the delay becomes on nontraumatic words, however, the incidence on nontraumatic words was never as great as the incidence on traumatic words. Rapaport states: "The simplest form of interference with the reaction are those usually described as 'repressive', 'inhibition', and their extreme, 'blocking'. In mild cases a delay in reaction time, and in more severe ones no reaction and/or no reproduction in the Reproduction Test are the effects."

Using a word-association test Bruner and Postman (5) found that recognition thresholds were higher for words which produced association disturbances than words which did not produce these disturbances. Eriksen (7) used aggressive, succorant, and homosexual stimulus-words in an association test and found that the amount of association disturbance of these words was positively related to the S's recognition thresholds for scenes portraying aggressive, succorant, and homosexual activity.

Having determined that word-association techniques are adequate clinical and experimental tools to use in the assessment of anxiety areas in the personality structure and that long reaction times may be assumed to reveal both an anxiety area and an avoidance reaction to the stimulus, the problem of this study was formulated as follows: Does the individual exhibit behavior toward anxiety-arousing stimuli which is characteristic of emotional disturbance even though overtly disturbed behavior is inhibited by repressive defense mechanisms? In an anxiety-relevant situation we may expect to find GSR reactions characteristic of emotional behavior after the individual has been successful in repressing recognition of anxiety provoking stimuli. That is, autonomic reactions may have a lower threshold to anxiety provoking stimuli than those systems mediating consciousness. Much of the evidence to show the adequacy of the GSR as a capable measure of emotional behavior has been summarized by Schlosberg (20).

Assuming perceptual filtering of visual stimuli does occur in anxiety-relevant situations, we would anticipate that, in a tachistoscopic situation, the S would report observation of neutral stimuli more frequently than observation of critical stimuli. Further, we would expect greater GSR resistance levels to be associated with critical stimuli than with neutral stimuli. This expectation is in agreement with

Johnson (10) who states that when a person is emotionally aroused the resistance of the skin drops. In addition, we can check Blum's (1) finding concerning Ss reactions to non-present stimuli. Using the Blacky Test, Blum assessed the pictures for each S for areas of conflict and repression. Then, using only four pictures, he flashed these pictures repeatedly at speeds too great for conscious recognition while the Ss attempted to name the pictures they saw. He found that the Ss did not avoid naming pictures representing conflict areas for them if the conflict picture named was not one of those projected; that is, the Ss guesses appeared to be no different from chance when the threatening stimulus was not one of those projected. This can be checked indirectly in the present experiment by investigating those trials on which the S is guessing, i.e., generally those trials on which he is incorrect. Our experiment differs from Blum's, however, in the provision of a list of choice-words for the S rather than relying on the S's memory of the list.

Specifically stated, we hypothesize that (a) when critical and neutral stimulus-words are presented tachistoscopically at speeds too rapid for verbal discrimination, the S will report a greater number of neutral stimulus-words in relation to critical stimulus-words; (b) the S will show greater autonomic reactivity, as measured by GSR resistance,

to critical than to neutral stimulus-words, and (e) when the S is guessing, he will show no systematic avoidance of critical words.

CHAPTER II
METHOD

METHOD

Apparatus. -- The projector, a Keystone Over-head Mirror Projector, was located 21 feet from a 50 inch by 50 inch white matte screen. The reflectance coefficient of the surface was .80. A concentration area 34 x 16 inches was marked on the screen with green paper tape one-half inch wide. The illumination level at the screen was .032 foot-candles with the slide in place. The luminous level was .006 foot-lamberts. Light intensity and duration of exposure were constant for all Ss. S was seated 20 feet from the screen. Tachistoscopes were made from yellow cellophane. Stimulus-words were typed, upper case, elite, using carbon paper on both sides of the cellophane. GSR's were recorded by the galvanometer unit of the Keeler Polygraph, Model 3020.

Subjects. -- Sixteen Montana State University students enrolled in introductory psychology classes during the spring quarter served as Ss.

Procedure. -- A word-association test was used to determine anxiety provoking and nonanxiety provoking stimuli. The master list of stimulus-words used in this study is presented in Table 1. Ss were individually given one administration of the test after the following instructions were read to them.

"I am going to read you a series of words, one-by-one. I want you to respond to each word with one other word. It makes no difference what your other word will be, but it should be the very first word that comes into your mind after you hear my word. I want you to be just as fast as you can, because I will time you. When people take this test they have a tendency not to hear some of the words. I want you to resist this tendency, I am not to repeat the words. Here is the first word." These instructions were adapted from Rapaport (17).

Sixteen stimulus-words were obtained for each S - five critical and eleven neutral words as determined by the following reaction time criterion. Critical stimuli were defined as stimulus-words having a reaction time at least two times greater than the S's modal reaction time for the test. Neutral stimuli were defined as stimulus-words having the shortest reaction times of the one hundred words comprising the word-association test, except that no neutral stimulus could have a reaction time that exceeded the S's modal reaction time. Arbitrarily eleven instead of five neutral stimulus-words were used in order to provide the S with a greater latitude of response. The experiment was conducted seven days after the assessment of stimuli.

After the S had been seated, the following instructions were read to him. "This is an experiment to determine how

well you can identify words when they are shown to you at very rapid speeds. This instrument (place hand electrode on S) will keep a record of your temperature throughout the experiment. It is a very delicate machine, and once the experiment has begun, please refrain from all but the most necessary movements.

"Here is a listing of four words which will be flashed in the marked portion of the screen in front of you. No word shall be flashed more than once. Just before a word is shown I will say 'Ready Watch' and immediately flash the word. After each flash I want you to look at your list and tell me the word you saw. Remember to keep movements at a minimum. Have you any questions? All right, let us begin (show S the four preslides).

"Now, here is another listing of sixteen words. We shall follow the same procedure as before except the words will be exposed for a much shorter time. If you are not sure of a word, look at your listing and make the best possible guess. No word shall be shown more than once. Have you any questions? All right, let us begin."

Following this, the galvanometer was equated with the S's basal resistance level. Four pretrials were given to each S in order to accustom him to the apparatus and to further familiarize him with experimental procedure. Pretrial stimuli were "boy", "rat", "dog" and "cat". These stimuli were flashed

for a duration of .5 second with a luminous level of .06 foot-lamberts. In the test proper the S was given a listing of sixteen stimulus-words arranged randomly (5 critical and 11 neutral). On trial number 1 the stimulus-word was flashed for a duration of .01 second. Ten seconds (approximate latency of the galvanometer) after the initial exposure, the experimenter marked the kymograph record of the galvanometer indicating the beginning of the S's autonomic response to stimulus-word number one. The S was instructed to report whatever he saw or thought he saw (using the word list provided him as a reference) on the exposure. This response (word choice) was noted by the experimenter and was used in analysing the data of the experiment. This procedure was repeated for 10 trials with the five critical words and five neutral words presented in counterbalanced order.

Table 1

Word-Association Test

1. Anger A	21. Stove	41. Youth
2. Music AA	22. Child	42. Apple
3. White 24	23. Heavy	43. Trunk
4. Short AA	24. Green	44. Price
5. Fruit AA	25. Horse	45. Taxes
6. River AA	26. Alarm	46. Water
7. Rough A	27. House	47. Table
8. Sleep AA	28. Crowd	48. Woman
9. Eagle 38	29. Laugh	49. Truck
10. Chair AA	30. Happy	50. World
11. Dance AA	31. Never	51. Spend
12. Brave AA	32. Farty	52. Abuse
13. Dream AA	33. Night	53. Plate
14. Drink	34. Right	54. Badge
15. Bread	35. Paper	55. Sleek
16. Light	36. Noise	56. Candy
17. Bible	37. Sorry	57. Slime
18. Sheep	38. Round	58. Fancy
19. Frame	39. Sweet	59. Birth
20. Ocean	40. Trust	60. Glass

CHAPTER III
RESULTS AND DISCUSSION

RESULTS AND DISCUSSION

The number of critical and neutral stimuli correctly identified by each of the 16 Ss is presented in Table 2. Inspection of the table shows that the differences between the two groups of stimulus-words are not normally distributed and that occasionally the difference is zero; therefore a nonparametric method of analysis was used. A sign test of the differences (14) leads to the rejection of the null hypothesis ($P = .003$) and confirms our hypothesis that Ss should tend to recognize neutral stimuli better than critical stimuli.

In order to determine whether the differences between the number of critical and neutral stimuli correctly identified were due to relative familiarity with the words, the frequency of usage was found for each word from the general record of Thorndike and Lorge (21). The difference between average frequencies of usage of critical and neutral stimuli for all Ss combined (52.888 and 68.438, respectively) was not found to be significant ($t = 1.89$, $P > .05$). Upon analysis of the frequency of word usage for individual Ss (Table 3), it was found that the difference between critical and neutral stimuli was significant at the .05 level for only two of the 16 Ss, however there was no relation between frequency of

Table 2
 Number of Critical and Neutral Stimuli
 Correctly Identified

S	Critical Stimuli Total 5	Neutral Stimuli Total 5	Difference
1	2	3	-1
2	2	3	-1
3	3	3	0
4	2	3	-1
5	0	3	-3
6	0	1	-1
7	5	3	+2
8	2	2	0
9	3	4	-1
10	1	4	-3
11	0	3	-3
12	1	2	-1
13	0	3	-3
14	0	2	-2
15	3	3	0
16	2	4	-2
Total	26	46	-20

Table 3
Average Frequencies of Usage for Critical
and Neutral Stimulus-words

S	Mean		t Value
	Critical	Neutral	
1	37.80	74.60	1.538
2	52.80	46.20	.318
3	33.60	68.40	1.289
4	79.60	64.00	.783
5	35.80	80.00	2.873 *
6	65.20	77.40	.600
7	39.20	68.80	2.328 *
8	57.00	67.60	.484
9	36.00	68.40	2.048
10	75.80	68.40	.420
11	45.80	80.00	2.153
12	60.00	49.80	.548
13	64.40	68.00	.177
14	75.80	68.00	.387
15	56.00	71.80	.729
16	31.40	64.60	1.742

* Significant at the .05 level

word usage and identification of critical stimuli for these two subjects. We may conclude that the tendency towards greater recognition of neutral stimuli does not necessarily depend on frequency of usage.

The number of critical and neutral words incorrectly chosen are shown in Table 4. Corrected and expected values of the data shown in Table 4 are given in Table 5. The correction for chance success is made by recognizing that an S, if guessing, will correctly identify some stimulus-words. Therefore, the observed number of critical words incorrectly chosen should be increased by $1/5$, and the observed number of neutral words incorrectly chosen should be increased by $1/11$. If the stimulus category makes no difference, the corrected proportion of critical responses to a critical stimulus, .3043, should not be significantly different from the corrected proportion of critical responses to a neutral stimulus, .2747.

A t-test shows that the difference between these corrected proportions of critical responses is not significant ($t = .171$, $P > .05$), and we may conclude that the stimulus category makes no difference on incorrect trials.

Average GSR's to recognized and nonrecognized critical and neutral stimuli are shown in Table 6. In cases where the average GSR for a particular category was zero, the average of the other categories was used. Table 7 presents

Table 4
 Number of Critical and Neutral Words
 Incorrectly Chosen

Stimulus Category	Response Word		Total
	Critical	Neutral	
Critical	14	40	54
Neutral	<u>10</u>	<u>24</u>	<u>34</u>
Total	24	64	88

Table 5
 Critical and Neutral Response Words Incorrectly
 Chosen Corrected for Chance Success

Stimulus Category	Response								Tot.
	Critical				Neutral				
	Observed		Expected		Observed		Expected		
	No.	Prop.	No.	Prop.	No.	Prop.	No.	Prop.	
Critical	17.50	.3043	17.97	.3125	40.00	.6956	39.53	.6874	57.50
Neutral	10.00	.2747	11.38	.3126	26.40	.7252	25.02	.6873	36.40
Total	27.50	.2928	29.35	.3125	66.40	.7071	64.55	.6874	93.90

Table 6

Average GSR's in Ohms to Stimulus-words

S	Recognized		Nonrecognized	
	Critical	Neutral	Critical	Neutral
1	- 1517.0	- 58.7	- 2916.7	- 1625.0
2	- 247.5	- 312.7	- 485.0	∕ 32.5
3	∕ 361.3	∕ 356.3	- 593.5	- 42.0
4	- 2234.5	- 632.0	- 226.0	∕ 406.5
5	- 71.2*	- 184.0	- 50.6	∕ 21.0
6	- 1327.5	- 1700.0	- 3970.0	∕ 1687.5
7	- 3.6	- .3	- 2.0*	- 2.0*
8	- 833.5	- 340.5	- 246.0	∕ 172.0
9	- 250.0	- 11.5	- 84.5	- 563.0
10	- 46.0	- 12.8	- 553.5	- 456.0
11	∕ 100.4*	∕ 1125.7	- 1506.0	∕ 681.5
12	∕ 204.2*	∕ 240.0	- 15.8	∕ 388.3
13	∕ 233.9*	∕ 155.3	∕ 114.4	∕ 372.0
14	- 247.8	- 240.0	- 359.6	- 143.7
15	- 1273.0	- 850.0	- 1662.0	- 1587.5
16	- 34.5	∕ 511.5	∕ 16.0	- 125.0
Total	- 7186.3	- 1953.7	- 12,558.8	- 782.9
Mean	- 449.144	- 122.106	- 784.925	- 48.931

*No response in this category, therefore average of other categories was used.

Table 7
 Comparisons Between GSR's to Recognized and
 Nonrecognized Stimulus-words

Comparison Between	Means Difference	Standard Error	t Value
RC vs. RN	327.038	170.099	1.922
NRC vs. NRN	735.994	152.900	4.813
RN vs. NRN	73.250	132.381	.553
RC vs. NRC	335.781	271.280	1.305
RC \neq NRC vs. RN \neq NRN	1063.013	133.009	7.992

RC: recognized critical
 RN: recognized neutral
 NRC: nonrecognized critical
 NRN: nonrecognized neutral.

mean differences and t values for GSR data. Analysis of the difference between recognized critical and neutral stimuli shows the difference to be not significant ($t = 1.922$, $P > .1$). The difference between nonrecognized critical and neutral stimuli was significant ($t = 4.813$, $P < .01$). There is some justification for combining the two categories of critical stimuli and combining the two categories of neutral stimuli since the differences between the combined categories are not significant. The difference between combined critical and combined neutral stimuli is significant ($t = 7.992$, $P < .01$). The significance of these combined results offers support of our hypothesis that S_s would have lower resistance associated with critical stimuli. The GSR to recognized and nonrecognized stimuli, however, does not show any consistent trend.

We may conclude that there is a tendency for individuals to exhibit reactions toward anxiety-arousing stimuli which are characteristic of emotional disturbance even though overtly disturbed behavior is inhibited by defensive mechanisms. However, the results of this study should not be taken as conclusive evidence for the perceptual defense hypothesis. We have shown that S_s tend not to recognize critical stimuli and that they have lower GSR's to critical stimuli. We have also shown that, when the S is guessing, he does not avoid verbalization of anxiety-arousing words

and that the GSR shows no consistent relation to recognized nor nonrecognized stimuli. Just why the S should avoid verbalization of the tachistoscopically-presented critical stimuli but not avoid verbalization of critical stimuli from the list in his hand is not clear, unless the difference is due to relative familiarity with the words. The present study has not fully excluded relative familiarity as a possible factor in the results.

CHAPTER IV

SUMMARY

rather they serve merely as symptoms of the presence of conflict.

That long reaction time is directly associated with traumatic stimulus-words has been shown by Rapaport (17) in a clinical comparison of reaction times of normals, neurotics, schizophrenics, and depressives to traumatic stimulus-words. He also found that the greater the incidence of delay on traumatic words, the greater the delay becomes on nontraumatic words, however, the incidence on nontraumatic words was never as great as the incidence on traumatic words. Rapaport states: "The simplest form of interference with the reaction are those usually described as 'repressive', 'inhibition', and their extreme, 'blocking'. In mild cases a delay in reaction time, and in more severe ones no reaction and/or no reproduction in the Reproduction Test are the effects."

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10. Chair AA	30. Happy	50. World
11. Dance AA	31. Never	51. Spend
12. Brave AA	32. Farty	52. Abuse
13. Dream AA	33. Night	53. Plate
14. Drink	34. Right	54. Badge
15. Bread	35. Paper	55. Sleek
16. Light	36. Noise	56. Candy
17. Bible	37. Sorry	57. Slime
18. Sheep	38. Round	58. Fancy
19. Frame	39. Sweet	59. Birth
20. Ocean	40. Trust	60. Glass

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 Nonrecognized Stimulus-words

Comparison Between	Means Difference	Standard Error	t Value
RC vs. RN	327.038	170.099	1.922
NRC vs. NRN	735.994	152.900	4.813
RN vs. NRN	73.250	132.381	.553
RC vs. NRC	335.781	271.280	1.305
RC \neq NRC vs. RN \neq NRN	1063.013	133.009	7.992

RC: recognized critical
 RN: recognized neutral
 NRC: nonrecognized critical
 NRN: nonrecognized neutral.

SUMMARY

The aim of this study was to investigate the perceptual defense hypothesis and the GSR in a perceptual defense situation. The GSR was chosen for four reasons: (a) it has been shown to be related to emotional behavior, (b) it is readily available for study, (c) it is an involuntary reaction, and (d) it may be easily quantified. A word-association test was used in the assessment of stimuli. Critical and neutral stimulus-words were tachistoscopically presented in a counterbalanced order for a duration of .01 second with a luminance level of .006 foot-lamberts. An attempt was made to control stimulus-word selection for familiarity, selective verbal report, antecedent conditions, and set so that the results of the study could be traced to the influence of the perceptual defense process. Five neutral and five critical stimulus-words were shown to each of 16 Ss. GSR's to each presentation were recorded. The Ss were instructed to report the content of the presentation after each flash. In cases where they were not certain of the content they were instructed to guess.

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Ss correctly identified more neutral than critical stimulus-words when the stimulus was present ($P = .003$). However, when the Ss were guessing they did not tend to avoid verbalization of critical stimuli. GSR resistance to critical stimuli was greater than GSR resistance to neutral stimuli. However, no consistent relationship was found between the GSR and recognition or nonrecognition of stimulus-words. The results of this study are interpreted in terms of heightened visual thresholds and accompanying GSR's resembling those of emotional behavior to anxiety-arousing stimuli presented tachistoscopically. There is a possibility, however, that relative familiarity with the words may have had some effect.

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APPENDIX A

Reaction Times in Seconds of Ss 1 thru
16 to Words in the Word-Association Test

*Neutral Stimulus-words

**Critical Stimulus-words

Mode RT: 1.5

Subject 1

1.	1.1	26.	1.3	51.	1.1	*76.	1.0
2.	1.7	27.	1.4	52.	1.4	77.	1.2
3.	1.6	28.	2.3	53.	1.6	78.	1.7
4.	1.7	*29.	1.0	54.	1.7	79.	1.1
5.	1.4	30.	1.1	55.	1.7	80.	1.1
6.	2.2	*31.	1.0	56.	1.5	81.	1.5
7.	1.8	32.	1.8	57.	1.7	82.	1.3
8.	1.9	33.	1.3	58.	1.6	**83.	9.3
9.	1.2	*34.	.6	59.	1.4	84.	1.4
10.	1.3	35.	1.6	**60.	3.2	85.	1.6
11.	1.5	36.	1.3	61.	1.2	86.	1.5
12.	1.2	37.	1.4	62.	1.9	87.	1.5
13.	2.0	38.	1.1	63.	1.8	88.	1.5
14.	3.0	39.	1.8	64.	1.3	89.	1.6
15.	1.3	*40.	1.0	65.	1.9	*90.	.9
16.	1.5	41.	1.6	66.	1.6	91.	2.1
17.	1.4	42.	1.4	67.	1.5	**92.	3.5
18.	2.2	43.	1.1	68.	1.5	93.	2.1
*19.	.8	**44.	7.1	69.	1.9	94.	1.9
20.	1.3	45.	2.0	**70.	6.1	95.	1.6
*21.	1.0	46.	1.5	71.	1.8	96.	3.1
22.	2.0	*47.	.7	72.	1.7	97.	1.7
23.	1.6	48.	1.4	73.	1.1	98.	1.6
24.	1.5	*49.	.9	74.	2.0	99.	1.7
*25.	.7	50.	1.1	75.	1.5	100.	1.8

Subject 2 Mode III: 1.1

1.	1.2	26.	1.7	51.	1.0	76.	1.6
2.	1.3	27.	1.6	52.	1.3	77.	2.1
3.	1.0	28.	1.1	53.	1.2	78.	2.0
*4.	.8	29.	1.1	54.	2.0	79.	1.5
5.	1.8	*30.	.9	55.	1.7	80.	1.4
6.	1.6	31.	1.5	56.	1.1	81.	2.0
7.	1.5	32.	1.6	57.	1.5	82.	1.6
8.	1.6	33.	1.3	58.	2.0	83.	1.7
9.	1.6	34.	2.5	**59.	5.9	84.	1.6
10.	1.4	35.	1.5	60.	1.6	85.	1.2
11.	1.4	36.	1.1	61.	2.3	*86.	.8
12.	1.4	*37.	.9	62.	1.5	*87.	.8
13.	1.5	38.	1.1	63.	1.2	88.	2.0
14.	1.3	39.	.7	64.	1.1	89.	1.1
*15.	.9	**40.	6.5	65.	1.9	90.	1.1
16.	1.6	41.	1.1	**66.	4.2	91.	1.4
*17.	.9	42.	1.3	67.	2.0	92.	2.1
18.	1.4	43.	1.6	*68.	.6	**93.	2.7
19.	1.2	**44.	4.9	69.	2.3	94.	1.6
*20.	.9	45.	1.6	70.	1.2	95.	1.1
21.	1.4	46.	1.1	71.	2.5	96.	1.5
22.	1.5	47.	1.0	72.	2.0	97.	1.1
23.	1.1	48.	1.4	73.	1.1	98.	1.2
24.	1.1	49.	1.1	74.	1.3	99.	1.7
*25.	1.0	50.	1.7	75.	1.6	100.	1.3

Subject 3		Mode RT: 1.5					
1.	1.9	26.	1.5	51.	1.5	*76.	1.0
2.	1.5	27.	2.2	52.	1.7	77.	2.5
3.	1.5	28.	1.3	53.	1.5	78.	1.5
4.	2.1	29.	1.5	54.	3.0	79.	1.6
5.	1.6	30.	1.5	55.	1.4	*80.	.7
* 6.	1.2	31.	1.8	56.	1.6	81.	1.5
7.	2.5	32.	2.0	*57.	1.1	82.	1.2
8.	2.3	*33.	1.1	58.	1.6	83.	1.6
9.	2.5	34.	1.3	59.	1.6	84.	1.3
10.	3.0	35.	1.7	60.	1.6	*85.	1.0
11.	1.5	36.	2.0	61.	1.6	86.	2.0
12.	1.2	37.	2.2	62.	2.1	87.	1.2
13.	2.4	38.	1.5	63.	1.5	88.	1.4
14.	2.0	*39.	1.1	64.	2.5	89.	1.5
15.	2.1	40.	1.6	65.	1.6	90.	1.6
16.	1.5	41.	1.6	**66.	9.0	91.	1.3
17.	1.4	42.	1.7	**67.	5.0	**92.	3.8
18.	1.5	43.	2.6	*68.	1.0	93.	3.4
19.	2.1	44.	1.5	69.	1.5	94.	1.5
20.	3.3	45.	1.6	70.	1.5	95.	1.6
21.	1.7	46.	2.7	71.	1.6	96.	1.4
22.	1.6	*47.	1.1	72.	2.0	97.	1.4
23.	1.4	48.	.8	*73.	1.0	*98.	1.1
24.	1.5	49.	1.8	74.	1.7	**99.	8.1
25.	1.8	50.	3.2	**75.	14.0	100.	1.4

Subject 4 Mode RT: 1.0

1.	1.1	26.	1.2	51.	1.2	76.	1.3
2.	1.4	27.	2.0	*52.	.6	*77.	.8
3.	1.1	28.	2.0	53.	1.0	78.	2.4
*4.	.9	29.	1.5	54.	1.5	79.	1.1
5.	1.8	30.	1.5	55.	.9	80.	1.1
*6.	.9	31.	1.2	56.	1.0	81.	1.0
7.	1.2	**32.	4.0	57.	1.5	82.	1.2
8.	1.5	*33.	.7	58.	2.3	83.	1.7
9.	1.4	*34.	.9	59.	2.5	*84.	.6
10.	1.3	*35.	.9	60.	1.2	85.	.9
11.	1.8	36.	1.5	61.	1.4	86.	1.0
12.	2.0	37.	1.0	62.	2.0	87.	1.0
**13.	3.4	38.	1.0	63.	1.3	88.	1.5
14.	1.6	39.	.9	64.	1.1	89.	1.2
15.	2.0	40.	1.4	65.	1.5	90.	1.0
16.	1.0	**41.	7.0	66.	1.3	91.	1.1
17.	1.3	42.	1.2	67.	1.6	92.	1.5
18.	1.1	**43.	3.5	68.	1.5	93.	2.9
19.	1.5	44.	1.2	69.	2.4	94.	1.2
20.	1.0	45.	2.0	70.	1.3	95.	1.0
21.	1.7	46.	1.4	*71.	.8	96.	2.5
**22.	4.0	*47.	.6	72.	1.1	97.	1.1
23.	1.1	48.	1.0	73.	1.1	98.	1.2
24.	1.1	49.	.9	74.	1.0	99.	2.1
*25.	.9	50.	1.7	75.	1.3	100.	1.2

Subject 5. Mode RT: 1.3

**1.	8.3	26.	5.0	51.	1.2	76.	1.4
2.	1.5	27.	4.2	52.	2.0	77.	6.2
*3.	.7	28.	2.5	53.	1.2	78.	1.7
*4.	.9	29.	2.8	54.	1.5	79.	1.1
5.	1.9	30.	1.0	55.	1.8	80.	2.0
6.	1.3	31.	1.3	56.	2.5	81.	2.5
7.	1.5	32.	1.5	**57.	8.3	82.	1.2
8.	1.3	*33.	.9	58.	3.5	83.	2.5
9.	1.4	*34.	.9	59.	1.1	84.	1.5
10.	1.5	35.	1.6	60.	1.7	85.	1.3
11.	1.3	36.	1.8	61.	1.3	86.	1.4
**12.	7.0	37.	1.4	62.	2.7	87.	1.6
13.	3.0	38.	1.6	63.	5.0	88.	3.8
14.	1.2	39.	1.2	64.	1.2	*89.	.9
*15.	1.0	40.	2.5	65.	1.7	90.	4.1
16.	1.9	41.	1.3	66.	2.8	91.	6.5
**17.	7.1	42.	1.2	67.	2.2	92.	1.3
18.	1.2	43.	1.3	68.	1.6	93.	1.6
**19.	8.5	44.	2.7	69.	1.4	94.	2.0
*20.	.8	45.	1.4	70.	1.3	95.	1.5
*21.	1.0	46.	2.0	71.	1.6	96.	1.6
22.	1.4	47.	1.3	72.	3.0	*97.	.4
23.	1.8	48.	1.0	73.	1.3	98.	1.1
24.	1.2	49.	2.0	74.	1.3	99.	1.8
25.	1.2	50.	2.0	*75.	.9	100.	3.5

Subject 6 Mode RT: 1.5

**1.	20.0	26.	2.6	51.	2.2	76.	2.9
2.	2.0	27.	2.0	52.	2.5	**77.	6.0
3.	1.0	28.	1.5	53.	2.2	78.	1.4
*4.	.7	29.	4.0	54.	2.2	79.	1.2
5.	3.0	*30.	.8	55.	1.7	*80.	.9
6.	1.1	31.	1.6	56.	1.0	81.	2.0
7.	2.1	32.	2.5	57.	1.5	82.	1.2
8.	1.8	33.	1.1	58.	3.0	83.	2.6
9.	1.7	34.	2.1	59.	1.5	84.	2.5
10.	1.1	*35.	12.0	60.	1.6	*85.	.8
11.	1.8	36.	3.0	61.	1.6	86.	1.5
12.	2.4	37.	2.1	62.	1.5	87.	2.1
13.	1.5	38.	1.6	63.	1.5	88.	1.0
14.	1.5	*39.	1.0	64.	1.6	89.	1.2
15.	1.5	40.	2.4	65.	1.5	90.	1.2
*16.	1.0	41.	1.5	66.	2.3	*91.	.9
17.	1.5	42.	2.2	67.	2.5	92.	2.4
18.	2.5	43.	2.0	68.	1.1	93.	2.1
19.	1.5	44.	1.8	69.	2.1	94.	1.0
*20.	1.0	45.	3.0	**70.	5.6	95.	1.5
21.	1.2	46.	1.5	**71.	7.1	96.	2.4
22.	2.4	47.	2.1	72.	2.1	*97.	.6
23.	1.5	48.	1.7	73.	1.2	*98.	.9
24.	1.4	49.	1.3	74.	1.6	99.	2.1
25.	1.2	50.	2.0	75.	1.6	100.	2.0

		Subject 7	Mode RT: 1.2				
1.	1.4	26.	1.3	*51.	.6	76.	1.5
2.	2.1	27.	1.1	52.	2.4	77.	1.5
3.	1.0	28.	1.8	53.	1.4	78.	1.1
4.	1.0	29.	1.1	**54.	26.0	79.	1.7
5.	1.3	30.	1.1	55.	1.4	80.	1.3
6.	1.8	31.	1.3	56.	1.2	81.	1.8
7.	2.0	32.	1.6	57.	1.1	82.	1.7
8.	1.3	*33.	.9	58.	1.0	83.	1.3
**9.	3.1	*34.	.8	59.	2.2	84.	1.0
10.	1.0	35.	1.2	60.	1.8	*85.	.8
11.	1.2	36.	1.5	61.	1.1	**86.	2.1
12.	1.8	37.	1.9	62.	1.2	87.	1.0
13.	1.1	38.	1.5	**63.	2.6	88.	1.2
14.	1.7	*39.	.6	64.	1.4	89.	1.2
15.	1.8	40.	1.5	65.	2.0	90.	1.1
*16.	.9	41.	1.1	66.	2.1	91.	1.3
17.	1.1	42.	1.1	67.	1.2	*92.	.9
18.	1.2	43.	1.8	68.	1.0	**93.	3.7
19.	2.3	44.	2.0	69.	1.6	94.	1.9
20.	1.2	45.	1.0	70.	1.3	95.	1.4
21.	1.1	46.	1.5	71.	1.6	96.	1.3
22.	1.2	*47.	.7	72.	1.4	97.	1.1
*23.	.9	48.	1.0	*73.	.7	98.	1.3
*24.	.6	49.	1.1	74.	1.2	99.	1.3
25.	1.0	50.	1.5	75.	1.2	100.	1.5

Subject 8 Mode RT: 1.5

1.	2.7	26.	1.8	51.	.9	76.	1.0
2.	1.6	27.	1.4	52.	1.8	77.	2.2
*3.	.7	28.	2.0	53.	1.0	78.	1.5
*4.	.7	29.	1.4	54.	2.0	79.	1.6
5.	1.6	30.	1.0	55.	2.1	80.	1.2
6.	1.8	31.	1.9	56.	1.4	81.	1.4
*7.	.7	32.	1.6	*57.	.8	82.	1.3
*8.	.7	*33.	.7	58.	2.2	**83.	3.2
9.	1.4	34.	1.0	59.	1.9	84.	1.2
10.	1.2	35.	1.0	60.	1.7	*85.	.7
11.	1.5	36.	1.3	61.	1.2	86.	1.0
12.	2.5	37.	1.5	62.	2.0	87.	1.0
13.	.9	38.	1.5	63.	2.8	**88.	6.0
14.	1.5	*39.	.7	64.	2.0	*89.	.8
15.	1.0	40.	2.5	65.	1.5	*90.	.6
16.	2.2	41.	1.1	66.	1.4	91.	.9
**17.	3.1	**42.	5.0	67.	2.3	92.	1.8
18.	1.5	43.	2.1	68.	1.0	93.	2.5
19.	1.1	44.	2.0	69.	2.1	94.	1.2
20.	1.2	45.	1.4	70.	2.0	95.	1.3
21.	.9	46.	1.9	71.	2.3	96.	1.6
22.	2.1	47.	1.4	72.	1.5	97.	.9
23.	1.0	48.	1.2	73.	1.6	*98.	.8
24.	1.5	49.	1.1	74.	1.3	99.	3.2
25.	1.7	50.	2.8	75.	1.9	100.	2.0

Subject 9 Mode RT: 1.0

1.	1.7	*26.	.7	51.	1.4	76.	2.1
2.	1.6	27.	1.2	52.	1.5	77.	1.6
*3.	.8	28.	.9	53.	2.7	78.	1.4
*4.	.8	29.	1.6	54.	1.5	79.	1.4
5.	1.2	30.	2.6	**55.	3.0	80.	1.0
6.	1.0	31.	1.5	56.	1.1	81.	2.0
7.	1.0	32.	1.3	57.	1.1	*82.	.8
8.	1.7	33.	.6	**58.	2.8	83.	1.4
9.	1.0	*34.	.8	59.	1.1	84.	1.4
10.	.9	35.	2.1	**60.	3.1	*85.	.6
11.	1.5	**36.	5.7	61.	1.0	86.	1.0
12.	2.0	37.	1.0	62.	2.0	87.	.9
13.	1.2	38.	1.1	63.	1.0	88.	1.1
14.	1.2	*39.	.8	64.	1.0	89.	1.3
15.	1.7	40.	2.0	65.	2.3	90.	1.0
16.	.9	41.	1.7	66.	2.2	91.	1.6
17.	.9	42.	1.2	67.	1.5	92.	1.9
18.	1.5	43.	1.3	68.	1.7	93.	2.2
19.	1.2	44.	1.5	69.	1.5	94.	1.0
20.	.9	45.	1.2	70.	2.7	95.	1.0
21.	1.8	46.	1.2	71.	1.9	96.	1.1
22.	1.0	47.	1.0	*72.	.8	97.	.8
23.	1.9	48.	1.4	**73.	3.4	*98.	.7
24.	1.1	49.	1.0	74.	1.1	99.	1.6
*25.	.8	50.	1.0	75.	2.0	100.	1.8

		Subject 10		Mode RT: 1.0			
1.	1.7	26.	1.2	**51.	3.1	76.	1.6
2.	1.1	27.	1.9	52.	1.5	77.	1.1
3.	1.4	28.	1.6	53.	1.8	78.	1.0
4.	1.1	29.	1.0	54.	1.0	79.	1.3
5.	1.0	**30.	.8	55.	2.0	80.	1.1
6.	1.0	31.	1.1	56.	1.1	81.	1.1
*7.	.7	32.	1.2	57.	2.9	*82.	.6
8.	1.6	**33.	.9	58.	2.0	83.	1.5
*9.	.8	**34.	.8	59.	1.1	84.	2.4
10.	1.2	35.	1.3	60.	2.0	85.	1.0
11.	3.0	36.	1.8	61.	1.0	86.	1.0
12.	1.1	37.	1.6	62.	1.3	87.	1.3
13.	2.5	38.	1.1	63.	1.0	88.	1.9
14.	1.5	**39.	.9	**64.	6.0	89.	.9
15.	1.2	40.	2.1	65.	2.0	90.	1.6
16.	1.4	**41.	.8	66.	1.6	91.	1.7
17.	1.2	42.	1.0	67.	1.0	92.	2.0
18.	2.1	43.	1.6	68.	1.9	93.	1.2
19.	1.6	**44.	6.6	69.	1.3	94.	1.5
20.	2.8	45.	1.6	70.	1.6	95.	1.3
21.	1.0	46.	1.1	71.	2.5	96.	1.6
**22.	4.5	**47.	.8	**72.	.6	97.	2.4
23.	1.6	48.	1.5	73.	1.3	98.	1.8
24.	1.0	49.	1.2	74.	1.1	99.	1.8
*25.	.9	**50.	3.1	75.	1.2	100.	1.3

Subject 11 Mode RT: 1.0

*1.	1.0	26.	2.5	51.	4.1	76.	2.1
2.	3.2	27.	2.1	52.	2.3	77.	1.5
*3.	1.0	28.	2.2	53.	2.0	78.	2.2
*4.	1.0	29.	2.2	54.	1.5	79.	4.0
5.	1.2	30.	3.5	55.	1.5	80.	1.6
*6.	.9	31.	2.6	*56.	.9	81.	1.7
7.	2.0	32.	4.1	57.	2.0	82.	1.0
8.	3.7	33.	1.6	58.	1.8	83.	1.2
9.	2.9	34.	5.3	59.	1.9	84.	4.6
10.	1.7	35.	2.4	60.	4.5	85.	1.0
11.	1.9	36.	1.6	61.	2.4	86.	1.4
**12.	6.0	37.	2.9	62.	2.5	87.	1.0
13.	3.0	38.	1.2	63.	3.0	88.	2.8
14.	3.5	39.	1.1	**64.	6.5	89.	1.0
15.	1.8	**40.	5.9	65.	3.2	*90.	.6
16.	1.3	41.	3.4	66.	1.7	91.	2.4
17.	2.1	42.	1.2	67.	1.4	92.	1.0
18.	1.5	43.	3.6	68.	2.0	**93.	5.6
**19.	6.1	44.	1.8	69.	1.5	94.	1.3
*20.	1.0	45.	1.3	70.	3.1	95.	1.0
21.	1.3	46.	1.4	71.	2.0	96.	2.4
22.	2.4	*47.	1.0	72.	2.9	97.	1.5
23.	1.5	48.	1.7	*73.	1.0	98.	1.0
*24.	.9	49.	1.2	74.	1.5	99.	1.3
*25.	1.0	50.	1.4	75.	3.0	100.	2.4

Subject 12 Mode RT: 1.5

1.	1.5	26.	1.7	*51.	1.1	76.	1.4
2.	2.4	**27.	3.2	52.	3.0	77.	1.6
3.	1.6	28.	1.2	53.	1.3	78.	2.0
*4.	1.0	29.	1.5	54.	1.9	79.	1.5
5.	1.6	30.	1.4	55.	2.0	80.	1.4
6.	1.7	31.	2.0	56.	1.6	*81.	1.0
7.	1.7	32.	2.5	57.	1.1	82.	1.4
8.	2.6	33.	1.2	58.	2.4	83.	1.5
9.	2.5	34.	1.2	59.	1.6	84.	2.2
10.	1.4	*35.	1.1	60.	1.2	*85.	1.0
**11.	5.4	36.	2.4	61.	2.0	86.	2.0
12.	1.9	37.	1.6	62.	1.4	87.	2.5
13.	1.5	38.	1.3	*63.	1.0	88.	1.6
14.	1.5	*39.	.9	64.	2.2	89.	1.1
15.	1.6	40.	2.0	65.	2.0	90.	1.3
16.	1.3	41.	1.7	66.	1.5	91.	2.3
17.	1.8	42.	1.3	67.	2.5	*92.	1.0
18.	1.5	*43.	1.0	68.	1.6	93.	1.4
**19.	4.5	44.	3.0	69.	1.3	94.	1.5
**20.	3.0	45.	1.7	70.	1.6	95.	2.2
*21.	1.1	46.	1.4	71.	2.1	96.	1.4
22.	1.5	47.	1.5	72.	1.6	*97.	.6
*23.	3.5	48.	2.0	73.	1.1	98.	2.1
24.	1.2	49.	1.2	74.	1.6	99.	1.7
25.	1.5	50.	1.3	75.	1.1	100.	1.5

Subject 13 Mode RT: 1.5

1.	1.2	26.	2.5	51.	1.9	76.	1.0
2.	2.6	27.	1.3	**52.	4.5	77.	1.0
3.	1.2	28.	1.2	**53.	3.8	78.	1.5
4.	1.0	**29.	4.3	54.	2.1	79.	1.7
5.	1.5	30.	2.7	55.	2.0	80.	1.4
6.	1.5	**31.	5.0	56.	2.1	81.	1.5
**7.	4.4	32.	1.8	57.	2.5	*82.	.9
8.	1.5	33.	1.0	58.	3.0	83.	1.5
9.	1.5	*34.	.9	59.	1.7	*84.	.9
10.	1.4	35.	2.2	60.	1.1	*85.	.9
11.	3.5	36.	1.2	61.	1.4	86.	1.9
12.	1.3	37.	1.3	62.	2.1	87.	.9
13.	1.5	38.	1.3	63.	2.5	88.	2.1
14.	2.2	39.	1.2	64.	1.1	89.	1.5
15.	1.4	40.	1.4	65.	1.0	*90.	.9
16.	2.5	*41.	.9	66.	2.1	91.	1.1
17.	1.6	42.	2.0	67.	2.8	92.	2.5
18.	1.1	43.	1.5	68.	1.1	93.	1.2
*19.	.7	44.	1.4	69.	1.6	94.	1.3
20.	1.0	45.	1.3	70.	2.2	*95.	.9
*21.	.9	*46.	.9	71.	1.6	96.	1.6
22.	1.9	47.	1.9	72.	1.3	97.	1.0
23.	1.5	48.	1.6	73.	2.0	*98.	.8
24.	1.0	49.	1.3	74.	1.2	99.	1.0
25.	1.0	50.	1.5	75.	1.1	100.	2.3

Subject 14

Mode RT: 1.4

*1.	1.0	26.	1.3	51.	2.8	76.	1.2
2.	1.5	**27.	9.5	52.	1.4	77.	1.3
*3.	1.0	*28.	.9	53.	1.4	78.	2.5
4.	1.4	29.	1.4	54.	1.6	79.	1.6
5.	1.3	30.	2.6	55.	1.2	80.	1.6
*6.	1.0	31.	1.7	56.	2.3	81.	2.2
7.	1.5	32.	3.1	57.	1.4	82.	1.2
8.	1.5	*33.	.9	58.	1.9	83.	1.4
9.	1.7	34.	1.2	59.	1.2	84.	1.4
10.	1.7	35.	1.4	60.	1.9	85.	1.1
11.	1.4	36.	1.4	61.	1.6	86.	1.7
12.	1.3	37.	1.3	62.	1.4	87.	1.7
*13.	.8	*38.	.9	63.	1.6	88.	2.5
14.	1.3	39.	1.2	**64.	3.8	89.	1.3
15.	1.3	40.	1.5	65.	1.9	90.	1.5
*16.	1.0	*41.	.9	66.	2.1	91.	1.4
17.	1.2	42.	1.0	67.	1.4	92.	2.0
18.	1.4	43.	1.3	68.	1.4	**93.	4.6
19.	1.0	**44.	3.9	69.	1.8	94.	2.3
20.	1.0	45.	3.3	70.	2.3	95.	1.2
*21.	.9	46.	1.3	71.	1.4	96.	1.6
**22.	6.9	47.	2.1	72.	1.3	97.	1.1
*23.	.9	48.	1.6	73.	1.3	98.	1.2
24.	1.2	49.	1.4	74.	1.6	99.	3.2
25.	1.0	50.	1.9	75.	2.1	100.	1.4

Subject 15 Mode RT: 1.5

1.	2.0	26.	1.3	51.	1.5	76.	2.0
2.	1.7	27.	1.5	52.	1.7	77.	1.6
*3.	.9	28.	1.5	53.	1.7	78.	2.1
*4.	.8	*29.	1.1	54.	1.3	79.	1.2
5.	1.4	30.	1.2	55.	2.4	80.	1.7
*6.	1.0	31.	1.9	56.	1.2	81.	1.5
7.	1.6	32.	2.6	*57.	.9	82.	1.1
8.	2.7	33.	1.1	58.	2.9	83.	2.4
9.	2.5	*34.	1.0	59.	2.5	84.	1.6
*10.	1.1	35.	1.5	60.	1.5	85.	1.1
11.	2.0	36.	1.4	61.	1.9	*86.	1.0
12.	1.9	*37.	.8	**62.	3.5	87.	1.8
13.	1.6	38.	1.5	63.	1.1	88.	1.5
14.	2.3	*39.	.8	64.	1.2	89.	1.5
15.	2.6	*40.	3.9	65.	1.7	90.	1.9
16.	1.3	41.	2.1	66.	1.6	91.	2.0
17.	1.9	42.	1.1	67.	1.8	92.	3.0
18.	2.0	43.	1.3	68.	1.1	93.	2.2
19.	2.4	44.	1.4	69.	1.7	94.	2.4
20.	1.2	45.	1.7	70.	1.3	95.	1.4
21.	1.5	46.	1.5	*71.	4.6	96.	2.0
22.	1.8	47.	1.5	72.	2.5	97.	2.3
23.	1.5	*48.	.8	73.	1.4	**98.	3.1
24.	2.3	49.	1.6	74.	2.1	99.	1.8
25.	2.6	50.	2.7	**75.	6.1	100.	2.6

Subject 16

Mode RT: 1.5

1.	1.3	26.	1.2	*51.	1.0	76.	1.3
2.	1.5	27.	1.2	52.	1.6	77.	1.1
*3.	.7	28.	1.1	53.	1.6	78.	1.8
*4.	.7	29.	1.5	54.	1.7	79.	3.0
*5.	1.1	30.	1.1	55.	1.5	80.	1.2
6.	1.2	31.	1.3	56.	1.1	81.	1.5
7.	1.1	32.	2.6	*57.	3.6	*82.	1.0
8.	2.0	33.	1.5	58.	2.1	83.	1.3
9.	1.7	34.	2.5	59.	1.5	84.	1.1
10.	1.2	35.	1.1	*60.	1.0	85.	1.1
11.	1.7	*36.	3.5	61.	1.3	86.	1.1
*12.	7.3	37.	1.4	62.	1.3	87.	1.4
13.	1.4	38.	1.5	63.	1.3	88.	1.6
14.	1.4	*39.	1.0	64.	2.1	89.	1.4
15.	1.6	**40.	5.2	65.	1.4	*90.	.7
16.	1.1	41.	1.5	66.	1.4	91.	1.4
17.	1.7	42.	1.1	*67.	4.2	92.	1.3
18.	1.5	43.	1.7	68.	2.0	93.	2.2
19.	1.9	44.	1.9	69.	2.2	94.	1.7
20.	1.1	45.	1.5	70.	2.0	95.	1.1
21.	1.1	46.	1.9	71.	1.5	96.	1.5
22.	2.3	47.	1.1	72.	2.1	*97.	.9
23.	1.1	48.	1.5	73.	1.2	*98.	1.0
24.	1.7	*49.	.9	74.	1.2	99.	1.5
25.	1.2	30.	2.6	75.	1.5	100.	1.5

APPENDIX B

Stimulus-words, Response-words and

GSR's for Subjects 1 thru 16

Stimulus and Response Words with Average
GSR Changes in Gram for
Subject 1

Stimulus	Response	Av. GSR Changes**
*Soapy	Stove	+ 3,500
None	Stove	+ 1,750
Table	Table	+ 1,333
*Navel	Never	+ 3,000
*Price	Price	+ 1,001
From	Price	+ 1,500
Truck	Truck	+ 3,533
*Glass	Glass	+ 2,033
*Gone	Glass	+ 2,250
Right	Right	+ 4,750

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: + 2,357

**Total Av. Change to Neutral Stimuli: + 663

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 2

Stimulus	Response	Av. GSR Changes**
*Break	Maple	- 188
Smart	Short	/ 658
Sweet	Sweet	- 63
*Birth	Happy	- 657
*Price	Broom	- 610
Short	Sorry	- 593
Maple	Maple	- 375
*Ledge	Ledge	- 57
*Trust	Trust	- 438
Broom	Broom	- 500

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 390

**Total Av. Change to Neutral Stimuli: - 175

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 3

Stimulus	Response	Av. GSR Changes**
*Guide	Soapy	ƒ 188
Large	River	- 0
Agony	Night	- 84
*Relay	Relay	ƒ 42
*Ledge	Ledge	ƒ 500
Maple	Maple	ƒ 125
Watch	Watch	ƒ 833
*Power	Power	ƒ 542
*Soapy	Table	= 1,375
Stand	Stand	ƒ 111

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: ƒ 139

**Total Av. Change to Neutral Stimuli: ƒ 197

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 4

Stimulus	Response	Av. GSR Changes**
Stare	Stare	0
*Child	Child	0
*Youth	Table	0
Abuse	Reach	0
Night	Right	+ 813
*Dream	Night	- 407
*Trunk	Trunk	= 4,469
Table	Table	- 2,438
Organ	Organ	+ 542
*Party	Right	- 271

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 1,029

**Total Av. Change to Neutral Stimuli: - 217

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 5

Stimulus	Response	Av. GSR Changes**
Grass	Ocean	- 17
*Frame	Short	0
*Anger	Bible	- 134
Right	Right	- 67
White	White	- 346
*Bible	Slime	0
*Brave	Bible	- 119
Ocean	Grass	+ 59
Night	Night	- 139
*Slime	Power	0

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: = 50

**Total Av. Change to Neutral Stimuli: = 102

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 6

Stimulus	Response	Av. GSR Changes**
Grass	Watch	0
*Naval	Light	- 5,950
*Anger	Stand	- 4,900
Large	Large	- 1,700
Short	Grass	+ 2,050
*Paper	Stand	- 2,400
*Organ	Sweet	- 2,100
Happy	Watch	+ 2,300
Ashes	Match	+ 2,400
*Reach	Stand	- 4,500

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 3,970

**Total Av. Change to Neutral Stimuli: + 1,010

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 7

Stimulus	Response	Av. GSR Changes**
Agony	Agony	0
*Badge	Badge	- 178
*Break	Break	- 59
Table	Table	✓ 59
Green	Soapy	0
*Eagle	Eagle	✓ 60
*Smart	Smart	✓ 159
Sweet	Sweet	- 60
Spend	Night	0
*Throw	Throw	0

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 4

**Total Av. Change to Neutral Stimuli: 0

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 8

Stimulus	Response	Av. GSR Changes**
*Guide	Germ	✂ 288
Short	Apple	0
White	Germ	0
*Germ	Cover	- 1,080
*Bible	Match	0
Sleep	Sleep	- 1,025
Eagle	Guide	✂ 172
*Apple	Apple	✂ 256
*Cover	Cover	- 1,923
Rough	Rough	✂ 344

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: = 492

**Total Av. Change to Neutral Stimuli: = 102

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 9

Stimulus	Response	Av. GSR Changes**
*Agony	Agony	= 156
Large	Large	0
Solid	Solid	= 500
*Fancy	Noise	= 94
*Noise	Sweet	= 75
Night	Short	= 563
Clean	Clean	≠ 781
*Sleek	Sleek	= 219
*Glass	Glass	= 375
Match	Match	= 235

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: = 184

***Total Av. Change to Neutral Stimuli: = 103

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 10

Stimulus	Response	Av. GSR Changes**
Solid	Child	- 456
*World	Youth	- 854
*Inner	Right	- 985
Clean	Clean	- 0
Happy	Happy	✓ 132
*Child	Clean	- 416
*Price	Price	= 46
Youth	Youth	= 60
Rough	Rough	= 123
*Spend	No Response	- 62

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 473

***Total Av. Change to Neutral Stimuli: - 101

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 11

Stimulus	Response	Av. GSR Changes**
*Break	Ocean	- 3,552
River	Agony	- 650
Horse	Horse	/ 321
*Inner	Trust	- 3,386
*Brave	Inner	- 417
Green	Green	0
Anger	Candy	/ 2,013
*Frame	White	/ 525
*Trust	Frame	- 700
Stone	Stone	/ 3,056

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: = 1,506

**Total Av. Change to Neutral Stimuli: / 948

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 12

Stimulus	Response	Av. GSR Changes**
*Dance	Large	+ 66
Grass	Dance	+ 263
Sweet	Heavy	- 198
*Frame	Paper	+ 197
*Ocean	Short	= 263
Short	Stove	+ 1,116
Soapy	Soapy	+ 42
*Heavy	Heavy	0
*House	Frame	= 63
Trunk	Trunk	+ 438

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 13

***Total Av. Change to Neutral Stimuli: + 380

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 13

Stimulus	Response	Av. GSR Changes**
Frame	Frame	150
*Rough	Clean	125
*Laugh	Large	325
Match	Youth	500
Stove	Stove	163
*Never	Match	244
*Abuse	Laugh	366
Right	Right	163
Youth	Stare	244
*Plate	Frame	0

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: 114

**Total Av. Change to Neutral Stimuli: 244

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 14

Stimulus	Response	Av. GSR Changes**
*Child	Anger	- 383
Dream	House	- 187
Stove	Price	- 632
*House	Youth	- 671
*Price	Stove	- 240
Crowd	Crowd	- 240
Night	Night	- 240
*Inner	River	- 504
*Break	Light	0
Youth	Light	⚡ 388

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 360

**Total Av. Change to Neutral Stimuli: - 192

Stimulus and Response Words with Average
GSR Changes in Ohms for
Subject 15

Stimulus	Response	Av. GSR Changes**
Woman	Woman	- 850
*Trust	Trust	- 744
*Hedge	Hedge	- 1,750
Sweet	Sweet	- 475
Short	Slime	- 1,662
*Organ	Short	- 1,467
*Power	Power	- 1,325
White	White	- 1,225
Slime	Smart	- 1,513
*Watch	River	- 1,857

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 1,429

**Total Av. Change to Neutral Stimuli: - 1,145

Stimulus and Response Words with Average
GSR Changes in Chms for
Subject 16

Stimulus	Response	Av. GSR Changes**
*Brave	Truck	0
White	White	ƒ 184
Short	Short	ƒ 162
*Noise	Fruit	ƒ 48
*Trust	Trust	0
Stone	Slime	- 125
Truck	Truck	ƒ 325
*Slime	Relay	0
*Relay	Relay	- 69
Grass	Grass	ƒ 1,375

*Critical Stimulus-words

**Total Av. Change to Critical Stimuli: - 4

**Total Av. Change to Neutral Stimuli: ƒ 384