

1959

Personal values and visual thresholds in a complex recognition task.

<https://hdl.handle.net/2144/14180>

Downloaded from DSpace Repository, DSpace Institution's institutional repository

Boston University

GRADUATE SCHOOL

Dissertation

PERSONAL VALUES AND VISUAL THRESHOLDS
IN A COMPLEX RECOGNITION TASK

by

William Russell MacDonald
(A.B., Boston University, 1952)
(A.M., Boston University, 1953)

*Requiem was awarded
in
1959*

Submitted in partial fulfilment of the
requirements for the degree of
Doctor of Philosophy

1958

PhD
1959
ma

Approved by the Committee

Chairman

Murray I. Cohen
Assistant Professor of Psychology

Austin W. Bacheley
Professor of Psychology

Henry J. Einberg
Associate Professor of Psychology

Edward T. Davis
Clinical Associate

ACKNOWLEDGEMENTS

I wish to express a debt of gratitude to the members of the committee, Drs. Murray L. Cohen, Austin W. Berkeley, Henry Weinberg, and Edward T. Davis for the many helpful suggestions offered in the development of the present study. I thank Dr. Chester C. Bennett for the interest he showed at many points along the way. I am also indebted to many of the personnel of the Veterans Administration Hospital, Bedford, Massachusetts. A particular debt is due Dr. Thomas Mulholland of that hospital for his many cogent evaluations and suggestions. The cooperation of Miss Rebecca Glassman of the Social Service department made possible the use of Social Service personnel in pilot investigations. Miss Marguerite Dionne was responsible for the execution of the stimulus cards.

Special thanks are due to Dr. Edward T. Robinson of the Boston University Physical Research Laboratory for making the apparatus available and to Mr. Albert Leverone for calibrating the apparatus. Dr. Leo Reyna is thanked for making testing facilities available.

I am deeply grateful to Mrs. Mary Crosby for her extensive clerical help in the preparation of this thesis.

Grateful acknowledgement is due Paul Sprosty, Philip Havener, and Angeline MacDonald for scoring the Study of Values protocols. The last named is doubly thanked for her tireless efforts on my behalf.

TABLE OF CONTENTS

CHAPTER		PAGE
I	INTRODUCTION	1
II	CONTEXT OF THE PRESENT PROBLEM	3
	Personal values and perception	5
	Summary	12
III	STATEMENT OF THE PROBLEM AND HYPOTHESIS	13
IV	EXPERIMENTAL METHODS AND PROCEDURES	16
	Subjects	16
	Variables	16
	Independent Variable	16
	Level of Difficulty	19
	Dependent Variable	21
	Apparatus	21
	Stimulus words	24
	Stimulus holders	26
	Procedure	30
V	RESULTS	33
	Experimental Hypothesis	33
	Statistical Hypothesis	33
	Data	33
	Other Sources of Variation	35
	Recognition Acuity of the Groups	39
VI	DISCUSSION	42
	Other Factors Affecting Thresholds	43
	Word Frequency	46
	Implications of the Results	47
	Implications for Further Research	50
VII	SUMMARY	54
	APPENDIXES	58
	REFERENCES	78
	ABSTRACT	81
	AUTOBIOGRAPHY	86

LIST OF TABLES

TABLE		PAGE
1.	Mean Value Differences between Social, Neutral, and Economic Groups	20
2.	Log Frequency of Appearance of Words in Thorndike-Lorge <u>L</u> and <u>S</u> Counts (1941 Counts included)	27
3.	<u>F</u> Test for the Value Groups by Value Words Interaction.	34
4.	Group Mean Recognition Thresholds for Social and Economic Words.	36
5.	<u>F</u> Test for Value Words	38
6.	<u>F</u> Test for Word Pairs.	40
7.	<u>F</u> Test for the Value Groups.	41

LIST OF FIGURES

FIGURE		PAGE
1.	Tachistoscope viewed with cover removed	22
2.	Electrical circuit of tachistoscope	23
3.	Position Series of the eight Word Pairs	29
4.	Mean visual recognition thresholds of the Social, Neutral, and Economic Groups for social and economic words	37

CHAPTER I

INTRODUCTION

The notion that an individual's lasting and momentary beliefs, feelings, needs, values, drives, and other personality aspects influence his behavior has been widespread and generally accepted throughout the modern history of man. The inference that personality characteristics are reflected in perceptual behavior is more recent and less well established. Indeed, the projective tests devised by Rorschach¹, Murray², and others rest heavily upon the premise of such an interaction. Subsequently, the task of discovering properties of this relationship has become an increasing concern of present day research in perception.

One group of investigators, often referred to as "Directive State Theorists", has attempted to discover whether motivational processes lead to measurable effects on the act of perceiving itself.³ It is with this hypothesis that the present paper is concerned. In part, directive state theorists are reacting to the view that perception is a passive process and the study of perception is restricted to an elaboration of the physical qualities of the stimulus. They maintain that perception is an active

1. Herman Rorschach Psychodiagnostics, Hans Huber, Bern, Med. Pub., Dist. by Grune & Stratton, N. Y.

2. Henry A. Murray Thematic Apperception Test, 1943, Harvard University Press, Cambridge, Mass.

3. Floyd H. Allport. Theories of Perception and the Concept of Structure, 1955, Rev. Ed., New York, John Wiley & Sons, Inc., p298.

situation into which the individual's expectancies insert themselves and contribute along with autochthonous factors to the final determination of what is perceived.

As Allport⁴ points out in his recent review, directive state theory endeavors "to show that motivation and past experience, under certain conditions, not only determine selectively what is perceived, but also can modify the speed, accuracy, or vividness of the perceptual act and even the perceived dimensions of the objects." The lack of unanimity in accepting the relevant findings in this area is well described by Jenkin⁵ and need not be reiterated here. On the other hand, the need for further research and added refinement seems obvious.

The purpose of this research is to study the relationship between motivation and perception, specifically between personal values and visual recognition thresholds of words related to these personal values.

4. Op cit. p.298

5. Noel Jenkin. Affectual Processes in Perception, Psychol. Bull., 1957, 54, 100-127

CHAPTER II

CONTEXT OF THE PRESENT PROBLEM

Since this paper is concerned primarily with selective sensitization, it appears appropriate to exclude from discussion those studies which deal with such postulated constructs as organization, accentuation, and fixation. While realizing that such studies might shed light on the question of how selectivity is possible, this issue is beyond the scope of this paper. Also excluded will be those studies dealing with "negative motivational conditions", e.g., the effects of punishment or inimical stimuli. This appears justified since the present experiment includes no measure of inimical stimuli.

The context of the present experiment is formed by those studies employing a motivational state of either momentary or lasting duration as the independent variable and speed of visual recognition of motivationally relevant stimulus materials as the dependent variable. The motivationally relevant materials in these studies had a characteristic in common, namely, they were "valued" by the perceiver.

In some of these studies the value of the object was established immediately prior to the perceptual task. For example, certain materials were associated with rewards prior to their visual presentation. Consequent facilitation in speed of recognition of such pictures¹ and

1. R. Schafer and G. Murphy. The role of autism in visual figure-ground relationship. J. Exp. Psychol., 1943, 32, 335-343

linguistic materials² were reported. In others, physiological needs were enhanced by conditions of food and drink deprivation and the subsequent increased speed of recognition of relevant symbols, pictorial and linguistic representations of food and drink, were reported by the experimenters.^{3,4}

A second type of study in this area utilized enduring predispositions and individual differences in motivation. In one such study, McClelland and Liberman⁵ classified subjects on the basis of their performance on the Thematic Apperception Test and an Anagram test. Subjects were found to differ in the degree that they valued achievement. In the perceptual task, those subjects with a high achievement need recognized positive achievement related words more quickly than did subjects with low achievement needs. Also stressing individual differences, a whole series of researchers have used the individual's personal values as the independent variable in the investigation of perceptual sensitivity. Since these studies are directly related to the present experiment, they will be reviewed in greater detail.

2. M. K. Rigby, and W. K. Rigby. Perceptual thresholds as a function of reinforcement and frequency. Amer. Psychol., 1952, 7, 321. (Abstract)

3. R. S. Lazarus, H. Yousem, and D. Arenberg. Hunger and Perception. J. Pers., 1952, 21, 312-328.

4. L. G. Wispe, and N. C. Drambaream. Physiological need, word frequency and visual duration thresholds. J. Exp. Psychol., 1953, 46, 25-31.

5. D. G. McClelland, and A. M. Liberman. The effects of need for achievement on recognition of need-related words. 1949, J. Pers., 18, 236-251.

Personal Values and Perception

An early attempt to relate an individual's personal values as measured by the Allport-Vernon Study of Values⁶ to perception was reported by Woolbert⁷. He composed an artificial newspaper consisting of twenty-two headlined items, matched for physical characteristics, clipped from the New York Times. These items had been judged as most unequivocally representing the six Spranger⁸ types of value which are measured by the Study of Values. Twenty-three subjects were then tested by recognition-recall method with thirty-eight items which included the original twenty-two. They were also asked to indicate the items which they found most interesting. Recall and interest scores both were positively correlated with group scores on the Study of Values.

A more direct measure of perceptual functioning in this area was undertaken by Postman, Bruner, and McGinnies⁹ who exposed, tachistoscopically, a list of thirty-six words, one at a time, to twenty-five college students who were also given the Study of Values. The words used were judged to be relevant to the six value areas of the Study of Values, six words representing each of the following areas: theoretical,

6. G. W. Allport, and P. E. Vernon. A Study of Values. Boston: Houghton Mifflin, 1931.

7. H. Cantril, and G. W. Allport. Recent applications of the Study of Values. J. abn. & soc. Psychol., 1933, 28, 259-273.

8. E. Spranger. Types of Men. P. J. W. Pigors, trans., N.Y., Stechert-Hafner, Inc. 5th Ed.

9. L. Postman, J. Bruner, E. McGinnies. Personal Values as Selective Factors in Perception. 1948 J. Abn. Soc. Psych. 43 142-154

economic, aesthetic, social, political, and religious. The investigators found that words related to preferred value areas required shorter exposure times for recognition.

Encouraged by this, Haigh and Fiske¹⁰ repeated the experiment adding what they termed a more "direct" measure of value preference. The direct method involved having the subjects rank the thirty-six words which had been exposed tachistoscopically in terms of their preference of one word over another. This was done within four weeks after the perceptual part of the study. They were also given the Study of Values. Not only did the results corroborate the findings of the original experiment using the Study of Value, but showed even stronger confirmation using the "direct" method.

An important controversy followed the discovery of the correlation between personal values and perception. Howes and Solomon¹¹ found an inverse logarithmic correlation between frequency of appearance of a word in popular literature as measured by the Thorndike-Lorge Word Counts and tachistoscopically measured visual recognition¹² thresholds of the same word. They described the effects as "properties of a linguistic response relative to varying stimulus configurations."

10. G. Haigh, and D. Fiske. Corroboration of personal values as selective factors in perception. J. Abn. Soc. Psychol. 1952, 392-398

11. D. Howes and R. L. Solomon. Visual duration thresholds as a function of word probability. J. Exp. Psychol., 41, 401-410

12. R. Solomon and D. Howes used the term visual duration threshold.

Solomon and Howes¹³ pointed out that usually a perception is defined on the basis of observations made upon responses given by subjects under certain conditions. This being the case, there is a need to specify response properties as well as stimulus and situational properties. Specifically, they felt that since frequency of occurrence of a word in a general sample of the English language is a linguistic variable which is a general property of linguistic responses, it must also be a general property of perceptual concepts like visual duration thresholds which are based upon those responses. They believed it possible to account for the findings of Postman, Bruner, and McGinnies in terms of the known properties of the relationship of linguistic responses to linguistic stimuli, i.e., the inverse correlation between word frequency in the Thorndike-Lorge Counts and visual duration thresholds for those words.

Solomon and Howes then made a number of assumptions. They assumed that extreme differences in value ranks on the Study of Values are associated with extreme differences in frequency of usage of words in that value area, and thus extreme differences in value scores lead to larger differences in visual duration thresholds. Here it would appear appropriate to explain what they meant by the term "value rank". The Study of Values yields a profile of six scores which may be ranked from the highest (most preferred) to the lowest (least preferred). The extreme ranks would be one and six.

13. R. Solomon and D. Howes. Word frequency, personal values, and visual duration thresholds. Psychol. Rev., 58, 1951, 256-270.

Secondly they assumed that since the word frequency and the word recognition relationship approaches a logarithmic function (a negatively decelerating curve), changes in word frequency will produce smaller visual threshold differences if these changes occur for frequent words than if they occur for non frequent words. Thus a difference between two value ranks should produce a smaller difference when the stimuli used are frequent words representing the two value areas, than would be the case when the stimuli were relevant infrequent words.

Finally, it was inferred from their previous data that the variation of frequency of occurrence of a word among persons is slight in comparison to the extreme variation of frequency of occurrence among words. They deduced that differences between duration thresholds due to extreme differences in value rank will be small compared with threshold differences due to differences in word frequency in the Thorndike-Lorge Count.

Their experiment was a replication of the original by Postman, et. al., with the following exceptions: two lists of words were used, one containing infrequently used words and the other familiar words - as determined by the Word Counts. Their predictions were confirmed: they found only a minor relationship between personal values and visual recognition thresholds of frequent words, whereas with infrequent words a significant relationship was found for the extreme ranks of value. They concluded that familiarity alone was necessary to explain their results.

Publishing concurrently with Solomon and Howes were Postman and Schneider¹⁴ who also replicated the original study employing the new control for frequency of usage. They also found a significant relationship between the extremes of value rank and visual recognition threshold when infrequent words were used, but reported no differences when frequent words were employed. They interpreted their results as demonstrating that frequency of occurrence in the English language is a most effective variable, but when words are relatively unfamiliar recognition builds up over a longer period of time and selective sensitivity to different value areas has a chance to show itself. This statement that with longer time necessary for perception personal values become effective appears to be a restatement of the view that as the task becomes more difficult, or the stimulus more ambiguous, the effects of subjective factors are more discernible.^{15,16,17} Such a statement is possible if it can be assumed that increases in the time required for recognition represent increases in the amount of difficulty posed by the perceptual task.

14. L. Postman, and B. Schneider. Personal values, visual recognition, and recall. Psychol. Rev., 58, 1951, 271-284.

15. J. S. Bruner. Personality dynamics and the process of perceiving. In Blake R.R. and Ramsey, G.V. (eds.), Perception An Approach to Personality, New York, Ronald Press, 1951.

16. F. H. Allport. Theories of Perception and the Concept of Structure, 1955, Rev. Ed., New York, John Wiley & Sons, Inc.

17. K. R. Newton. Visual recognition thresholds and learning. Perceptual and Motor Skills, 6, No. 2, 1956.

Suggestive evidence for Postman and Schneider's explanation can be found in a study wherein it was predicted that the relationship between personal values and recognition thresholds would not hold. Eisdorfer¹⁸ administered the Study of Values to twenty four subjects whom he divided into four groups. Using only fairly common words, he constructed two lists of eighteen words each, three words in each of the lists representing one of the six value categories. Two methods of determining thresholds were used: the conventional tachistoscopic procedure and a procedure utilizing a continuous increase in brightness intensity. Two of the groups were given one list of words, and the other list was given to the remaining two groups. The order of perceptual task was also controlled by obtaining brightness thresholds first with two groups and duration thresholds first with the other two groups, making four conditions in all.

Eisdorfer concluded that methods involving varying the exposure time and those varying the illumination do not result in equivalent patterns of threshold variation, and that the Postman, Bruner, and McGinnies hypothesis of selective perception in terms of values was not supported by the data of his experiment. It can be noted, however, that in the tachistoscopic procedure there was evidence for such an hypothesis: eighteen

18. G. Eisdorfer. A comparison of two methods for the determination of visual duration thresholds. Psychol. Newsletter, 1954, VI, Nov.-Dec.

of the twenty-four published correlations between duration thresholds and value rank were positive, which, Eisdorfer admits yields a probability value of .01. This suggestive material is attributed by Eisdorfer to the differential opportunity for guessing offered by the two methods of obtaining thresholds. Interestingly enough the same article reports on the study by Klein and Schlesinger¹⁹ in which it was pointed out that one of the factors systematically increasing subjective errors in a perceptual task was the difficulty of the task. From the data taken from Eisdorfer's experiment, it appears likely that the difficulty of the task was again a factor. It seems reasonable to assume that guessing increases with the difficulty of the task, and according to Eisdorfer guessing was much more prominent in the tachistoscopic procedure: a mean of 5.0 additional responses as compared to a mean of 1.9. The tachistoscopic procedure being more difficult led to greater effects of value.

Lately there have been attempts to synthesize factors of familiarity, set, recency, and other more "formal" variables with motivational variables into a larger more inclusive theoretical context. The attending methodological changes have led to attempts to discover the interaction of more than one of these factors in the same experiment. Consequently, it has been shown how word frequency can act as a limiting factor. Wispe²⁰ found that

19. G. S. Klein, G. J. Schlesinger, and D. E. Meister. The effect of personal values of perception: an experimental critique. Psychol. Rev., 1951, 58, 96-112.

20. Op Cit.

physiological drives were much more effective in reducing the thresholds of infrequent words. Engler and Freeman²¹ showed that a set to see a certain category of words was much more effective in lowering the thresholds of infrequent words. In the area of Personal Values, however, further experimental attempts to discover the conditions under which motivation affects perception has been notably lacking.

Summary

A number of studies have been done which suggest that motivation influences perception. Experiments in one area especially, that of personal values, have led to attempts at more inclusive theoretical formulations. On the other hand, further experimentation in this area is lacking, leaving important issues unresolved. A further study of the conditions under which personal values may be expected to lead to measurable effects on visual perception seems to be in order.

21. J. Engler, and J. T. Freeman. Perceptual behavior as related to factors of associative and drive strength. J. Exp. Psychol., 1956, 51, 399-404

CHAPTER III

STATEMENT OF THE PROBLEM AND HYPOTHESIS

It has become increasingly common in psychology to infer that the effects of motivational factors are more evident as the difficulty of the task, or the ambiguity, is increased. That the same is true not only in the area of clinical testing, but also in perceptual behavior has been asserted by Bruner¹ and others.^{2,3} This viewpoint appears to underlie Postman's and Schneider's contention that with increasing time necessary for recognition, personal values become effective. In the present study, an attempt will be made to alter the level of difficulty in such a way as to allow personal values to become more effective.

Postman and Bruner⁴ have begun construction of a more general theory of perception. Briefly, they see perception as a process in which the perceiver makes "hypotheses" about the stimulus. They state a number of conditions which lead to the strengthening of perceptual hypotheses, among them motivation and frequency of past commerce with the stimulus. There appear to be a number of

1. J. S. Bruner. Personality dynamics and the process of perceiving. In Perception: an Approach to Personality, Blake and Ramsey, eds., 1951, Ronald Press, New York, 121-148.

2. F. H. Allport. Theories of Perception and the Concept of Structure. (Rev. ed.) New York: John Wiley & Sons, 1955

3. K. R. Newton. Visual recognition thresholds and learning. Perceptual and Motor Skills, 6, No. 2, 1956.

4. J. S. Bruner. Op Cit.

reasons for accepting the familiarity postulate; numerous studies have shown the facilitating influence of familiarity in both learning and perception. Can it also be shown that motivation facilitates the perception of motivationally relevant objects and symbols? It is proposed here that motivational predispositions do lead to selecting, and as a corrolary, to faster recognition of motivationally relevant stimuli.

The general formulation of the reasoning from which the present experiment is derived may be stated as follows: as the level of difficulty of the perceptual task increases, motivational factors become measurably effective. At a low level of difficulty, D1, perception is primarily a function of non-motivational factors. D1 may be defined as that difficulty existing when frequent words are exposed singly at a fixation point on a uniform field. It is assumed that this level of difficulty has been empirically established by Solomon and Howes⁵ and by Postman and Schneider⁶ who exposed frequent motivationally relevant words singly at a fixation point on a uniform field. Under such conditions they were unable to discover effects attributable to motivational factors.

The second aspect of the theoretical formulation states that at a higher level of difficulty, D2, perception is a function of

5. R. Solomon and D. Howes. Word frequency, personal values, and visual duration thresholds. Psychol. Rev., 58, 1951, 256-270

6. L. Postman and B. Schneider. Personal values, visual recognition, and recall. Psychol. Rev., 58, 1951, 271-284.

motivational as well as non-motivational factors. An empirical derivative of this statement is to be tested in the present experiment. Since no change in familiarity is desired, it was decided to increase difficulty in some other manner. Thus if words are presented two at a time in varying positions around a fixation point the perceptual task becomes more difficult. The empirical derivation of the second theoretical statement is that if frequent, motivationally relevant words are exposed two at a time in varying positions around a fixation point there will be measurable effects of motivational factors. Operationally, these effects can be defined as follows: If one of the two words presented simultaneously is related to an area of high motivation, and the remaining word is related to an area of low motivation, that word which is related to high motivation will be perceived prior to that word which is related to low motivation. It is assumed that high personal value is a motivational condition.

The experimental hypothesis may be stated as follows: Words which are related to areas of high personal value will be perceived at shorter exposure times than words related to areas of low personal value.

CHAPTER IV

EXPERIMENTAL METHODS AND PROCEDURES

Subjects

Thirty male college students from the various schools of Boston University participated in the complete experiment. Sixteen others either did not meet the visual requirements or did not return for the second part of the experiment. Only those subjects with no known visual abnormalities were used. This was accomplished by obtaining subjects who professed 20/20 vision with or without correction, and by establishing a cutoff point at 680 msec.

Since some of the schools sampled were graduate schools, intelligence and age factors were controlled by using only Juniors, Seniors, Graduates, and in two cases, overage (service veteran) Sophomores. The mean age of each of three subgroups of ten subjects each was 27.3 for the Social Group, 24.5 for the Neutral Group, and 24.0 for the Economic Group.

Variables

Independent Variable

The independent variable in this experiment was personal value as measured by the Allport, Vernon, Lindzey Study of Values.¹ This instrument has been in use since 1931, and was revised and improved in 1951. Values are classified into six

1. G. W. Allport, P. E. Vernon, and G. Lindzey. Study of Values. 1951, Houghton Mifflin, Cambridge, Mass.

areas: theoretical, economic, aesthetic, social, political, and religious. Originally the classification was based upon Edward Spranger's Types of Men², but in the present scale the social value items have been limited to measure "altruistic love or philanthropy" rather than "love in any form - conjugal, familial, philanthropic, or religious." In so doing Allport, et al raised the reliability of measurement of the social value quite strikingly.

Both the split-half and the test-retest methods of assessing reliability have been applied to the Study of Values.³ Using the former method, product-moment correlations ranging from .73 for the theoretical area up to .90 for the religious area were obtained. Test-retest measures on 34 cases yielded coefficients ranging from .77 for social values to .92 for economic values. The internal consistency was also checked by an analysis of the items carried out on a group of 780 subjects of both sexes, showing a positive correlation for each item with the total score for its value, significant at the .01 level.

For the purpose of the present study only two value areas were needed. In selecting these areas both the Manual⁴ and a study by Brown and Adams⁵ were consulted. In their study they

2. E. Spranger Types of Men. 5th Ed., P. J. W. Pigors, trans., Stechert-Hafner, Inc., 31 east 10th St., New York

3. Op Cit.

4. G. W. Allport, P. E. Vernon, & G. Lindzey. Study of Values, Manual of Directions, 1951, Houghton Mifflin Co., Riverside Press, Cambridge, Mass.

5. D. R. Brown and J. Adams Word frequency and the measurement of value areas. J. abnorm. soc. Psychol., 49, 1954, 427-430

administered six revisions of the Study of Values wherein one area of value was favored by using frequent words in the response alternatives. Each of six groups was given the original plus one of the revised forms. A different area was favored for each group. Correlations of the revisions with the original remained significantly positive, and there were no consistent changes in scores on the value area favored for one group compared to the five other groups in that value area. The correlations were based on scores for the different values. When frequent words were used in some areas, however, they tended to be favored by higher scores than when non frequent words were used. Religious and theoretical value changes reached significance at the .01 level while aesthetic value changes reached the .07 level. It would seem then that social, economic, and political values are less susceptible to the influence of changes in word frequency than the other values. Further, among the social, economic, and political values, the Manual reports the highest negative correlation exists between the first two ($r = -.36$). Since the present experiment deals with opposing values, it was decided to use differences between the scores in the social and economic value areas as the independent variable of this experiment.

Each subject was placed into one of three subgroups on the basis of his scores on the Study of Values. He was placed in the Social Group if his value scores showed a marked preference for the social value in contradistinction to the economic value, in the Economic Group if he showed a marked

preference for economic values over social values, and in the Neutral Group if he demonstrated no marked preference. The criteria for placement in the Social Group were as follows: a social value score greater than 45 accompanied by an average (35-45) or lower score on the economic value, or a score above 40 on social values accompanied by a score below 32 on the economic value. The Economic Group criteria were as follows: an economic value score above 45 coupled with a social value score in the average range or lower, or an economic score above 40 coupled with a social score below 32. A score below 32 represents 40 minus one standard deviation in the standardizing group presented in the Manual. The Neutral Group was composed of those subjects whose scores were in the average for both social and economic values, or were both below 40. Table 1 gives the mean value differences between the three groups.

Level of Difficulty

While the level of difficulty was not systematically varied within the present experiment, the difference between perceptual difficulty attending the present method of stimulus presentation and that attending previous methods is an important factor in the present study. It was assumed here that the present method of exposing words two at a time around a fixation point makes the perceptual task more difficult than is the case when words are exposed singly at a fixation point. To show that this difference in difficulty between the two methods existed, two male subjects were each given the task of recognizing three words presented one at a time, and three words presented along with a pseudo word

Table 1

Mean Value Differences Between Social, Neutral,
and Economic Groups

Values		Groups		
			Neutral	Economic
Social	Groups	Mean	Mean Difference	
	Social	45.6	10.4**	12.9**
	Neutral	35.2	-	2.5 N.S.
	Economic	32.7	-	-
Economic				
	Social	30.0	8.7*	21.2**
	Neutral	38.7	-	12.5**
	Economic	51.2	-	-

* Significant at .05

** Significant at .01

Note: The estimates of σ used to compute Z scores were taken from the Manual.

consisting of a series of Xs equal to the number of letters in the word it accompanied. A mirror-type tachistoscope with incandescent bulbs was used.

Both subjects reported greater difficulty with the multiple word presentation. The obtained mean recognition thresholds of 179 msec. for single words and 454 msec. for multiple word presentation confirmed their phenomenological reports.

Dependent Variable

Visual recognition thresholds was the dependent variable. A visual recognition threshold was defined as that point where the stimulus word was exposed for a period long enough to elicit a correct recognition response from the subject. The exposure time was measured in hundredths of a second beginning at 10 and continuing in steps of 2 up to 68.

Apparatus

An electronically timed mirror-type tachistoscope was used in the experiment. A picture of the apparatus is presented in Fig. 1. This tachistoscope featured a timer which was variable from .001 to 10.0 seconds through the manipulation of four ten step dials. For the present study, only the hundredths and tenths of a second dials were needed. At the beginning of the experiment the timer was calibrated and found to be accurate to one-tenth of one per cent on each dial. This represents no change over a four year period. The wiring plan of the timer is shown in Fig. 2.

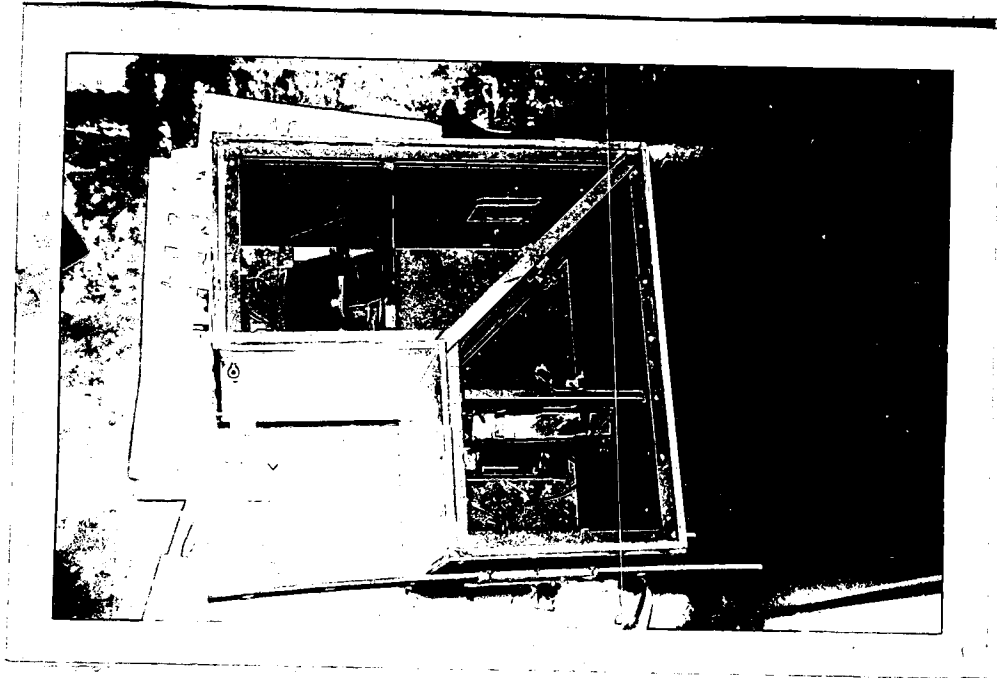
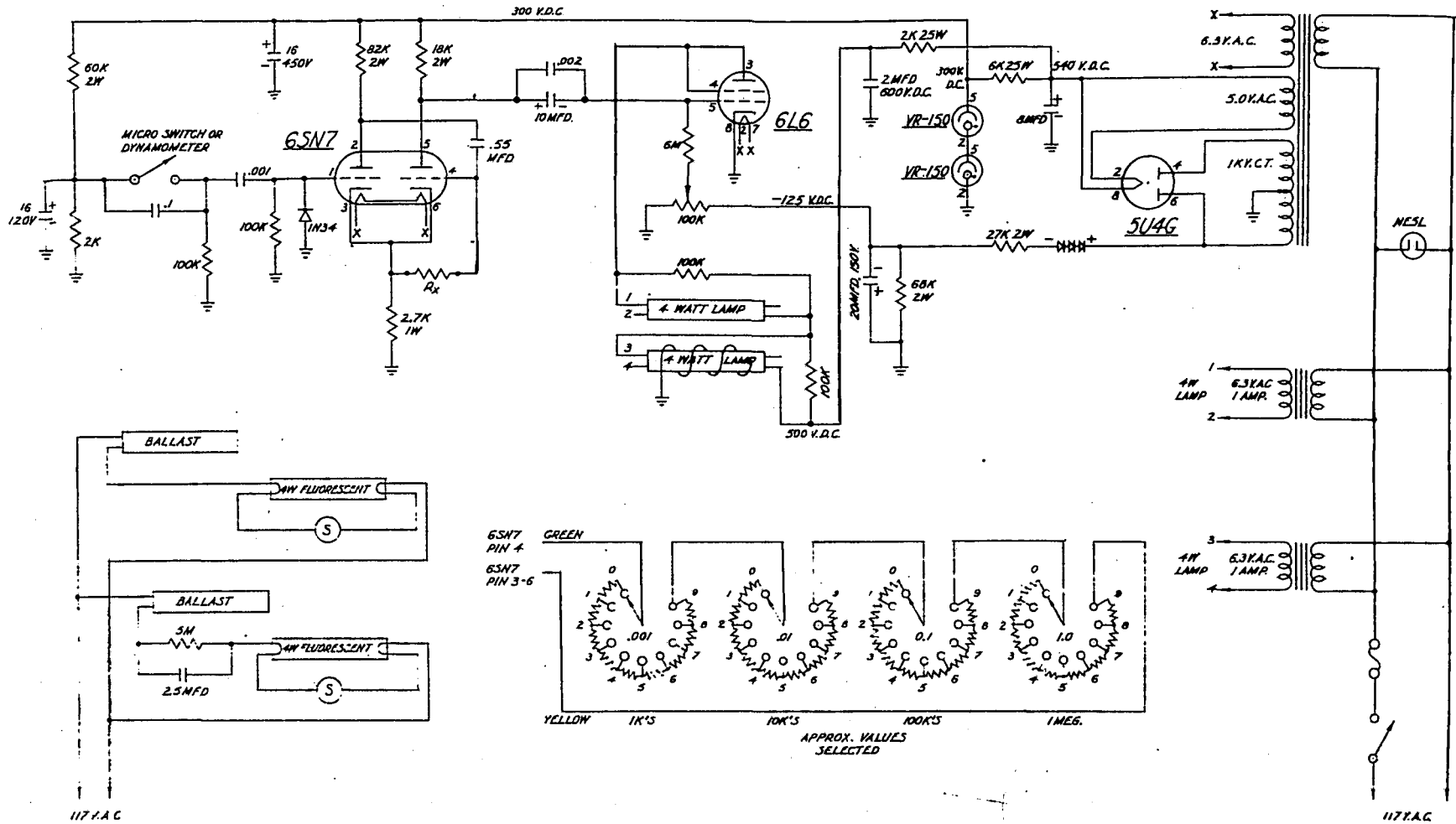


Fig. 1 Tachistoscope viewed
with cover removed.



NOTE: R_x = RESISTORS ON MULTIPLE SWITCHES

2-PIN JONES CONN.
TO MICROSWITCH
1-B + 2-GRID IN.

10-PIN JONES CONN.
TO "T"-SCOPE

1-B + (ORANGE)	2-PIN 3-6L6 (GREEN)
3- (YELLOW)	4- (BLUE)
5-GROUND (WHITE)	6-
7-6.3 K.A.C. (BROWN)	8-6.3 K. LAMP (BLACK)
9-6.3 P.A.C. (PURPLE)	10-6.3 P. LAMP (RED)

Fig. 2. Electrical circuit of the tachistoscope.

The stimulus lighting consisted of two four watt "standard cool white" fluorescents transmitting light through three layers of mildly exposed X-Ray film. The field was illuminated by two four watt cool white fluorescents, each completely screened by one layer of mildly exposed X-Ray film. The field lights remained on throughout each experimental session, thus allowing some brightness adaptation.

All the lamps used in the study were aged three hours prior to their use to control for brightness variability due to aging. Bi-weekly checks of the lighting were made with a Weston Illumination Meter, Model 756 (Viscor Filter) which indicates illumination in foot-candles based on the New Candle. The illumination measured at the fixation point (field) was 24 foot-candles. With exposure time set at 500 msc., the illumination $\frac{1}{2}$ inch behind the stimulus window was .7 foot-candles. Readings at the fixation point were taken with the room lights off and the top of the tachistoscope removed. Readings at the stimulus window were taken with the room lights off and the tachistoscope cover in place.

Stimulus Words

Words representing the six areas measured by the Study of Value were gathered from various sources including the previous studies. A list of 153 such words were given to seven judges, along with Spranger definitions of value. These judges were asked to assign one of the following four designations to each word: 1. It corresponds to the Spranger definition of one of

the six values; 2. It corresponds to popular notions of the six values, but not to 1; 3. It is ambiguous in that it could apply to more than one value area; and 4. It fits none of the value areas. From the words judged most appropriate, social and economic words were chosen which could be matched with regard to length and frequency of appearance in the Thorndike-Lorge Word Counts. Since they had already been judged appropriate, words used in previous studies were given added weight.

To exclude word pairs wherein one member of the pair was markedly "easier" to see than the other, five subjects from the staff of a veterans hospital were tested on the selected pairs. A mirror-type tachistoscope utilizing incandescent lighting and a less efficient timer was employed for this screening process. Four social-economic pairs were selected following this procedure. The experimental word pairs were: kindly-useful, affection-economics, sympathy-commerce, and friendly-finances.

Four other pairs of words from the remaining four value areas - religious, aesthetic, theoretical, and political - were selected which, although they were rated as corresponding to the particular value area and were matched for length, were not deliberately matched for Thorndike-Lorge frequency. A requirement for these words was that they be among those more quickly recognized of 40 words presented tachistoscopically to two of the pre-experimental subjects. These pairs will be referred to as the "insert" pairs. They were: research-painting, worship-science;

powerful-discover, and religious-beautiful. While the individual lengths are not exactly the same as the experimental pairs, the total number of letters for the four pairs is the same in both experimental and insert conditions.

The purpose of the "insert pairs" was to prevent the subject from acquiring a set to see only social and economic words. With an equal number of words from the other value areas, the chance of the subject's developing a situational expectancy to see only words in the experimental value areas is minimized.

The logarithms of the frequencies given in the Thorndike-Lorge L and S counts are given in Table 2. Two counts were used to obtain a more stable estimate. The L count mean log of 2.39 for social words and 2.31 for economic words compares favorably with the 2.22 and 2.28 figures for the "frequent" words in the same value areas in the study done by Solomon and Howes. It can be seen from the same table that only frequent words were used in the experiment being presented here.

Stimulus Holders

An electrical typewriter with a new ribbon was used by a clerical worker to type the word pairs on three by four inch white cards. Upper case capitals were struck with the instrument set in the light touch position. Eight pairs of words were used comprising four social-economic pairs and four insert pairs. Each pair was typed on an individual card.

To preclude the possibility of one word of the pair being favored by its position on the card, three positions were used

TABLE 2

Log Frequency of Appearance of Words in Thorndike-Lorge
L and S Counts

Social Words	Log L	Log S	Mean Log S and L
Kindly	2.32	2.22	
Friendly	2.55	2.55	
Sympathy	2.35	2.43	
Affection	2.34	2.20	
			2.37
Economic Words			
Useful	2.33	2.33	
Finances	2.36	2.52	
Commerce	2.06	2.62	
Economics	2.49	2.84	
			2.44
Insert Words			
Powerful	2.26	2.54	
Discover	2.84	2.84	
Painting	2.34	2.24	
Research	2.17	2.28	
Worship	2.17	2.54	
Science	2.40	2.87	
Beautiful	2.99	2.80	
Religious	2.20	2.64	
			2.50

for each word of each pair. Thus there were three positions in which a particular word might appear. If all three positions were occupied by words on any one card, they would appear in triangular fashion such that the sides of the enclosed triangle would measure $5/8$ of an inch. The points of this hypothetical triangle would touch the right hand edge of the left word, the bottom center of the top word, and the left hand edge of the word on the right. The fixation point would fall in the center of the triangle. Actually only two words appear on any card.

Taking the pair kindly-useful as an example, the procedure was as follows: The word "kindly" was typed to the lower left of the fixation point, and the word "useful" was typed directly above the fixation point. On a second card the same positions were used but the word "useful" appeared on the lower left and the word "kindly" to the top. On a third card, the word "kindly" was typed to the lower right and the word "useful" to the top. These positions were reversed on the fourth card. On the fifth card the word "kindly" was typed to the lower left and the word "useful" to the lower right. The positions of the fifth card were reversed on the sixth card. The same procedure was followed for each of the other seven word pairs.

The six cards which made up the position series for each pair were then taped on a masonite board, measuring 27 inches long by four inches wide. These stimulus boards are pictured in Fig. 3. With the aid of markings on the brackets attached to the back of the tachistoscope along with markings on the back of the masonite boards, it was then possible to expose any

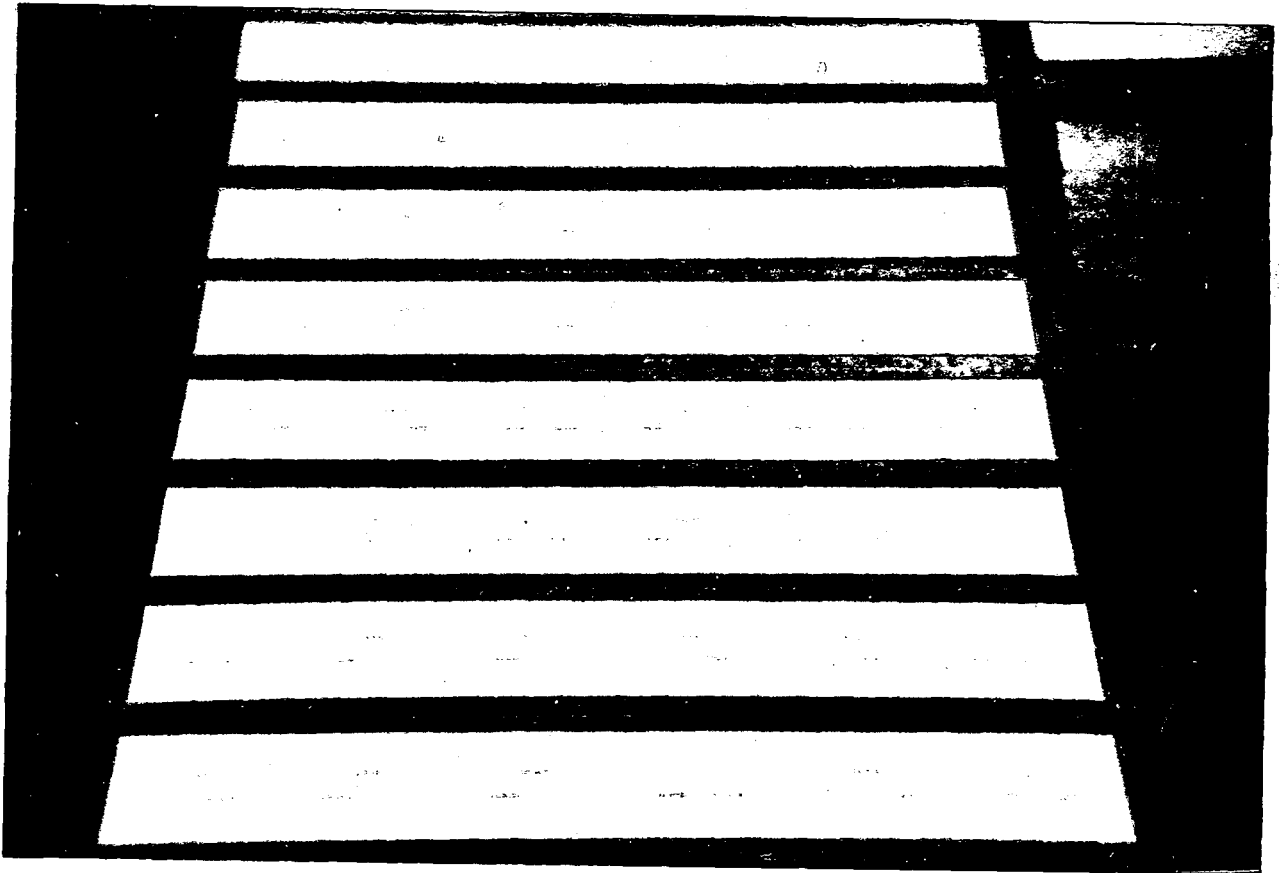


Fig. 3 Position Series of the eight Word Pairs

of the six spatial pairings in the $2\frac{1}{2}$ inch high by $3\frac{1}{2}$ inch wide stimulus opening by sliding the board to the left or right. A random order was followed in taping the cards on the stimulus boards so that no two boards present a similar spatial pairing at all six positions.

Procedure

The subjects were seen in two sessions, each lasting from twenty to twenty-five minutes. Immediately following the second session the subject was given the Study of Value. No subject was allowed to go through both sessions on the same day. By limiting the time the subject spent at the tachistoscope, the possibility of fatigue was controlled.

Before each subject was taken into the tachistoscope room, he was told quite casually: "This is only a word recognition thing. I'll run some practice words first, so that you will know exactly what to do." This was an attempt on the experimenter's part to equate the subjects' "task set" as much as possible. The subject was then seated before the tachistoscope in a small darkened, windowless room. Stimulus cards containing the practice pair table-chair were then inserted into the tachistoscope with the following instructions:

As you look into the viewer, do you see the two dots? They are there to control eye movements. Otherwise your natural eye movements would make it very difficult for you to see all the words. So be sure to look at a point right between the two dots whenever I tell you to look right at the center which I will do constantly. Now, two seconds after I say "ready" I will flash on two words which will be located around the dots. One may be on the left and the other on the right, like this.

The practice pair is exposed at 300 msc.

Notice that they are a little below the dots, but we will just call them left and right. Or one may be at the top and the other on the left, like this.

The practice pair is exposed at 400 msc.

Or, one at the top and the other on the right.

The practice pair is exposed at 500 msc.

No other positions will be used. Your job is to tell me the word or words you see and the positions in which they appear. Always report something! Guess if you are not sure. Let's try it again.

The practice pair is again exposed in the same order at 600, 500, and 400 msc. Both practice words had to be recognized prior to starting the experiment proper. All the subjects whose data appear in this paper recognized both words in the regular six exposures from 300 to 600 msc. The subjects were then told:

I will always tell you when we are to start a new pair. Look right at the center. Ready!'

The order in which the stimulus boards were presented during each session was insert, social-economic, insert, and social-economic. The specific insert or social-economic pair used was determined by assignment from a table of random numbers.

Beginning at .10 seconds the first pair was exposed at increments of .02 seconds until both words of the pair were recognized. Pre-determined random numbers from one to six were used for each presentation of the position series to the maximum of five presentations. There were no consecutive exposures of the same card. One correct recognition was the criterion for a

recognition threshold. As soon as one pair was recognized, a new pair was begun, again at .10 seconds. The order of presentation differed for each pair and for each subject. The interval between each exposure was approximately ten seconds, while the elapsed time between the last exposure on one pair and the first exposure of the succeeding pair was approximately fifteen seconds. The practice pair was also given at the beginning of the second session following the same sequence of exposures with the same words - table-chair.

Following the second tachistoscopic session, the subject was told that there was another study in which he was expected to participate. The Study of Value was then administered in the standard way with the following modifications: the scoring page had been removed and the title obliterated by colored tape covered with a card on which the subject was instructed to write a number that had been assigned to him. On completing this task he was told he would receive an abstract containing the purposes and overall results of the different studies at a later date.

Subjects were paid at the rate of \$2.00 each. It became necessary to raise the scale to \$3.00 to obtain enough subjects with high economic values.

CHAPTER V

RESULTS

Experimental Hypothesis

The experimental hypothesis states that words which are related to areas of high personal value will be perceived at shorter exposure times than words related to areas of low personal value.

Statistical Hypothesis

The null hypothesis to be tested states that the mean difference between social and economic word recognition thresholds will be the same for the Social, Neutral, and Economic Groups. This predicts no statistical interaction between the value groups (Social, Neutral, and Economic) and the value words (social and economic) with respect to mean visual recognition thresholds.

The alternative statistical hypothesis states that there will be an interaction of value groups and value words such that the mean threshold differences between social and economic words for the Social group will be significantly different from the same mean differences for the Economic group.

Data

The data, consisting of 240 thresholds, are presented in Tables 6, 7 and 8 of Appendix D. These data were analyzed by a three way analysis of variance. The overall analysis of variance statistics

Table 3

F Test for the Value Groups by Value Words Interaction

Source of Variation	d. f.	Mean Square	F	F	Decision
				.05	
G x W	2	843.45	6.94	3.35	Reject
Pooled Ss x W	27	121.37			

are presented in Table 10 of Appendix D.

The statistic representing groups (G) by value words (W) was used to test the null hypothesis. An analysis of this interaction is presented in Table 3. The hypothesis of no interaction is rejected on the basis of the resulting F value which is significant at the .01 level for 2 and 27 degrees of freedom.

The six means representing the mean recognition thresholds for social words of the Social, Neutral, and Economic Groups are presented in Table 4 and Fig. 4. It should be noted that since males tend to score two or three points higher on economic values than on social values,¹ the mean value scores of the Neutral Group are approximately equal. Thus no difference in recognition thresholds would be predicted for the Neutral Group.

Other Sources of Variation

A second source of variation is that due to the different types of value words. The resulting F value is presented in Table 5. An inspection of the data shows that, in general, social words are recognized at shorter exposure times than economic words. This appears to be true of two of the four pairs: friendly-finances and sympathy-commerce. All three groups in the study recognized the social word in these two pairs at shorter mean exposure times than its matching economic word.

1. J. C. Stanley. Study of Values Profiles adjusted for sex and variability differences. J. appl. Psychol. 1953, 37, 472-473

Table 4

Group Mean Recognition Thresholds for Social
and Economic Words

Groups	Social	Words	Economic	Total
Social	27.8		40.7	34.2
Neutral	34.5		37.4	36.0
Economic	32.2		33.0	32.6
Mean Total	31.5		37.0	34.2

MEAN RECOGNITION THRESHOLDS
(HUNDRETHS OF A SECOND)

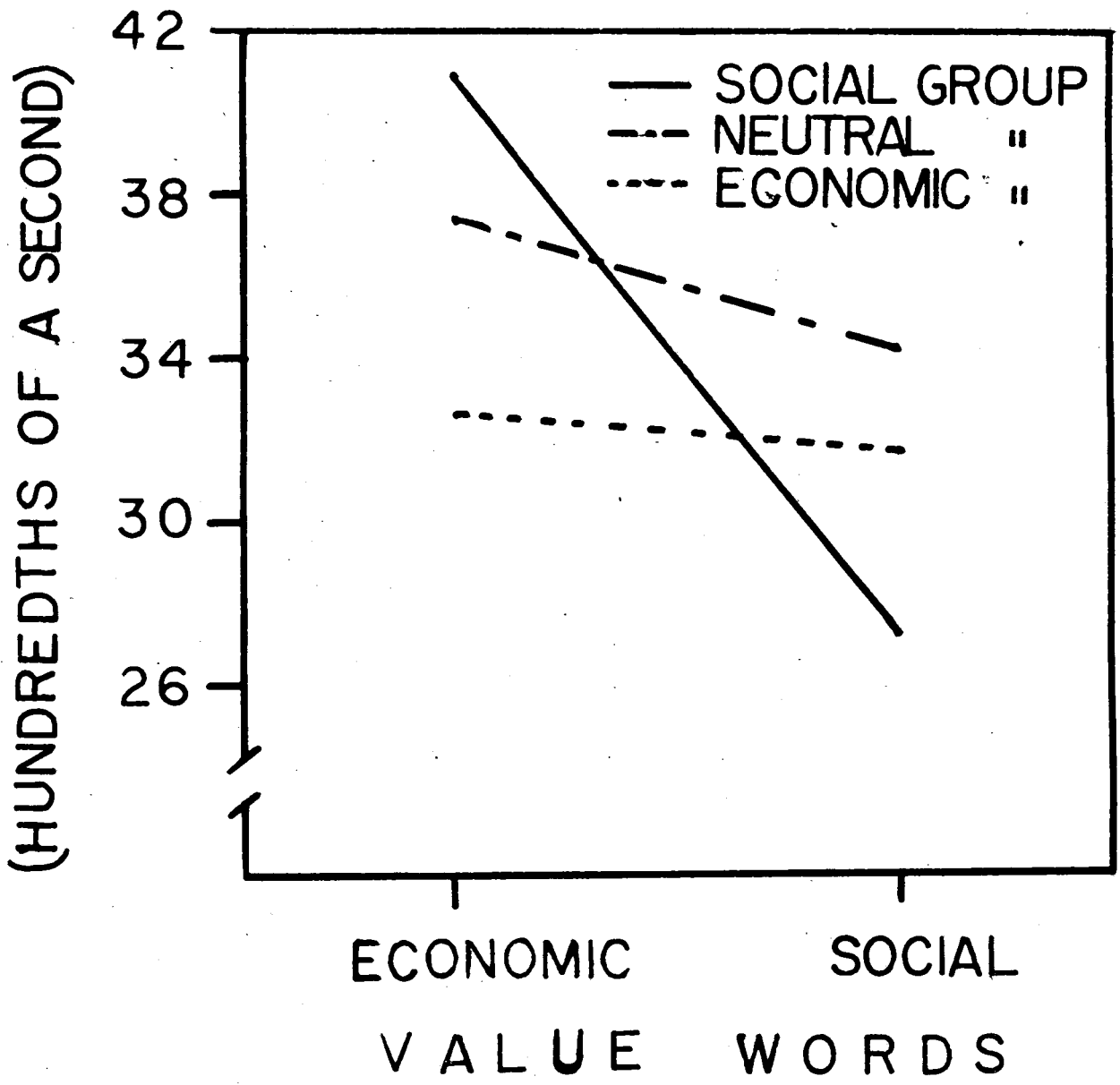


Fig. 4 Mean visual recognition thresholds of the Social, Neutral, and Economic Groups for social and economic words

Table 5

F Test for Value Words

Source of Variation	d. f.	Mean Square	F	F .05	Decision
Between W	1	1815.00	14.95	4.21	Reject
Pooled Ss x W	27	121.37			

The final significant source of variation is contributed by the different word pairs (P). The F value of 11.72 is significant at .001. The F test is presented in Table 6. If the word pairs are arranged according to length, it can be seen that the shorter word pairs require shorter exposure times for their recognition. The mean recognition thresholds for the individual pairs are as follows: kindly-useful, 59.2; friendly-finances, 64.8; sympathy-commerce, 72.6; and affection-economics, 76.6.

Recognition Acuity of the Groups

In order to compare the three groups with respect to visual recognition acuity, mean recognition thresholds irrespective of words or pairs were analyzed. The results are presented in Table 7. The non significance of this factor implies that the groups did not differ overall in visual recognition thresholds. A comparison of the mean recognition for the insert words gives an even more impressive expression of the equality of the social and economic groups; their means of 32.8 and 32.4 respectively are strikingly similar. As with the experimental words, the neutral group is again somewhat slower, yielding a mean of 36.3 for the insert words.

Table 6

F Test for Word Pairs

Source of Variation	d. f.	Mean Square	F	F .05	Decision
Between Pairs	3	1005.00	11.72	2.72	Reject
Pooled Ss x P	81	85.70			

Table 7

F Test for the Value Groups

Source of Variation	d. f.	Mean Square	F	F .05	Decision
Between Value Groups	2	224.50	1.08	3.35	Accept
Ss within Value Groups	27	207.87			

CHAPTER VI

DISCUSSION

Evaluation of Results

The results of this experiment generally support the prediction that under the condition of a complex visual task words related to areas of high personal value will be recognized at shorter exposure times than words representing areas of low personal value. These data tend to support the general statement that with increasing perceptual difficulty, motivational factors are measurably effective in determining visual acuity.

It does not appear that the specific hypothesis was confirmed with the Economic Group. The question remains as to why the mean recognition thresholds of this group were not lower for economic words than social words. In an attempt to answer this question, a further analysis of the data of this group was carried out.

Certain values appear together in certain subdivisions of the general population; for example, women tend to score higher on religious, social, and aesthetic values than on the remaining types of value.¹ The most important division from the point of view of the present experiment, however, can be seen to exist in the mean scores given for a group of 173 students of business administration.² Their scores are above the normal means in the

1. G. W. Allport, P. E. Lindzey, & G. Lindzey. Study of Values, Manual of Directions, 1951, Houghton Mifflin Co., Riverside Press, Cambridge, Mass. p.8.

2. loc. cit.

economic, political, and theoretical value areas. The same trend can be found in the Economic Group of this experiment: six of the subjects follow the pattern of scoring lowest on what may be termed a social triad, e.g., social, religious, and aesthetic.

Consequently, it was decided to separate the subjects in the Economic Group in terms of their total score on this value triad: the five subjects with the highest total score in the social, religious, and aesthetic values were placed into one group (heterogeneous value group) and the five subjects with the lowest total scores on these values were placed in the other group (homogeneous value group).

For the heterogeneous group the mean recognition thresholds were 29.3 for social words and 32.2 for economic words, while for the homogeneous group the means were 35.2 for social words and 33.8 for economic words. An analysis of variance was done and the F test for the Groups by Value words interaction was not significant. Although the difference between the two groups on social words is in the expected direction, a t test of this difference is statistically non significant (t = 1.56 P = .20) .10.)

The mean value scores presented in Tables 1, 2, and 3 of Appendix A show why the Social Group cannot be separated in the same manner. While the Economic Group shows high mean value scores in three areas and low mean value scores in three areas, the Social Group shows a low mean value score in one area only - economic. Otherwise the Social Group manifests high mean value scores in the social and religious areas, and average mean value scores in the theoretical, aesthetic, and political areas. Since the Social

Group is relatively homogeneous with respect to high and low values, they would not be expected to differ in visual recognition thresholds. This expectation is borne out by the fact that every subject in the Social Group achieved a lower mean recognition threshold for social words than for economic words.

Other Factors Affecting Thresholds

There is empirical evidence that a number of variables are relevant for the description of differences in visual recognition thresholds. Length of the individual words is one such variable. In the present experiment, this variable was responsible for considerable variation. The means for the social-economic pairs beginning with the six-letter word pair and continuing to the nine-letter pair were: 59.2, 64.8, 72.6, and 77.3, indicating an increase in recognition threshold with increase in word length. This finding corroborates McGinnies, et al, who found recognition thresholds to be a linear increasing function of length.³

Another source of variation was contributed by the different classes of words. Inspection of the data shows that the social words were recognized at shorter exposure times, in general, than the economic words. This appears to be true in the case of two pairs: friendly-finances and sympathy-commerce. Many explanations are possible to explain this finding. One possibility which may account for part of this effect has already been discussed, i.e., the consistency of the individual's value structure.

3. E. M. McGinnies, P. B. Comer, and O. L. Lacey. Visual recognition thresholds as a function of word length and word frequency, 1952, J. exp. Psych., 44, 65-69

An alternative explanation might be that in the present experiment social values were more potent factors in perception than economic values. It should be noted that while they achieve low scores in social values, the majority of the Economic Group were known to be fraternity members, which may suggest higher "functional" social values than their scores on the Study of Values imply. Certainly, it does not appear that they were asocial. Further to interpret low scores in the social value area as indicating antisocial trends would appear to be an extremely hazardous form of logic.

A more conservative way of explaining the overall differences in threshold between the two types of value words, is in terms of structural configurations. Lazarus has speculated that "...findings in terms of mean differences in threshold for threat and neutral words could be made to go in either direction by the appropriate selection of words on the basis of such variables as context, contrast, sequential probabilities, and a host of other factors not directly related to word frequency."⁴ If the terms social, economic, and personal value are substituted for threat, neutral, and word frequency, the statement could be applied in the present instance. Howes and Solomon⁵ discussed the need to weight the words of their study according to empirical constants based on the ease or difficulty of the different letter sequences. Other studies have indicated that the speed of recognition for letter sequences varies significantly with the strength of verbal

4. R. S. Lazarus. Is there a mechanism of perceptual defense? 1954, J. abn. soc. Psychol., 49, 396-398

5. Op cit.

habits associated with such stimuli,⁶ and that familiar contexts increase the number of letters correctly identified.⁷ Assuming that configurational factors were at work in the present experiment, it would then have to be concluded that the tachistoscopic word matching procedure employed was not completely adequate. Thus a larger number of subjects would probably be desirable to make such a procedure effective. The present data was analyzed in a manner which parcels out the effects of such factors while allowing a powerful test of the main interaction studied.

Although the magnitude of the differences in threshold means between the Social and Economic Groups varies from word to word, the direction of these differences is consistent. The mean recognition thresholds of the individual social and economic words used in the present study are presented in Table 9 of Appendix D. The mean recognition threshold for each of the social words is lower in the case of the Social Group, while the mean recognition threshold for each of the economic words is lower for the Economic Group. Thus if social and economic words different than those used in the present experiment were employed with the same groups, the same relationship between groups would be expected. The Social Group would be expected to recognize the social words at shorter mean exposure times than the Economic Group, while the Economic Group would be expected to recognize economic words at shorter exposure times than the Social Group, irrespective of the overall ease or difficulty of the particular words used.

6. L. Postman and B. Conger. Verbal habits and the visual recognition of words. Science, 1954, 119, 671-673.

7. G. A. Miller, J. S. Bruner, and L. Postman. Familiarity of letter sequences and tachistoscopic identification.

Word frequency

A word should be said in regard to word frequency which has been shown to be an effective variable in visual recognition. The controls used in the present study should exclude any explanation based on individual word frequencies or familiarity with the stimuli. As it has been pointed out already⁸ any attempt to invalidate the Thorndike-Lorge Word Counts as an estimate of individual word frequencies, would raise serious questions concerning the original correlation of word frequency and visual thresholds since this correlation was obtained using those word counts.

There is no accurate way of estimating "idiosyncratic" word frequencies, i.e., differences among individuals in past commerce with the various words. One empirical comparison may be made, however, if it is assumed that differences in the number of years of attendance at a business school leads to varying familiarity with economic words. The Economic Group in the present study was composed of four Graduates, three Seniors, and three Juniors from a College of Business Administration. The mean recognition thresholds for economic words of the three classes ordered from Graduate to Junior were 32.5, 33.8, and 32.8 respectively. No systematic differences can be found.

Implications of the results

In general the results of the present study are consistent with a large body of empirical findings relating positive motivational states to perceptual facilitation. They tend to support

⁸ D. R. Brown and J. Adams. Word frequency and the measurement of value areas. J. abnorm. soc. Psychol., 49, 1954, 427-430

the positive findings of those studies relating known dimensions of the personality to cognitive functioning, including perception. The generality of an explanation of perceptual thresholds based on the individual's personal value structure is suggested by other studies which have found this interaction holds in the area of memory,⁹ and in the auditory perceptual process.¹⁰

The fact that this relationship was demonstrated with familiar words tends to confirm the generality of the statement that motivational factors become effective as the difficulty of the perceptual task increases. This general hypothesis also can account for the fact that there is an increase in the effects of personal values on the perception of value congruent words when the difficulty of the perceptual task is increased by alterations in the stimulus along the familiarity dimension, e.g. using non frequent words. By extension, it would also appear to account for the fact that personal values are effective in recall even where frequent words are concerned. The recall task, since it involves an absence of cues, may be considered to be more difficult than the perceptual task, and thus is determined by motivational as well as non motivational factors. Even when the recall test is given almost immediately after the perceptual task as in the experiment of Woolbert cited by Cantril et al,¹¹ the motivational effects are discernible. It will be remembered that in Woolbert's study newspaper articles, which

9. L. Postman and B. Schneider Op cit.

10. J. M. Vanderplas and R. R. Blake. Selective sensitization in auditory perception. J. pers., 1949, 18, 252-266.

11. H. Cantril and G. W. Allport. Recent applications of the Study of Values. 1933, J abn Soc. Psychol., 28, 259-273

it can be assumed were made up of fairly common words, were used.

The question of the comparability of laboratory perceptual tasks and everyday perception remains unanswered. Some, like Bruner,¹² hold that everyday perception is of the complex variety. Luchins¹³ on the other hand questions the comparability of brief exposure method with ordinary perception which he implies is much less complex. Research aimed at further exploring this question will be discussed in the next section.

The present direction of research in motivation and cognition has tended toward examining more generalized aspects of the personality. Recently, investigators have begun to examine cognitive functioning in terms of individual cognitive styles,¹⁴ and tendencies to use one psychological "defense mechanism" in preference to another.¹⁵ Raising the level of difficulty may not be a necessary condition in such studies as they generally have intensified the independent variable either by using "deeper" aspects of the personality delineated by the use either of projective test techniques¹⁶ or groupings

12. J. S. Bruner. Personality dynamics and the process of perceiving. In Blake, R.R. and Ramsey, G.V. (Eds.) Perception: an Approach to Personality, New York, Ronald Press, 1951.

13. A. S. Luchins. On an approach to social perception. J. Pers., 1950-51, 19, 64-84.

14. G. S. Klein, P. S. Holzman, and D. Laskin. The perception project: progress report for 1953-54. Bull. of Menninger Clin., 1954, 18, No. 6, 260-266.

15. B. Carpenter, M. Wiener, and J. T. Carpenter. Predictability of perceptual defense behavior. J. abn. soc. Psychol., 1956, 52, 380-383

16. D. C. McClelland and A. M. Liberman. The effect of need for achievement on recognition of need-related words. J. Pers., 1949, 18, 236-251.

in terms of known pathology.¹⁷ The method of presenting stimuli from contrasting areas simultaneously, however, has proved effective in discovering individual differences in the present experiment and offers a relatively more direct comparison of the strength of alternative perceptual hypotheses.

Implications for Further Research

A general theory of perception must account for variability as well as uniformity in perception. It must also account for perceptual phenomena which occur under less than optimal conditions of viewing the stimulus. Research in the area of perception, on the other hand, can describe laboratory perception or everyday perception, that is, the results of such research can be referable only to the specific conditions of viewing and these conditions can approximate everyday perception in differing degrees. While it is impossible to set up laboratory conditions identical to ordinary viewing conditions, gross similarities in procedure can be established. The results of the present study show that motivation affects the speed of visual recognition of motivationally relevant words under conditions of a complex visual task. Are the conditions of this experiment more complex than everyday perceiving?

The question may be phrased in a different way: Is perception determined by motivational factors as well as non motivational factors when the conditions more closely approximate the conditions of everyday perception? Since the correlation has been demonstrated with familiar words, further comparisons

17. H. Lindner. Sexual responsiveness to perceptual tests in a group of sexual offenders. J. Pers., 1953, 21, 364-375

appear to be possible. Reading material consisting of passages related to specific areas of motivation can be employed with groups matched for visual acuity but differentiated in terms of specific motivational variables. The passages can be matched not only with respect to the physical characteristics of the words appearing in them but also in terms of familiarity, i.e. only frequent words as determined by the Thorndike-Lorge Word Counts would be used. Differences could be sought in terms of reading speed, ocularmotor patterns, and comprehension.

It seems obvious that it is the meaning of the word that is congruent with the motivational predisposition rather than its physical properties. This is important since the meaning can be established by the context in which the word appears. It might be possible to construct separate reading passages in which many of the words are the same but the arrangement of the words is such as to suggest different meanings.

More basic questions raised by the results of the present experiment, are those related to the underlying process which mediates the perception of words relevant to different areas of motivation. It has been speculated that perception involves the sifting of internal hypotheses or expectancies.¹⁸ That there is some sort of an interaction between the stimulus and the perceiver below the level of conscious recognition is suggested by the number of studies reporting the effects of subliminally exposed materials. A review of these studies was

18. J. S. Bruner. Op cit.

done by McConnell et al.¹⁹ Other evidence for such an interaction is suggested by the pre recognition responses reported by Postman, Bruner and McGinnies.²⁰ What is the relationship between perceptual hypotheses, subliminal stimulation, and the appropriate response? It has been suggested that subliminal information reinforces a generalized set to respond selectively when such information is congruent with the existing set.²¹ Both meaningfully related (same value area) and structurally related (similar letters) pre-recognition responses were found to appear more often in the data of high value subjects than low value subjects.²² Since individuals differ in the ease with which they will verbalize "guesses" in such experiments, information concerning these pre-recognition hypotheses is limited.

Can the relationship of meaningful and structural associates of the stimulus be examined? One possibility suggests itself: these associates can be exposed peripherally while thresholds of words related to various areas of motivation are being established. The effects, if any, can be compared with each other (meaningful versus structural) and contrasted with the effects of peripherally exposed nonsense syllables and words from areas of contrasting meaning. Gilchrist et al,²³ has

19. J. V. McConnell, R. L. Cutler, and E. B. McNeil. Subliminal Stimulation: An Overview. Amer. Psychologist, 1958, 13, 229-243

20. L. Postman, J. Bruner, and E. McGinnies. Personal Values as Selective Factors in Perception. 1948 J. Abn. Soc. Psych., 43, 142-154

21. J. S. Bruner. Op cit.

22. L. Postman, J. Bruner, and E. McGinnies. Op cit.

23. J. C. Gilchrist, J. F. Ludeman, and W. Lysak. Values as determinants of word recognition thresholds. J. abn. Soc. Psychol., 1954, 49, 423-426

utilized this method to examine the relationship of peripherally exposed words of positive, negative, and neutral emotional value on the thresholds of centrally exposed words of positive, neutral, and negative emotional value. They found that positive value words exposed peripherally tend to raise the thresholds of centrally exposed positive value words. In the present study, however, the results of the Heterogeneous Economic Group suggest that positive values are mutually facilitating. Differences in the types of value used may be in part responsible for the conflicting results, i.e., Gilchrist et al used "emotionally loaded" contexts.

The question remains as to whether a set, either generalized and enduring or specific and transitory, can lead to greater use of subliminal information. The method of simultaneous presentation offers a way of testing this hypothesis. Stimulus words, one of which is related to an instructional set given to the perceiver can be exposed in positions around a fixation point. The perceiver can be instructed to give the position of the word which corresponds to the set. If the stimuli are exposed a number of times at each exposure time below that necessary for recognition, it might be expected that he would choose the appropriate word more than chance and would also recognize the appropriate word and not the others. As an example the set could be "coldness" and the stimulus words BRR!, YMM!, and OWW!, in which case BRR! would be the appropriate response.

CHAPTER VII

SUMMARY

The purpose of the present study was to study the relationship between perception and motivation, specifically between visual recognition thresholds of words related to specific areas of personal value.

The context for this experiment is provided by those studies in perception which found evidence for a relationship between positive motivational states of the perceiver such as reward states, needs, etc., and the speed with which the perceiver recognizes motivationally congruent stimuli. Of these studies, those utilizing personal value as the motivational factor have engendered much theoretical and methodological criticism. One such critique proposed to explain the obtained relationship between high personal value and low tachistoscopic visual recognition thresholds for relevant high value words on the basis of the perceiver's familiarity with the words used. In that experiment it was demonstrated that the value factor was insignificant when common words, as measured by the Thorndike-Lorge Word Counts of popular literature, were used.

Opposing this viewpoint, it was contended that familiarity was a limiting factor but could not be invoked to explain all the systematic variation in such experiments. Recently, Postman and Bruner have attempted to account for both factors. They postulate a system wherein the perceiver utilizes

"hypotheses" or inferences concerning the stimulus to be perceived. A number of conditions contributing to the strength of perceptual hypotheses are given including frequency of past commerce with the stimulus and the motivational dispositions of the perceiver.

Implicit in the explanation that frequency is only one factor determining recognition thresholds, is the view long held by many investigators of perception that the level of difficulty of the perceptual task is positively related to the degree to which subjective motivational factors become evident. The present experiment proposed that increasing the difficulty of the perceptual task will allow the effects of personal values on the speed of recognition of familiar words to become measurable.

It was postulated that the former method of presenting common words singly at a fixation point represented a level of difficulty, D1, at which recognition was primarily a function of non motivational factors. It was further postulated that a higher level of difficulty, D2, could be established by simultaneously presenting two common words located around a fixation point. It was further postulated that at level of difficulty, D2, recognition would be a function of motivational as well as non motivational factors.

The prediction was made that familiar words related to a high value area would be recognized at shorter exposure times than simultaneously presented familiar words from a low value

area. To test this prediction two lists of words, each judged relevant to the social or economic value area, were combed for matching pairs of social and economic words: the matching was on the basis of word frequency, length of the word, and ease of recognition by a small independent pilot group.

The four selected word pairs were then electrically typed in capitals on white cards and presented along with four pairs (insert pairs) containing words from the four other areas represented in the Allport, Vernon, Lindzey Study of Values. The insert pairs were interspersed among the experimental (social-economic) pairs to lessen the possibility of the subject developing a situational expectancy to see only social and economic words. Six cards were used for each word pair to control for positional effects.

An electronically operated mirror-type tachistoscope was used to present the word pairs to 30 male advanced college students drawn from the various schools of Boston University. On the basis of their scores on the Allport, Vernon, Lindzey scale, these subjects were divided into three groups of ten subjects each. The first group was characterized by high social and low economic values; the second had high economic values and low social values; and the third group consisted of those who were average or low on both social and economic values.

The resulting data were subjected to an analysis of variance producing an F value for the Groups by Values interaction which was significant at the .01 level. The analysis of variance also yielded significant variations for word

length and word type tending to corroborate the findings of previous experiments. Despite the limitations posed by the latter factors the effects of high personal value in lowering visual recognition thresholds were readily discernible.

The results were discussed in terms of their congruence with other studies relating positive motivational states to cognitive behavior, including perception. An attempt was made to explore the large variation attributed to the difference between social and economic words. Suggestive evidence was found that the Economic Group is further classified in terms of their scores on both social and related values (religious and aesthetic), and that the Economic Subgroup which is low on this triad of values achieves thresholds more in accord with the prediction based on values.

Implications for further research in terms of exploring the relationship of the present findings to "everyday" conditions of viewing the world were discussed. Further research designed to clarify the underlying processes which mediate perception was presented.

The conclusion of the present experiment is that under conditions of a complex visual task high personal value leads to increased speed in the perception of value relevant stimuli.

APPENDIX A

VALUE DATA

Table 1

Social Group: Value Profiles
(corrected scores)

Subject	Value					
	Theoretical	Economic	Aesthetic	Social	Political	Religious
1	29	43	40	46	48	34
2	45	27	45	45	42	36
3	39.5	39	39.5	47	33.5	41.5
4	36	31	37	47	39	50
5	43	29	35	43	37	53
6	34	34	37	51	43	41
7	34	22	50	45	34	55
8	39	20	45	41	38	57
9	39	27	36	44	41	53
10	44	28	43	47	46	32
Mean	38.2	30.0	40.7	45.6	40.1	45.2

Table 2

Neutral Group: Value Profiles

(corrected scores)

Subject	Value					
	Theoretical	Economic	Aesthetic	Social	Political	Religious
1	42	40	33	37	39	49
2	36	34	35	42	36	57
3	53	43	39	39	37	29
4	45	37	36	34	35	53
5	42	34	42	27	46	49
6	33	38	49	33	41	46
7	35	44	41	35	41	44
8	48	39	47	29	40	37
9	54	39	40	43	36	28
10	38	39	47	33	48	35
Mean	42.6	38.7	40.9	35.2	39.9	42.7

Table 3

Economic Group: Value Profiles
(corrected scores)

Subject	Value					
	Theoretical	Economic	Aesthetic	Social	Political	Religious
1	49	54	29	35	46	27
2	39	51	40	37	32	41
3	42	51	28	30	39	50
4	49	55	25	32.5	37.5	41
5	42	48	29	33	50	38
6	54	54	29	29	52	22
7	48	45	46	31	27	43
8	46	51	21	34	49	39
9	40	49	27	37	58	29
10	55	54	35	29	43	24
Mean	46.4	51.2	30.9	32.7	43.3	35.4

APPENDIX B

WORD RELEVANCY

Table 4

VALUE RELEVANCY OF WORDS

(1 = most appropriate; 4 = least appropriate)

Value	Words	Judge						
		I	II	III	IV	V	VI	VII
Social								
	FRIENDLY	1	1	1	1	1	2	1
	AFFECTION	1	1	1	1	1	3	2
	KINDLY	1	1	1	1	1	2	1
	SYMPATHY	1	1	1	1	1	1	1
Economic								
	FINANCES	1	1	3	1	1	2	1
	ECONOMICS	1	2	2	1	1	1	1
	USEFUL	1	1	1	1	1	2	1
	COMMERCE	1	2	2	1	1	1	2
Theoretical								
	RESEARCH	1	2	1	1	1	2	1
	SCIENCE	1	1	1	1	1	2	1
	DISCOVER	1	1	1	1	1	1	3
Religious								
	WORSHIP	1	1	1	1	1	2	1
	RELIGIOUS	1	2	1	1	1	1	1
Aesthetic								
	BEAUTIFUL	1	1	1	1	1	1	1
	PAINTING	1	1	2	1	1	2	1
Political								
	POWERFUL	1	1	1	1	1	1	1

APPENDIX C

SUBJECT DATA

Table 5

Subject Data

Age and School

Subject	Group								
	Social			Neutral			Economic		
Age	School	Class	Age	School	Class	Age	School	Class	
1	27	SSW	Grad.	26	ST	Grad.	25	CBA	Sr.
2	29	SSW	Grad.	33	SSW	Grad.	22	CBA	Sr.
3	30	SSW	Grad.	28	SSW	Grad.	25	CBA	Grad.
4	28	SSW	Grad.	20	CBA	Jr.	21	CBA	Sr.
5	32	ST	Grad.	21	SPRC	Sr.	26	CBA	Grad.
6	22	ST	Grad.	20	CLA	Jr.	24	CBA	Grad.
7	33	ST	Grad.	25	CBA	Jr.	25	CBA	Grad.
8	23	ST	Grad.	27	CBA	Soph.	27	CBA	Jr.
9	24	ST	Grad.	26	CBA	Soph.	20	CBA	Jr.
10	25	CBA	Jr.	19	SPRC	Jr.	25	CBA	Jr.

Note: The abbreviations represent the following schools:

SSW: School of Social Work

ST: School of Theology

SPRC: School of Public Relations and Communication

CBA: College of Business Administration

CLA: College of Liberal Arts

APPENDIX D

PERCEPTUAL DATA

Table 6

Social Group: Visual Recognition Thresholds for
Social and Economic Words

Subject	Word Pairs											
	Fy	¹ -	Fs	An	² -	Es	Ky	³ -	Ul	Sy	⁴ -	Ce
1	32		30	32		50	10		40	28		36
2	20		40	34		48	38		30	42		62
3	24		38	34		52	18		26	12		54
4	10		56	32		64	18		26	32		30
5	30		50	18		54	16		30	30		32
6	20		32	28		56	30		24	34		42
7	36		34	54		44	40		50	44		48
8	26		40	32		66	20		44	40		42
9	16		30	32		42	30		20	12		28
10	32		54	24		16	12		26	40		42
Total	246		404	320		492	232		316	314		416
Mean	24.6		40.4	32.0		49.2	23.2		31.6	31.4		41.6

1. Friendly Finances
2. Affection Economics
3. Kindly Useful
4. Sympathy Commerce

Table 7

Neutral Group: Visual Recognition Thresholds for
Social and Economic Words

Subject	Word Pairs									
	Fy	¹ - Fs	An	² - Es	Ky	³ - Ul	Sy	⁴ - Ce		
1	28	38	44	54	30	32	28	32		
2	42	28	30	32	32	20	28	46		
3	40	42	44	60	50	36	38	30		
4	36	38	42	24	44	32	34	32		
5	42	36	34	44	34	40	34	36		
6	24	40	38	44	38	30	36	44		
7	22	52	28	38	26	24	38	54		
8	36	40	30	60	26	30	38	30		
9	34	32	36	26	32	30	34	16		
10	28	52	42	34	34	30	28	58		
Total	332	398	368	416	346	304	336	378		
Mean	33.2	39.8	36.8	41.6	34.6	30.4	33.6	37.8		

1. Friendly Finances
2. Affection Economics
3. Kindly Useful
4. Sympathy Commerce

Table 8

Economic Group: Visual Recognition Thresholds for
Social and Economic Words

Subject	Word Pairs									
	Fy	¹ - Fs	An	² - Es	Ky	³ - Ul	Sy	⁴ - Ge		
1	34	44	32	34	40	36	36	42		
2	28	44	32	28	24	40	22	36		
3	34	32	44	42	36	38	50	44		
4	22	40	40	32	16	18	32	12		
5	22	14	30	22	32	18	26	46		
6	20	16	32	38	16	32	36	40		
7	22	38	22	34	26	22	26	44		
8	24	18	54	52	34	12	28	32		
9	16	32	24	36	22	24	34	42		
10	36	28	66	40	62	30	58	48		
Total	258	306	376	358	308	270	348	386		
Mean	25.8	30.6	37.6	35.8	30.8	27.0	34.8	38.6		

1. Friendly Finances

2. Affection Economics

3. Kindly Useful

4. Sympathy Commerce

Table 9

Group Mean Recognition Thresholds for Individual
Social and Economic Words

Group	Pairs							
	Words		Words		Words		Words	
	1 Fy - Fs	2 An - Es	3 Ky - Ul	4 Sy - Ce				
Social	24.6	40.4	32.0	49.2	23.2	31.6	31.4	41.6
Neutral	33.2	39.8	36.8	41.6	34.6	30.4	33.6	37.8
Economic	25.8	30.6	37.6	35.8	30.8	27.0	34.8	38.6
Mean Total	27.8	36.9	35.5	42.2	29.5	29.7	33.3	39.3

1. Friendly Finances
2. Affection Economics
3. Kindly Useful
4. Sympathy Commerce

Table 10

Analysis of Variance of Visual Recognition Thresholds
for Social and Economic Words

Source of Variation	d. f.	Mean Square	F	P
Between Value Groups (G)	2	224.50	1.08	N. S.
Ss within Value Groups	27	207.87		
Between Pairs (P)	3	1005.00	11.72	.001
Between Value Words (W)	1	1815.00	14.95	.001
W x P	3	216.82	3.09	N. S.
G x P	6	113.71	1.32	N. S.
G x W	2	843.45	6.94	.01
G x W x P	6	38.87	0.55	N. S.
Pooled Ss x W	27	121.37		
Pooled Ss x P	81	85.70		
Pooled Ss x W x P	81	70.13		
Total	239			

APPENDIX E

PERCEPTUAL DATA: INSERT WORDS

Table 11

Social Group: Visual Recognition Thresholds
for Insert Words

Subject	Word									
	Rs	¹ - Bl	Se	² - Wp	Dr	³ - Pl	Rh	⁴ - Pg		
1	28	48	32	22	30	28	28	26		
2	36	42	30	32	50	40	52	30		
3	22	32	32	12	44	28	26	24		
4	36	32	46	40	30	36	12	26		
5	54	44	50	12	38	50	32	14		
6	50	36	20	18	32	38	42	24		
7	62	44	14	40	60	30	32	34		
8	36	40	42	18	36	34	20	18		
9	16	24	36	22	30	16	26	30		
10	36	18	36	24	26	48	48	30		
Total	376	360	338	240	376	348	318	266		
Mean	37.6	36.0	33.8	24.0	37.6	34.8	31.8	26.6		

1. Religious Beautiful

2. Science Worship

3. Discover Powerful

4. Research Painting

Table 12

Neutral Group: Visual Recognition Thresholds
for Insert Words

Subject	Word											
	Rs	¹ - Bl	Se	² - Wp	Dr	³ - Pl	Rh	⁴ - Pg				
1	34	42	36	28	62	56	44	30				
2	40	30	50	14	14	30	32	28				
3	48	44	40	50	58	52	38	66				
4	42	34	30	36	60	18	40	30				
5	40	38	34	20	46	26	36	48				
6	34	28	34	22	30	24	22	32				
7	36	32	48	56	44	36	26	34				
8	32	34	30	44	30	32	26	30				
9	32	44	32	36	24	44	60	30				
10	38	32	36	38	34	40	14	30				
Total	376	358	370	344	402	358	338	358				
Mean	37.6	35.8	37.0	34.4	40.2	35.8	33.8	35.8				

1. Religious Beautiful
2. Science Worship
3. Discover Powerful
4. Research Painting

Table 13

Economic Group: Visual Recognition Thresholds
for Insert Words

Subject	Word											
	Rs	¹ -	Bl	Se	² -	Wp	Dr	³ -	Pl	Rh	⁴ -	Pg
1	48		26	40		18	38		40	38		32
2	32		28	32		34	26		18	26		30
3	34		32	58		26	46		34	28		18
4	34		24	36		38	26		16	14		54
5	46		30	42		30	26		30	26		32
6	24		16	24		18	24		18	14		18
7	28		34	34		16	46		32	22		40
8	34		18	26		40	36		40	16		12
9	38		40	28		30	40		26	50		42
10	52		44	56		66	68		28	36		32
Total	370		292	376		316	376		282	270		310
Mean	37.0		29.2	37.6		31.6	37.6		28.2	27.0		31.0

1. Religious Beautiful
2. Science Worship
3. Discover Powerful
4. Research Painting

APPENDIX F

MEAN SOCIAL WORD RECOGNITION THRESHOLDS OF
ECONOMIC SUBGROUPS

Table 14

Mean Social Word Recognition Thresholds of
Economic Subgroups

Group	Words			
	Friendly	Affection	Kindly	Sympathy
Homogeneous	26.0	41.6	34.8	38.4
Heterogeneous	25.6	33.6	26.8	31.2

REFERENCES

- Adams, Joe and Brown, Donald R. Values, Word Frequencies, and Perception. Psychol. Rev., 60, 1953, pp. 50-54
- Allport, Floyd H. Theories of Perception and the Concept of Structure, 1955, Rev. Ed., New York, John Wiley & Sons, Inc., p2 98
- Allport, G. W., Vernon, P. E., and Lindzey, G. Study of Values, Manual of Directions, 1951, Houghton Mifflin Co., Riverside Press, Cambridge, Mass. p.8
- Blake, R. R. and Vanderplas, J. M. The effect of pre recognition hypotheses on veridical recognition thresholds in auditory perception. J. pers., 1950-51, 19, 95-115.
- Brown, D. R. and Adams, J. Word Frequency and the measurement of values. J. Abn. Soc. Psychol., 1954, 49-427-430
- Bruner, J. S. Personality dynamics and the process of perceiving. In Blake, R. R. and Ramsey, G. V. (eds.), Perception An Approach to Personality, New York, Ronald Press, 1951
- Bruner, J. S. and Postman, L. Emotional selectivity in perception and reaction. J. Pers., 1947, 16, 69-77
- Bruner, J. S. and Postman, L. Perception, cognition and behavior. J. Pers., 1949, 18, 14-31
- Cantril, H. and Allport, G. W. Recent applications of the Study of Values. J. abn. & soc. Psychol., 1933, 28, 259-273
- Carpenter, B., Wiener, M., and Carpenter, J. T. Predictability of perceptual defense behavior. J. abn. soc. Psychol., 1956, 52, 380-383
- Eisdorfer, C. A comparison of two methods for the determination of visual duration thresholds. Psychol. Newsletter, 1954, VI, Nov.-Dec.
- Engler, J. and Freeman, J. T. Perceptual behavior as related to factors of associative and drive strength. J. Exp. Psychol., 1956, 51, 399-404
- Eriksen, C. W. Some implications for T A T interpretation arising from need and perception experiments. J. Pers., 1951 19, 282-288
- Gilchrist, J. G., Ludeman, J. F. and Lysak, W. Values as determinants of word recognition thresholds. J. abn. Soc. Psychol., 1954, 49, 423-426

- Haigh, G. and Fiske, D. Corroboration of personal values as selective factors in perception. J. Abn. Soc. Psychol. 1952, 392-398
- Howes, Davis. On the interpretation of word frequency as a variable affecting speed of recognition. J. exp. Psychol., 1954, 48, 106-112
- Howes, D. and Solomon, R. L. Visual duration thresholds as a function of word probability. J. Exp. Psychol., 41, 401-410
- Jenkin, Noel. Affectual Processes in Perception, Psychol. Bull., 1957, 54, 100-127
- Klein, G. S., Holzman, P. S., and Laskin, D. The perception project: progress report for 1953-54. Bull. of Menninger Clin., 1954, 18, No. 6, 260-266.
- Klein, G. S. and Schlesinger, H. J. and Meister, D. E. The effect of personal values on perception: an experimental critique. Psychol Rev. 1951, 58, 96-112
- Kogan, Leonard S. Variance Designs in Psychological Research. Psych. Bull., 50, 1953
- Lazarus, R. S. Is there a mechanism of perceptual defense? 1954, J. abn. soc. Psychol., 49, 396-398.
- Lazarus, R. S., Yousem, H., and Arenberg, D. Hunger and Perception. J. Pers., 1952, 21, 312-328.
- Leverone, A. A. and Mayer, Sylvia R. The Boston University Tachistoscope, 1951, unpublished manuscript available through Boston University Physical Research Laboratory
- Lindner, H. Sexual responsiveness to perceptual tests in a group of sexual offenders. J. Pers., 1953, 21, 364-375
- Luchins, A. S. On an approach to social perception. J. Pers., 1950-51, 19, 64-84
- McClelland, D. C. and Liberman, A. M. The effect of need for achievement on recognition of need-related words. J. Pers., 1949, 18, 236-251
- McConnell, J. V., Cutler, R. L. and McNeil, E. B. Subliminal Stimulation: An Overview, Amer. Psychologist, 1958, 13, 229-243
- McGinnies, E. M., Comer, P. B. and Lacey, O. L. Visual recognition thresholds as a function of word length and word frequency, 1952, J. exp. Psych., 44, 65-69

Miller, G. A., Bruner, J. S. and Postman, L. Familiarity of letter sequences and tachistoscopic identification. J. gen. Psychol., 1954, 50, 129-139

Murray, Henry A. Thematic Apperception Test, 1943, Harvard University Press, Cambridge, Mass.

Newton, K. R. Visual recognition thresholds and learning. Perceptual and Motor Skills, 6, No. 2, 1956.

Postman, L., Bruner, J. and McGinnies, E. Personal Values as Selective Factors in Perception. 1948 J. Abn. Soc. Psych. 43, 142-154

Postman, L. and Conger, B. Verbal habits and the visual recognition of words. Science, 1954, 119, 671-673.

Postman, L. and Schneider, B. Personal values, visual recognition, and recall. Psychol. Rev. 58, 1951, 271-284

Rigby, M. K. and Rigby, W. K. Perceptual thresholds as a function of reinforcement and frequency. Amer. Psychol., 1952, 7, 321. (Abstract)

Rorschach, Herman. Psychodiagnostics, Hans Huber, Bern, Med. Pub., Dist. by Grune & Stratton, N. Y.

Schafer, R. and Murphy, G. The role of autism in visual figure-ground relationship. J. exp. Psychol., 1943, 32, 335-343

Solomon, R. and Howes, D. H. Word frequency, personal values, and visual duration thresholds. Psychol. Rev., 58, 1951, 256-270

Spranger, E. Types of Men. 5th Ed., P. J. W. Pigors, trans., Stechert-Hafner, Inc., 31 east 10th St., New York

Stanley, J. G. Study of Values Profiles adjusted for sex and variability differences. J. appl. Psychol. 1953, 37, 472-473.

Thorndike, E. L. and Lorge, I. The Teacher's Word Book of 30,000 Words Pub. by Bureau of Publications, Teachers College, Columbia Univ., N. Y., 1944

Vanderplas, J. M. and Blake, R. R. Selective sensitization in auditory perception. J. pers., 1949, 18, 252-266

Wispé, L. G. and Drambaream, N. C. Physiological need, word frequency and visual duration thresholds. J. Exp. Psychol., 1953, 46, 25-31

PERSONAL VALUES AND VISUAL THRESHOLDS
IN A COMPLEX RECOGNITION TASK

Abstract of a Dissertation

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy

BOSTON UNIVERSITY GRADUATE SCHOOL

by

William R. MacDonald

A.M., Boston University, 1953

Department: Psychology

Field of Specialization: Clinical Psychology

Major Instructor: Asst. Professor Murray L. Cohen

ABSTRACT

The purpose of the present experiment was to study the relationship between motivation and perception, specifically between visual recognition thresholds of words related to specific areas of personal value.

The context of this experiment is provided by those studies in perception which found evidence for a relationship between positive motivational states of the perceiver such as reward states, needs, etc., and the speed with which the perceiver recognizes motivationally congruent stimuli. Of these studies, those utilizing personal value as the motivational factor have engendered much theoretical and methodological criticism. One such critique proposed to explain the obtained relationship between high personal value and low tachistoscopic visual recognition thresholds for relevant high value words on the basis of the perceiver's familiarity with the stimulus words used. In that experiment it was demonstrated that the value factor was insignificant when common words, as measured by word counts of samples of popular literature, were used.

Recent formulations have attempted to account for the effects of both motivational and non motivational factors in perception. It has been suggested that the level of difficulty of the task may be a factor in determining the extent to which motivational factors will operate in perception. The present

study proposed that increasing the difficulty of the perceptual task will allow the effects of personal values on the speed of recognition of familiar words to become measurable.

It was postulated that the former method of presenting words singly at a fixation point represented a level of difficulty, D1, at which recognition was primarily a function of non motivational factors when common words are used. It was further postulated that a higher level of difficulty, D2, could be established by simultaneously presenting two common words located around a fixation point. It was further postulated that at level of difficulty D2 recognition would be a function of motivational as well as non motivational factors.

The prediction was made that familiar words related to a high value area would be recognized at shorter exposure times than simultaneously presented familiar words from a low value area. To test this prediction four pairs of words, each pair containing one word judged relevant to the social value area and the other word judged relevant to the economic value area, were used. Words in each pair were matched for high frequency of occurrence in popular literature, length, and ease of recognition.

The four word pairs were then electrically typed in capitals on white cards and presented along with four pairs (insert pairs) containing words from the four other areas represented in the Allport, Vernon, Lindzey Study of Values.

The insert pairs were interspersed among the experimental (social-economic) pairs to lessen the possibility that the subject would develop a situational expectancy to see only social and economic words. Six cards were used for each word pair to control for positional effects.

An electronically operated mirror-type tachistoscope was used to present the word pairs to 30 male advanced college students. On the basis of their scores on the Allport, Vernon, Lindzey scale these subjects were separated into three groups of ten subjects each. The first group was characterized by high social and low economic values; the second had high economic values and low social values; and the third group consisted of those who were average or low on both social and economic values.

The resulting data were analyzed by an analysis of variance producing an F value for the Groups by Value interaction which was significant at the .01 level. The analysis also yielded significant variations for word length and word type tending to corroborate the findings of previous experiments. Despite the limitations posed by the latter factors the effects of high personal value in lowering visual recognition thresholds were readily discernible.

The results were congruent with other studies relating positive motivational states to cognitive behavior, including perception. An attempt was made to explore the large variation attributed to the difference between social and economic

words. Suggestive evidence was found that the Economic Group is further classified in terms of their scores on both social and related values (religious and aesthetic), and that the Economic Subgroup which is low on this triad of values achieves thresholds more in accord with the prediction based on values.

Implications for further research in terms of exploring the relationship of the present findings to "everyday" conditions of viewing the world were discussed. Further research designed to clarify the underlying processes which mediate perception was suggested.

The conclusion of the present experiment is that under conditions of a complex visual task high personal value leads to increased speed in the perception of value relevant stimuli.



AUTOBIOGRAPHY

I was born in Somerville, Massachusetts, on May 14, 1924, the son of John and Margaret Duffy MacDonald. I was educated in the Somerville school system.

I enlisted in the Army in 1942 and served until 1948. While in the service I received four and one half months of academic work at the University of Florida.

In 1949 I enrolled at Boston University where I received the Associate in Arts degree in General Education in 1951, and the degree of Bachelor of Arts in August of 1952. I entered the graduate school that same year where I pursued a course of study in the Department of Psychology, leading to the degree of Master of Arts. I received the Master of Arts degree in 1953.

In the fall of 1953, I enrolled in the doctoral program

in clinical psychology and was appointed to the Psychology Training Program of the Veterans Administration. Practicum requirements were met by participation to the present time in the training programs at the Veterans Administration Hospitals at Boston and Bedford, Massachusetts.

In May 1951 I married Angeline Cayon MacDonald. We have two children, Anne Cayon, age six years, and William Russell, age seventeen months.