

TACHISTOSCOPIC AND LEVEL-OF-ASPIRATION MEASURED  
OF THE INTERNAL-EXTERNAL CONTROL VARIABLE

by

GARY LANE STRALEY

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## INTRODUCTION

### General Statement

The ultimate objective of psychological research is to improve or enhance the prediction of behavior. Typically such research is conducted in the context of a theoretical orientation which appears to offer promise of providing fruitful hypotheses concerning relevant behavioral variables. An attempt is made to design experiments so that the effects of the variables on behavior can systematically be studied and the theoretical hypotheses put to test.

This study was conducted in the context of Rotter's Social Learning Theory and represents an extension of investigations initiated by other workers who have studied what appears to be a major behavioral variable. This variable deals with the external versus internal control of reinforcements. Briefly, this refers to the way one characteristically views his environment and the rewards and punishments which are derived therefrom. At one extreme, the world might be seen as a place where the individual, through exercise of effort and ingenuity, is able to control the events around him. However, at the opposite end of the spectrum, there would be that individual who sees his surroundings as being unfathomable and complex and himself as a victim of forces which are beyond his comprehension or control.

It is the purpose of this study to select individuals from these two extremes; to test certain hypotheses about their behavior in several situations; and to make some measurements which, it is hoped, will provide insight into the psychological functioning of the individual when the extent of influence of the internal-external control variable has been assessed for that particular individual.

### Social Learning Theory

Major Concepts. Rotter's Social Learning Theory, the theoretical context within which this study was conducted, employs three basic constructs: behavior potential, expectancy, and reinforcement value.

These theoretical variables are defined as follows (Rotter, 1954, Ch.V):

"Behavior potential - the potentiality of any behavior occurring in

any given situation or situations as calculated in relation to any single reinforcement or set of reinforcements."

"Expectancy - the probability held by the individual that a particular reinforcement will occur as a function of a specific behavior on his part in a specific situation or situations. Expectancy is independent of the value or importance of the reinforcement."

"Reinforcement value - the degree of preference for any reinforcement to occur if the possibilities of their occurring were all equal."

Behavior potential is postulated to be a function of expectancy and reinforcement value. The latter may be either positive or negative. Expectancy is a function of  $E'$ , expectancy based on experience in a given specific situation, and  $GE$ , generalized expectancy based on the previous occurrence or non-occurrence of reinforcements in situations seen as similar or related.

The Importance of the Situation. W. I. Thomas (1951) was concerned with the importance of definitions of the situation which were seen as the principle immediate determinants of behavior. Working within a sociological framework, he arrived at the conclusion that personality formation and behavior were dictated by situational variables arising, principally, in the family setting. This recognition of the importance of antecedent conditions on behavior is prevalent in current thinking as exemplified, for example, by the sociologists' concept of alienation (Rotter, Seeman, & Liverant, 1958). The extent of alienation is seen as being in direct proportion to the limited degree of personal control which the individual feels he has in a situation. Other concepts which have been subsumed under the notion of alienation are powerlessness, normlessness, meaninglessness, social isolation, and social estrangement which are partially overlapping in that major emphasis is placed on the objective situation in which these phenomena are observed to occur. Consequent behavior is markedly influenced under these conditions with resulting loss of personal identity; inability to recognize forces which seem unintelligible, incomprehensible and arbitrary; low predictability of events; excessive conforming or deviant behavior; and beliefs in mysticism, superstition, fate or stereotypes.

Recently, considerable attention has been given in psychology to an analysis of situational variables as they affect psychological testing

and behavior generally (Masling, 1960). Edith Lord's (1950) pioneer study exemplifies this in showing that the frequencies of particular kinds of Rorschach responses are partially a function of the personality of the examiner. Brunswik (1951) has also urged as necessary in psychology some sort of representative sampling of situations. Likewise, Helson (1948) has applied his theory of Adaptation Level to social psychology stating that the effect of the total field can be quantified by careful ordering of the field of exposed stimuli. Two of the first, however, to emphasize the importance of the psychological situation were Kantor (1924) and Lewin (1951).

Rotter (1955) has stressed the major importance of the psychological situation in the prediction of behavior as indicated in his definitions of the basic constructs of Social Learning Theory. Fundamentally, the psychological situation is discerned as being a set of cues which arouse expectancies for behavior-reinforcement sequences. Prediction of behavior in a given situation is dependent, partially, on the nature and preference for given types of reinforcements that are primarily culturally determined. In short, Rotter proposes the classification or categorization of situations from which are derived sets of functionally related reinforcements and toward which are directed corresponding sets of functionally related behaviors. The needs of the individual are thought of in terms of the potentiality of these functionally related behaviors and their associated reinforcements.

In a study by Phares and Rotter (1956) the degree of preference held by a group of students in secondary school for academic, athletic, and manual arts rewards was determined. These preferences were indicated by the subjects in three situations: in the classroom, in the gymnasium and in wood working classes. The results indicated that subjects' preferences were significantly influenced by the situation in which the lists of reinforcements were presented for ranking.

Leeko (1952) studied the influence on expectancies by the projected patterning of previous reinforcements by the subject over a series of trials. Under conditions of differential reinforcement, it was found that subjects would respond in accordance with an internalized conception of the nature of the reinforcement pattern which did not correspond di-

rectly to the sequence of external reinforcements. Lasko's results lead to the supposition that, not only the external situation, but also the perception of the nature of the external situation and how it is categorized by the individual, are important determinants of the magnitude of the individual's expectancies for reinforcement in the situation.

Morell (1956) conducted an investigation in which reinforcement value was varied with related situations and with performance and experience held constant by using prearranged scores and novel tasks. Reasoning that in a novel situation the subject's expectancy would be determined by related situations, i. e. only by GE, it was postulated that with experience in the novel situations, expectancies would increasingly depend on the occurrence of reinforcement in the situation and not on its reinforcement value. Further, if penalties were introduced for inaccurate expectancy statements, succeeding expectancy statements would be expected to be less conservative or autistic and more performance-oriented and realistic. From the results of the study, it was concluded that expectancy and reinforcement value are not independent, but that expectancy statements are significantly and consistently lower in situations involving goal objects with relatively high reinforcement values. It was, further, found that expectancy statements become more uniform with experience with a novel task, i. e. expectancies (E') arise which are unique to a given situation and are determined by the occurrence of reinforcements in that situation. Lastly, the conclusion was drawn that penalties invoked for unrealistic expectancy statements lead to expectancies which more closely approximate performance. From these results and other relevant research which has been done in the area, the investigator proposed that a dichotomy between achievement and non-achievement situations be made.

Phares (1957) used instructions designed to create skill and chance conditions in a matching situation and found that expectancy statements for succeeding reinforcements were subject to greater changes in the skill situation than in the chance situation and that in the skill situation greater frequency of changes in expectancy was exhibited over trials.

James & Rotter (1958) studied the differential effects of partial and 100% reinforcement schedules under skill and chance conditions and concluded, in line with their hypotheses, that resistance to extinction of expectancies was greater with 100% reinforcement than 50% reinforcement under skill conditions, but that under chance conditions, partial reinforcement was more effective in retarding the effects of extinction of expectancies. Wide individual differences were noted which the authors believed to be due to a personality variable in which reinforcements are perceived as being either externally or internally controlled. In a betting-type situation, Littig (1961) found that subjects prefer to state lower expectancies (in terms of higher probabilities of winning) under conditions of skill than under conditions of chance. However, Littig's findings were not statistically significant and were contrary to Phares's results (1957).

Feather (1959), though not subscribing strictly to Social Learning Theory, but utilizing concepts of attainment attractiveness and success probability which are respectively analogous to reinforcement value and expectancy, tested, first, an hypothesized inverse relationship between these two variables when the subject was free from commitment; secondly, an hypothesized direct relationship between choice potential, which was conceptually similar to behavior potential but implying commitment to choice by the subject, and success probability. The hypotheses were tested systematically under various situational conditions, e. g. ego-related versus chance-related and achievement-oriented versus relaxed. The findings indicated that the inverse relationship held for all conditions, but was more pronounced under the ego-related and achievement-oriented conditions. For the direct relationship, the results were not as clear, but did indicate that under conditions of commitment the subject was more likely to choose that goal object for which he held the greatest success probability of attaining. From the results of his study, Feather emphasized the importance of the extent of commitment of the individual and the situational context in the prediction of choice behavior.

Internal versus External Control of Reinforcements. Though the internal-external control variable was first formally postulated by James



(1957), the preliminary conceptualization and investigation had been conducted previously by Phares (1957). Earlier workers had also recognized the importance of the role of the perceiver as well as the objective aspects of the situation in influencing anticipation or expectancy of reinforcement (Lasko, 1952; Worell, 1956).

On the basis of his findings, Phares (1957) had constructed a scale to measure the extent to which an individual attributes the occurrence of reinforcements to chance rather than to his own efforts and a scale to measure the degree to which the individual perceived himself as having internal control of the occurrence of reinforcements. Correlation of this external-control scale with behavioral criteria (differences in magnitude of expectancy changes, frequency of shifts in expectancy and unusual shifts in expectancy) was merely suggestive, but the internal scale was not predictive and was discarded. Subsequently, James (1957) refined the former scale and developed the James-Phares Scale whose construct validity was enhanced by findings of substantial correlations with the California F-Scale, level-of-aspiration data, the Edwards Personal Preference Scale and Rotter's Incomplete Sentences Blank which seemed to indicate the generality of the internal-external control variable (Rotter, Seeman & Liverant, 1958).

James (1957) reasoned that in a situation categorized as being internally controlled, the subjects would show greater and more stable expectancies following positive reinforcements, greater generalizations of those expectancies to other situations, and greater resistance to extinction, than when the situation was perceived as being externally controlled. Further, he postulated that the generalized tendency to relegate events to externally controlled and internally controlled categories was an important personality variable which would be useful in the prediction of shifts in expectancy statements and as one measure of assessing the degree of maladjustment of the individual. The results substantiate the theoretical statements and the conclusion that shifts in expectancy were smaller under conditions of chance is in agreement with previously cited findings of Phares (1957). James and Rotter (1958) followed this line of reasoning in their study of the differential effects of various reinforcement schedules on extinction under skill and chance conditions. As

previously noted, they concluded that the magnitude of individual variation in the perception of the occurrence of reinforcements as being internally controlled or externally controlled was the result of a personality variable which James had labeled the internal-external control variable.

Therefore, the internal-external control dimension or continuum was thought to provide a measure of the degree to which reinforcements were perceived as being primarily due to the efforts and skill of the perceiver (internal control) or, rather, due to some external influence (external control) over which the perceiver has no control. The position which an individual occupied on the continuum, therefore, was dependent on his predisposition to categorize situations, either as being within or as being beyond his control and was considered to be an important determinant in the prediction of the behavior of that particular individual. While internal-control implied an element of skill on the part of the individual, external-control implied the operation of chance, fate, the influence of other individuals and outside forces, or of a complex, unpredictable world (Rotter, et. al., 1958).

Liverant (Rotter, et. al., 1958) devised a scale (See Appendix I) that measured the degree of preferences for goals in five specific need areas (academic-recognition, social recognition, love and affection, dominance and social-political categories) and one general need area (life philosophy). The selection of these need categories was based on reasoning, derived from Social Learning Theory, that similar behaviors are elicited under conditions where functionally related goals and reinforcements arise through learning and that these classes of related goals and reinforcements comprise a given need area. Particular attention was paid to the cultural relevance of the items to the categories to which they were assigned thereby maximizing the degree of independence between need categories.

The items were constructed so that the statements were of a general nature and the respondent would find it necessary to project his own personal bias into his responses. It was felt that this procedure would, in part, act as a control for social desirability. Further, the scale items were paired (one internal item with one external item which were judged to have equivalent social acceptance) and a forced-choice scale

constructed because it was thought that this situation would reduce response set and the social desirability encountered with the use of ratings on a single stimulus item. With the above ideas in mind and employing the usual procedures of test construction, the Liverant Scale (hereafter referred to as the I-E Scale) was assembled (Rotter, et. al.; 1958).

Liverant & Scodel (1960), using the I-E Scale as a selection device, administered the scale to a group of subjects previous to exposure to a chance (externally-controlled) situation. Only subjects whose scores placed them at either extreme of the I-E control continuum participated in the experiment. It was hypothesized that skill-oriented subjects would select lower betting probabilities and show less variation in their betting behavior than the chance-oriented group. Although the skill-oriented group did show less variability in their choice behavior than the chance-oriented group, there was a tendency for the skill-oriented group to make less extreme (either high or low bets) expectancy statements than the chance-oriented group.

## PROBLEM

## General Statement

From the foregoing discussion, it appears evident that the skill-chance dichotomy is a valid and useful situational one. That is, behavioral predictions are more precise when that dichotomy is borne in mind. Furthermore, there appears to be suggestive, but less conclusive, evidence that the I-E dimension may be an important generalized personality attribute or need. Basically, then, the purpose of this study was to explore the I-E dimension as a personality variable and ascertain the utility of so construing it. The I-E Scale, developed by Liverant, seemed to provide the means by which individuals could be arranged along the internal-external control continuum. Selection of those individuals occupying positions at the extremes and middle of the continuum and studying their behavior to determine the differential effects on behavior of the I-E variable was the primary aim of this study.

In a classical study by Postman, Bruner, and McGinnies (1948) the Allport-Vernon Study of Values was administered to a group of subjects and scores for each of the value-categories was obtained (theoretical, economic, aesthetic, social, political, and religious). Words which were meaningfully related to each of the categories were presented tachistoscopically and the visual threshold for each was determined. It was found that the words which were functionally related to a strongly embedded need area of an individual tended to have lower visual thresholds than other words whose relationship to a given need area was more remote. This study was the precursor of many later studies which have shown essentially the role of needs and their effects on perceptual behavior. Subsequent studies have become progressively more sophisticated in their methodological approach by controlling such variables as word frequency and response suppression particularly in threatening need areas. However, the basic findings of the effect on perception of needs appear essentially supported. Historical and critical reviews of the well known studies may be found in Allport (1955) and Ingle (1961).

Since one of the more widespread techniques in psychology for the investigation of needs has been the study of their effect on visual

thresholds, it was proposed to similarly study the I-E variable. If the I-E variable is a salient, general one, its effects should be observable on tachistoscopic thresholds. Predictable relationships established between I-E scores and visual thresholds for I-E related material would support the construct validity (Cronbach & Meehl, 1955) of the Liferant Scale and place the latter on a footing similar to other established need constructs in psychology. By careful selection of words judged to be closely related to the concepts of internal and external control of reinforcements and presentation of the stimulus words tachistoscopically, it was reasoned that those words most closely related to the stronger need (either external or internal) of the particular subject would have significantly lower visual thresholds. It was also felt that the internally or externally oriented subject would assign higher frequencies of usage and place higher emotional values on those words which more nearly corresponded to his respective internal or external frame of reference with regard to the occurrence of reinforcements.

In a situation where an individual is required to listen to verbal material read aloud, it was postulated that the internal-control oriented individual would tend to remember and thus reproduce more of the verbal material which emphasized internal-control over external-control. For the external-control oriented individual, the reverse relationship would be expected to hold. In general, the subject should subscribe to and remember better the verbal material having most relevance to his needs.

In a level-of-aspiration situation involving statements of expectancy for future success on a task these individuals should conform to the supporting evidence provided by the studies previously cited. That is, internal-control oriented individuals should exhibit more variation in their expectancy statements and fewer unusual shifts of expectancy than the external-control oriented individuals.

In general, it was proposed that there would be significant differences in the behavior of individuals identified as being externally-control oriented or internally-control oriented in these tasks.

## Major Hypotheses

1. For the internal-control oriented group, visual thresholds, as measured tachistoscopically, for words related to the concept of internal control will be significantly lower than the visual thresholds for words related to the concept of external control. For the external-control oriented group, the reverse relation will hold.
2. The internal-control oriented group will rate words related to the concept of internal control as being used significantly more frequently by themselves and by others than words related to the concept of external control. For the external-control oriented group, the reverse relationship will hold.
3. The internal-control oriented group will rate words related to the concept of internal control as having significantly greater emotional appeal than words related to the concept of external control. For the external-control oriented, the reverse relationship will hold.
4. The internal-control oriented group will recall a significantly greater amount of verbal material which is related to the concept of internal control than verbal material which is related to the concept of external control. For the external-control oriented group, the reverse relationship will hold.
5. In a level-of-aspiration task, the internal-control oriented group will show a significantly greater number of shifts over a series of trials than the external-control oriented group. Under identical conditions, the internal-control oriented group will show fewer unusual shifts of expectancy (shifts upward after failure and downward after success) than the external-control oriented group.

## METHOD

## Selection of Subjects

The Selection Devics. The I-E Scales was administered to 1025 General Psychology students at Kansas State University during the 1960-1961 academic year. Of this group, 428 were females and 597 were males. Since females were not to be used in the study, their scales were discarded.

The scale was scored so that a high value would indicate beliefs which incorporate the idea of internal as opposed to external control of events. The median score for males was 43.67 and the range 15-60 which corresponds to a mean of 47.65 and range of 10-60 reported by Scodal & Liverant (1960) on a similar, but smaller, group of male subjects. The distribution was skewed toward the internal-control end of the continuum, a result not unexpected for university students since enrollment in college presupposes a certain amount of an internal-control expectancy.

Subjects. Skill-oriented (internal) subjects were drawn from that group of individuals who received scores of 55-60 inclusively on the Liverant Scale. Correspondingly, the chance-oriented (external) subjects were taken from the group having scores of 15-29 inclusively. A third group of subjects were used whose scores fall at 43-44, i. e. at the median. The skill-oriented, the chance-oriented and median experimental groups were each composed of twenty individuals who were approached on an individual or small group basis and asked to participate in an experiment which was described as involving measures of visual and motor activity.

## Experimental Procedure

Tachistoscopic Determination of Visual Thresholds of Related Verbal Material.

Selection of Stimulus Words. Three groups of words were selected from Thorndike's Word List (1944) whose connotations were believed to fit the internal-control, external-control, and neutral categories. A list of 63 words was assembled and presented to each of five independent judges, all of whom were professional psychologists. Accompanying the list was a set of instructions (Appendix II) explaining the meaning of the cate-

gories (internal-control, external-control, and other) and asking the judges to assign each word to the most appropriate category. A list of those words which fit a given category by unanimous agreement of the judges, was compiled and from this list six words were selected for each of the three categories. The selection was made so that the mean frequencies of the respective word groups were approximately equal. Words included were:

- (1) Internal-control: talent, control, choose, ability, predict, and skill.
- (2) External-control: gamble, fortune, fate, luck, random, and chance.
- (3) Neutral: length, escort, solid, admiral, leather, and remark.

Preparation of the Stimulus Cards. Each of the stimulus words was printed on a white cardboard rectangle  $9 \frac{3}{16}$ " by 12" and centered  $5 \frac{9}{16}$ " from the left side along the length and  $4 \frac{5}{8}$ " from the top and across the width of the card. When placed in the tachistoscopic card back, the stimulus word appeared directly in the center of the field and the right end of the card protruded about  $1\frac{1}{2}$ " from the card back so that it might readily be removed. The words were set in lower case 12 point Century type.

Twenty cards were printed, six for each of the three categories and two additional words (color and school) presented initially to the subject as sample words to illustrate the procedure. All of the twenty cards fitted into the card back at once and a succeeding card was presented merely by pulling the card preceding it from the tachistoscope back.

Experimental Presentation. The subject was shown the Harvard Tachistoscope and given a brief informal explanation of the purpose and operation of the instrument and of the general experimental procedure. The test room was kept in semi-darkness during administration of the stimulus cards. Each presentation of the stimulus consisted of a single flash of light on the stimulus card, and the subject was encouraged to guess throughout the presentations. The first two cards were given to familiarize the subject with the procedure and, more importantly, to determine the general threshold level that the subject might be expected



to exhibit.

The presentation of each experimental stimulus card was begun at approximately 0.15 of a second below the thresholds of the first two sample words and increased by 0.01 second increments until the subject was able to correctly identify the word twice in succession. For shorter words, the initial time interval was reduced to insure that the subject did not correctly identify the word on the first presentation. As the experiment progressed, it was necessary, generally, to reduce the initial time interval for each new word due to practice effects. The time of the second successive correct response of the subject was recorded as the visual threshold value for a given word and upon reaching this criterion, the subject was informed that his response was correct and that he would be exposed to a new word.

**Subjects' Ratings of the Stimulus Words.** At the conclusion of the tachistoscopic presentation of the experimental words, each subject was given three rating scales. On the first, the subject was asked to estimate on a four point scale (very frequently, frequently, infrequently, and very infrequently) how frequently he used the words. The second scale employed the same four point scale, but the subject was required to estimate the frequency with which others used the words. The third scale attempted to assess the emotional reaction of the subject to each of the words according to a five point scale (very pleasant, pleasant, neutral, unpleasant, very unpleasant).

**Scoring of the Rating Scales.** The first two scales were scored by awarding four, three, two, and one point(s) to the very frequent, frequent, infrequent, and very infrequent categories, respectively. Five, four, three, two, and one point(s) were assigned to the very pleasant, pleasant, neutral, unpleasant, very unpleasant responses, respectively, on the emotionality scale. A total score for each of the word groups for each scale was determined.

#### Retention of Related Verbal Material

**Retention Procedure.** Two short paragraphs, one whose content emphasized ideas relevant to internal-control of events and the other embodying concepts pertinent to external-control of events, were read to the subject. These were adapted from Krech & Crutchfield (1958, pp.

265-266) and read as follows:

Internal-Control: Man is/ the master/ of his fate./ His desires,/ his goals/ and purposes/ are his./ The cause/ of his behavior/ is within/ him./ Man thinks,/ decides,/ and acts./ We behave/ as we do/ because we size up/ the situation,/ weigh/ the consequences/ and act/ with reason./ We choose/ what we do/ and we do/ what we choose./ We have/ free will./

External-Control: Man is/ a powerless/ tool/ of forces/ beyond his control./ It is these forces/ that move him./ Man is/ a pawn/ of fate/ predestined/ ahead of time./ He is merely/ the battleground/ of forces/ outside/ his control./ Unpredictable/ forces/ lay out/ a predetermined/ path/ that men/ fatalistically/ trudge,/ unable/ to change/ his course./

The subject was told that this was a test of retention and after hearing one of the paragraphs read through once, he was to write down as much of the material as possible. He was given as much time as he needed to complete the task which rarely exceeded five minutes for each paragraph. As soon as the subject had written as much of the first paragraph as he could remember, the other paragraph was read to him, and he proceeded to write as before. The presentation of the paragraphs was counterbalanced for each group of subjects, i. e. one half of the subjects heard the Internal-Control paragraph first and the remaining subjects heard the External-Control paragraph first.

Scoring. The phrasing of the paragraphs was broken into segments as indicated by the slashes shown above. In this way, the scoring was made as objective as possible though in some cases certain substitutions were allowed and some phrases such as "Man is" were not counted unless accompanied by other key words in a particular sentence.

To establish the reliability of the scoring, twelve sample protocols were collected from a small Social Psychology class and evaluated independently by the investigator and another judge. The rank order correlation for the Internal-Control paragraph was 0.92, and for the External-Control paragraph was 0.79 which was considered adequate. The experimental protocols were scored by the investigator. Each subject received two scores which represented the total number of phrases recalled for each paragraph.

Determination of Shifts in Expectancies Under Conditions of Success and Failure by Means of Rotter's Level-of-Aspiration (LOA) Board.

LOA Procedure. This part of the procedure followed Ss' completion of the retention of related verbal material. The task employed was Rotter's LOA Board (Rotter, 1942) which was previously set so that the subject would achieve a total score of approximately 20-25 points per trial after practice. This was accomplished by raising one end of the board and blocking underneath with small pieces of paper. There was no further manipulation or control of the subject's score.

The subject was given the following instructions by the experimenter:

This is a test of motor control. The idea is always to aim for the ten. Your score will depend on how close to the ten you come. Also if you hit the ball hard enough to collide with the back panel of the board, that shot will count zero. Now take fifteen or twenty practice shots just to get the feel of it.

The subject was allowed to practice and was told the score that he made on each shot. The instructions, then, continued:

Now, you will be given a series of trials in which you should try to get as high a total score as possible. Before you start each trial (a trial consists of your total score for five shots), however, you will have to tell me the score that you expect to get and you will not be credited with anything over that score. If your score is lower than your bid, then the score you will be credited with will be two points off your actual score for every point you fall below in your bid. For example, if you say you will score 25 and score 20, for the five hits, you will be credited with 10; if you say 15 and score 10, you will get 0 credit. You can see that once your bid is made it is always to your advantage to shoot as high as possible.

The experimenter discussed the instructions with the subject until it was felt that he fully understood what was to be done.

A total of sixteen trials was run for each subject. On each trial, the subject's estimate, the score of each of his individual shots, and his total score was recorded. His credited score was calculated, recorded on the data sheet and written in large numerals on a small piece of paper that was placed so the subject could see it before making his next estimate.

Scoring. A difference score (D score) was computed by subtracting the performance score on the previous trial from the following estimate.

This yielded 15 D scores for the 16 trials and represented a measure of the subject's shifts in expectancy. It was noted whether the subject succeeded or failed to achieve his estimate for each trial. Further, the total number of shifts in the subject's estimates were counted and broken into two groups: positive (upward) shifts and negative (downward) shifts. The number of unusual shifts was ascertained, an unusual shift being one in which a subject increases his estimate after failure or decreases his bid after a successful trial.

## RESULTS

## Verbal Stimulus Measures

Visual Thresholds of Related Verbal Material. For the purpose of convenience, in making the statistical analysis of the data, each of the visual threshold values was multiplied by 100. Also, for each of the subjects, a mean visual threshold value was computed separately for each of the three word categories. A two-way analysis of variance was applied to the data within each of the subject groups to determine whether the I-E control variable produced differential effects on the mean visual thresholds of the various stimulus word categories as predicted in Hypothesis 1. The results are summarized in Table 1. The  $F$  ratios indicate that within none of the three groups were significant differences among the mean visual thresholds for the various word categories obtained. However, there were highly significant differences between the mean visual thresholds of the subjects, indicating the lack of homogeneity in the selected groups.

On the basis of these results the null statement of Hypothesis 1 was accepted, and the conclusion drawn that there were no significant differences in the visual thresholds for the three word categories within any of the subject groups.

Table 1. Two-way analysis of variance of the visual thresholds of stimulus words within each of the subject groups.

Internal Control Group				
Source of Variation	df	MS	F	p
Subjects	19	2567.2017		
Words	2	72.1195	2.18	n. s.
Interaction	38	33.0259		
Cells same S & W	300	51.2944		
Total	359			
External Control Group				
Source of Variation	df	MS	F	p
Subjects	19	1664.6643		
Words	2	61.9528	1.78	n. s.
Interaction	38	34.8709		
Cells same S & W	300	51.2994		
Total	359			

Table 1 (concl.). Two-way analysis of variance of the visual thresholds of stimulus words within each of the subject groups.

Source of Variation	Median Group			
	df	MS	F	p
Subjects	19	917.5491		
Words	2	17.8694	0.24	n. s.
Interaction	38	74.0215		
Cells same S & W	300	29.0089		
Total	359			

Between group variation was investigated by testing the differences between the mean visual thresholds with the t-test (Table 2). Although not stated as formal hypotheses, it was expected that the internal-control subjects would have significantly lower visual thresholds for internal-control stimulus words than the external-control or median subjects; that the external-control subjects would have significantly lower visual thresholds for the external-control stimulus words than the internal-control or median subjects; and that there would be no significant differences in the visual thresholds of the neutral stimulus words between the three subject groups. These hypothesized directions of differences, with two exceptions in the Neutral word category, were not observed for any of the three groups of stimulus words as can be seen by examination of the mean thresholds in Table 2.

In general, the results of this analysis seem to suggest a trend for the median group to show higher visual thresholds than either the external or internal groups. This was particularly apparent in the case of the external versus the median group. One possible interpretation is that of a trend for median subjects to be less aware of environmental stimuli or at least to be less concerned with the salience of the I-E dichotomy than either the extreme groups thus resulting in somewhat higher thresholds. However, at best, this appears to be a weak trend.

The design of this study also permitted a more stringent test of the rationale embodied in Hypothesis 1. By the inclusion of neutral words along with both internal and external words it was possible to make comparisons within each group while at the same time considering

Table 2. Between group comparisons of the mean visual thresholds by stimulus word category. (Thresholds expressed in 1/100 seconds X 100).

Internal Stimulus Words			
Group	Word Category Mean Threshold	t	p
Internal Control Group	20.2	1.43	n. s.
External Control Group	17.8		
Internal Control Group	20.2	0.90	n. s.
Median Group	21.6		
External Control Group	17.8	2.99	0.005
Median Group	21.6		
External Stimulus Words			
Group	Word Category Mean Threshold	t	p
Internal Control Group	18.9	0.82	n. s.
External Control Group	17.6		
Internal Control Group	18.9	2.44	0.025
Median Group	22.4		
External Control Group	17.6	3.53	0.001
Median Group	22.4		
Neutral Stimulus Words			
Group	Word Category Mean Threshold	t	p
Internal Control Group	20.3	0.88	n. s.
External Control Group	18.9		
Internal Control Group	20.3	1.27	n. s.
Median Group	22.2		
External Control Group	18.9	2.52	0.025
Median Group	22.2		

Table 3. Between word category comparisons of scores on stimulus word rating scales by subject group. (I - Internal Stimulus Words; E - External Stimulus Words; N - Neutral Stimulus Words).

Internal Control Group			
Scale	Word Categories	t	p
I	I vs. E	2.96	0.01
	I vs. N	2.67	0.025
	E vs. N	0.48	n. s.
II	I vs. E	2.96	0.01
	I vs. N	4.02	0.001
	E vs. N	0.98	n. s.
III	I vs. E	3.21	0.005
	I vs. N	2.24	0.05
	E vs. N	1.44	n. s.
External Control Group			
Scale	Word Categories	t	p
I	I vs. E	3.95	0.005
	I vs. N	2.77	0.01
	E vs. N	1.03	n. s.
II	I vs. E	2.15	0.05
	I vs. N	2.95	0.01
	E vs. N	0.61	n. s.
III	I vs. E	3.54	0.005
	I vs. N	2.94	0.01
	E vs. N	0.38	n. s.
Median Group			
Scale	Word Categories	t	p
I	I vs. E	3.47	0.005
	I vs. N	2.80	0.01
	E vs. N	0.49	n. s.
II	I vs. E	2.29	0.05
	I vs. N	3.12	0.005
	E vs. N	0.72	n. s.
III	I vs. E	3.65	0.001
	I vs. N	3.06	0.005
	E vs. N	0.69	n. s.



the overall thresholds of those groups. For example, it would have been possible to take the difference between the external subjects' mean thresholds on external and neutral words and compare it with the differences between neutral and internal thresholds. The prediction would have been that the former differences should be larger than the latter differences. Similar analyses were possible with the other groups. However, inspection of the data indicated that the differences in thresholds among word classes were so small and unstable in their direction within the various groups, that such analyses would be futile. Similar analyses were possible across groups rather than within groups, but such analysis was abandoned for the same reasons.

Subjects' Ratings of the Stimulus Words. A series of t-tests were used to compare the mean ratings of the word categories within each subject group. This analysis is presented in Table 3. The ratings of the three classes of words for frequency of usage by self and others and for emotional tone revealed that all three groups of subjects behaved alike. Thus, all groups indicated that the internal control stimulus words were used significantly more often by themselves and by other people and also that they have a significantly greater emotional appeal than either the external control words or the neutral words. The results for the internal control group were in the direction expected. However, in view of the fact that the other two groups showed identical trends it is apparent that the scales did not, therefore, discriminate among the groups. Thus, the null statements of Hypotheses 2 and 3 were accepted. Comparisons based on t-tests between subject groups for similar word categories on each of the given scales were, without exception, non-significant.

Retention of Related Verbal Material. The t-test was again employed to test for differences in the means of the internal control and external control retention scores between and within subject groups (Table 4). For the three subject groups, the means of the internal control retention scores, without exception, exceeded the means of external control retention scores. The statistical analysis in Table 4 indicates that these mean differences are significant, but when comparisons were made of the mean scores on similar verbal material between subject groups, no significant differences were found. Since all three subject groups re-

acted to the verbal material in a similar way, it was supposed that there was a difference in the inherent difficulty of the two passages or that the greater social desirability of the passage. On the basis of the results, the null statement of Hypothesis 4 was accepted.

Table 5. Comparison of the retention scores on internal-control and external-control verbal material within and between subject groups.

Retention of Internal Control vs. External Control Material Within Groups		
	t	p
Internal Control Subject Group	4.17	0.001
External Control Subject Group	3.77	0.001
Median Subject Group	3.10	0.005
Internal Control Material Between Subject Groups		
	t	p
Internal Control Group vs. External Control Group	1.33	n. s.
Internal Control Group vs. Median Group	1.67	n. s.
External Control Group vs. Median Group	1.26	n. s.
External Control Material Between Subject Groups		
	t	p
Internal Control Group vs. External Control Group	1.23	n. s.
Internal Control Group vs. Median Group	0.35	n. s.
External Control Group vs. Median Group	0.90	n. s.

#### Level-of-Aspiration Measures

The t-test was used to compare the mean number of usual shifts, unusual shifts and total shifts of expectancy under conditions of success and failure on Rotter's Level-of-Aspiration Board between subject groups (Table 5).

Table 5. Comparison of the number of shifts in expectancy on the level-of-aspiration data between subject groups.

Internal Control Groups vs. External Control Group		
	t	p
Usual Shifts	0.46	n. s.
Unusual Shifts	0.29	n. s.
Total Shifts	0.44	n. s.

Table 5 (concl.). Comparison of number of shifts in expectancy on level-of-aspiration data between subject groups.

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Internal Control Group vs. Median Group

	t	p
Usual Shifts	0.22	n. s.
Unusual Shifts	1.57	n. s.
Total Shifts	0.77	n. s.

External Control Group vs. Median Group

	t	p
Usual Shifts	0.74	n. s.
Unusual Shifts	1.79	n. s.
Total Shifts	1.24	n. s.

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As shown in Table 5, no significant differences between the subject groups were elicited using the expectancy measure, and therefore, the null statement of Hypothesis 5 was accepted.

## DISCUSSION

The inability to generally demonstrate differences in visual thresholds for need-related words both within and between groups casts considerable doubt on the utility of conceptualizing the I-E variable as a general personality need. At least the results of this study provide no support for believing the I-E variable behaves similarly to other established needs or that its importance can be demonstrated as in the case of other needs. The tachistoscopic measurement of visual thresholds for need-related material is a well established method. Its failure to discriminate among I-E subjects is discouraging indeed. Certainly the construct validity of the Liverant Scale is temporarily, at least, in doubt. One might argue that the Liverant Scale is not an adequate instrument for the measurement of I-E. However, the scale appears to have been rather carefully constructed. Apart from the slight trend for the middle group to show generally higher thresholds than the other groups, no support for Hypothesis 1 is obtained. This would seem to lead to the tentative conclusion that although the I-E or skill-chance dichotomy is important in terms of situationism, the importance of construing it as a need has failed to be demonstrated.

The results of Hypotheses 2, 3, and 4 were similarly non-significant. They did indicate, however, that internal words are rated by all groups as being more frequently used by self and others and also as having a greater emotional appeal. It was also determined that passages reflecting an internal need orientation were better retained than external passages. This held for all three groups again. The homogeneity of these results is strongly suggestive of a cultural value or perhaps social desirability. It appears that the espousal of an internal orientation is the culturally acceptable or valuable thing to do. That is, the general trend among people is to state the importance of internal control over reinforcements particularly in a university setting where a premium is placed on individual competence. If people vary in the extent to which they believe this, the Liverant Scale seemingly failed to discriminate among them.

Likewise, the three groups did not differ in their level-of-ambition behavior. Total number of shifts in expectancy and frequency of un-

usual shifts ( up after failure, down after success) were not demonstrably different among the groups. Previous studies had indicated that in skill situations subjects show more frequent changes in expectancy and fewer unusual shifts than in chance situations. Thus, in skill situations success and failure provide usable information for the subject by which he can gauge the likelihood of future success. Chance situations do not provide such data, so that there are few unusual shifts and more unusual shifts (impulsive changes based on the gambler's fallacy). It was expected that similar results would obtain for subjects selected on the basis of their perception of the source of control of reinforcements. Failure to achieve comparable results again diminishes our confidence in the I-E variable as a personality construct.

One further analysis, however, was made. It was tentatively assumed that perhaps the level-of-aspiration task might be a better predictor of the tachistoscopic behavior than the Liverant Scale. The LOA Board, being a more behavioral measure, might reflect the subjects I-E orientation to a greater extent than the Liverant Scale. Thus, it was decided to select two extreme groups on the basis of frequency of shifts on the LOA Board. Bearing in mind the results of skill-chance situational studies it was thought that subjects with few shifts would be externally oriented while subjects with many shifts would be internally oriented.

Therefore, the twenty subjects with the most shifts in expectancies on the LOA Board were compared with the twenty subjects with the fewest in expectancies by means of a t-test. The results were again non-significant, further underlining or reinforcing the picture of the non-utility of the I-E variable as a personality need with generality.

Thus, both a carefully standardized paper and pencil test of I-E orientation and a more behavioral LOA measure failed to discriminate among individuals on the basis of the I-E concept.

## SUMMARY

On the basis of the premise that the internal-external control dimension is an important personality variable, the purpose of the study was to establish the construct validity of the I-E dimension by determining the nature and extent of behavioral and perceptual differences displayed by individuals, selected by the Livrant Scale as occupying extreme positions on the I-E continuum. Three groups of subjects were selected: the internal control group comprised of individuals who describe the occurrence of reinforcements to their own efforts; the external control group composed of those individuals who perceive the occurrence of reinforcements as being outside or beyond their control; and a third group who occupy a central position on the continuum.

Several major hypotheses were tested. First, that the visual thresholds, as measured tachistoscopically, of relevant need-related stimulus words would be lower than thresholds for diametrically opposed or neutral stimulus words for a given group. Secondly, that need-related stimulus words would be rated as occurring more frequently in self-usage and usage by others, and as having greater emotional appeal. Thirdly, verbal passages conveying ideas and concepts which were more need-related would be better retained or remembered than passages which dealt with ideas that were alien to the needs of the individual. Lastly, the internal-control group would show more variation in their expectancy statements, but fewer unusual shifts, than the external control group when tested on the Level-of-Aspiration Board.

None of the hypotheses were substantiated and the behavioral and perceptual measures failed to discriminate between the groups. On the basis of the results, it was tentatively concluded that the I-E construct is of questionable value as an explanatory and predictive behavioral concept when considered as an important need dimension.

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## APPENDIX

### I. The Liverant I-E Scales.

The I-E Scale which follows is in the form as presented to the subjects. Actually there are six subscales: Academic, Recognition, Social Recognition, Love and Affection, Dominance, Social-Political and Life Philosophy. Each of the subscales is composed of the following items.

A. Academic Recognition

1-b, 7-b, 13-a, 19-b, 25-a, 31-b, 37-a, 43-b, 49-b, 55-b.

B. Social Recognition

2-b, 8-a, 14-b, 20-a, 26-b, 32-b, 38-a, 44-b, 50-a, 56-b.

C. Love and Affection

3-b, 9-a, 15-b, 21-b, 27-b, 33-a, 39-b, 45-a, 51-b, 57-b.

D. Dominance

4-b, 10-a, 16-b, 22-a, 28-a, 34-a, 40-a, 46-b, 52-b, 58-b.

E. Social-Political

5-a, 11-b, 17-a, 23-b, 29-a, 35-b, 41-b, 47-b, 53-a, 59-a.

F. Life Philosophy

6-b, 12-a, 18-a, 24-b, 30-b, 36-a, 42-b, 48-b, 54-a, 60-a.

## SOCIAL REACTION INVENTORY

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief; obviously there are no right or wrong answers.

TURN TO NEXT PAGE

## DIRECTIONS

Your answers to the items on this inventory are to be recorded on a separate answer sheet which is loosely inserted in the booklet. Remove THIS ANSWER SHEET NOW. Print your name and any other information requested by the examiner on the answer sheet, then finish reading these directions. Do not open the booklet until you are told to do so.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. Find the number of the item on the answer sheet and black-in the space under the number 1 or 2 which you choose as the statement most true.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

## REMEMBER

Select that alternative which you personally believe to be most true.

I more strongly believe that:

1. a) many times the reactions of teachers seem haphazard to me.
  - b) in my experience I have noticed that there is a direct connection usually between how hard I study and the grades that I get.
2. a) I would be surprised if I discovered that social success is mostly a matter of chance.
  - b) in our society social recognition has little to do with ability.
3. a) in my case making friends depends on how hard I work at it, luck has little to do with it.
  - b) making friends is a funny business, it is ~~so~~ dependent on the right combination of circumstances.
4. a) through discussion I can change other people's opinions.
  - b) whether or not a person will do what I want, depends mostly on how he happens to feel at the time.
5. a) I feel increasingly helpless in the face of what is happening in the world today.
  - b) I sometimes feel personally to blame for the sad state of affairs in our government.
6. a) when I make plans, I am almost certain that I can make them work.
  - b) it is not wise to plan too far ahead because most things turn out to be a matter of good or bad fortune anyhow.
7. a) in most cases the student, not the teacher, determines the grade.
  - b) it seems many times that the grades one gets in school are more dependent on the instructor's whims than on what a student can really do.
8. a) making a lot of money is largely a matter of getting the right breaks.
  - b) promotions are earned through hard work and persistence.
9. a) marriage is largely a gamble.
  - b) the number of divorces indicates that more and more people are not trying to make their marriages work.

I more strongly believe that:

10. a) it is silly to think that one can really change another person's basic attitudes.  
b) when I am right I can convince others.
11. a) with enough effort we can wipe out political corruption.  
b) it is difficult for people to have much control over the things politicians do in office.
12. a) I have usually found that what is going to happen will happen, regardless of my actions.  
b) trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
13. a) if one gets the right teacher he can do well, otherwise it is hopeless.  
b) the marks I get in class are completely my own responsibility.
14. a) as far as I am concerned becoming a success in our society is a matter of struggle, luck has little or nothing to do with it.  
b) getting a good job largely depends upon being in the right place at the right time.
15. a) people are lonely because they don't know how to be friendly.  
b) making friends is largely a matter of being lucky enough to meet the right people
16. a) changing people's opinions is often a hard job, but with enough effort it can be done.  
b) in general other people will do as they please in spite of my efforts to get them to listen to me.
17. a) as far as international affairs are concerned, most of us are the victims of forces we cannot understand, let alone control.  
b) by active participation in political and social affairs the people can control world events.
18. a) most people don't realize the extent to which their lives are controlled by accidental happenings.  
b) people are responsible for their actions, both good and bad.

I more strongly believe that:

19. a) if one wants to badly enough, he can overcome almost any obstacle in the path of academic success.  
b) some teachers will give you a poor grade no matter how hard you work.
20. a) getting promoted is really a matter of being a little luckier than the next guy.  
b) in our society a man's future earning power is dependent upon his ability.
21. a) anyone can have good friends if he knows how to interact with people.  
b) being able to get along with people seems to be more a matter of the other person's moods and feelings at the time rather than one's own actions.
22. a) I have little influence over the way other people behave.  
b) if one knows how to deal with people they are really quite easily led.
23. a) changing social attitudes is a tremendous undertaking but every little bit helps.  
b) people being the way they are, some form of racial prejudice is inevitable.
24. a) people are responsible for their actions, both good and bad.  
b) many people could be described as victims of circumstances beyond their control.
25. a) sometimes I feel that I have little to do with the grades I get.  
b) in my case the grades I make are the result of my own efforts, luck has little to do with it.
26. a) popularity depends on knowing how to get people to admire you.  
b) some people are just naturally popular--others aren't.
27. a) people are lonely because they don't try to be friendly.  
b) there's not much use in trying to please people, if they like you, they like you.

I more strongly believe that:

28. a) my effectiveness in influencing what others will do depends on how hard I work at it, luck has little or nothing to do with it.  
b) I often can't understand how it is possible to get people to do what you want.
29. a) it is only wishful thinking to believe that one can really influence what happens in society at large.  
b) people like me can change the course of world affairs if we make ourselves heard.
30. a) what happens to me is my own doing.  
b) most of the disappointing things in my life have contained a large element of change.
31. a) in the case of the well prepared student there is rarely if ever such a thing as an unfair test.  
b) many times exam questions tend to be so unrelated to course work, that studying is really useless.
32. a) if one just follows his own convictions he can get people to respect and admire him.  
b) respect and admiration depend to a large extent on the whims of fickle people.
33. a) no matter how hard you try, some people just don't like you.  
b) failure to have people like you is usually an indicator of ignorance in interpersonal relationships.
34. a) to a large extent who gets to be a leader depends on the whims of the group.  
b) leadership comes to those who work for it.
35. a) a great deal that happens to me is probably a matter of chance.  
b) I am the master of my fate.
36. a) I have usually found that what is going to happen will happen, regardless of my actions.  
b) most misfortunes are the result of lack of ability, or ignorance, or laziness, or all three.



I more strongly believe that:

37. a) in the present academic system getting good grades has little relationship to real ability.  
 b) grades are a good measure of a student's ability to learn.
38. a) gaining recognition in our society is largely a question of being around the right people at the right time.  
 b) a person's status is determined by how much he contributes to the group.
39. a) getting along with people is a skill which must be practiced.  
 b) it is almost impossible to figure out how to please some people.
40. a) I have learned to accept the fact that without the right breaks one cannot be an effective leader.  
 b) able people who do not rise to positions of authority have failed to take advantage of their opportunities.
41. a) a major cause of wars is people's apathy concerning political affairs.  
 b) wars are inevitable, in spite of efforts to prevent them.
42. a) in my case getting what I want has little or nothing to do with luck.  
 b) many times we might just as well make our decisions by flipping a coin.
43. a) in the long run a person's academic ability can be accurately judged by the grades he gets.  
 b) getting good grades seems to be largely a matter of being lucky enough to take the right course at the right time.
44. a) failure to gain the respect of others is usually an indicator of social incompetence.  
 b) it seems many times that the promotions one gets are more dependent on the employer's whims than on what an employee can really do.
45. a) it is so hard to know whether or not a person really likes you.  
 b) there is a direct connection between being a nice person and the number of friends one has.

I more strongly believe that:

46. a) it is only the skilled individual who can get others to see the error of their ways.  
 b) the power one person exercises over another is more a matter of the second person's weakness rather than anything the first person does.
47. a) there is nothing inevitable about the course of human affairs, the nature of society is what people like me make it to be.  
 b) there's little use in worrying about the outbreak of war, what will be, will be.
48. a) people's misfortunes usually result from the mistakes they make.  
 b) sometimes I feel that I don't have enough control over the direction my life is taking.
49. a) all this talk about teachers being unfair to students is mostly nonsense.  
 b) most students don't realize the extent to which their grades are controlled by accidental happenings.
50. a) it is silly to think that hard work is given its rightful recognition in our society.  
 b) sooner or later a person's achievements are recognized.
51. a) if I play my cards right I can get people I like to like me.  
 b) many times I feel that I have little control over the way people react to me.
52. a) in my case getting people to do the right thing depends upon ability, luck has little or nothing to do with it.  
 b) one must accept the fact that who dominates whom is largely a matter of who was lucky enough to get in the right position first.
53. a) most of the time the behavior of politicians is incomprehensible to me.  
 b) in the long run the people are responsible for bad government on a national as well as on a municipal level.
54. a) many times I feel that I have little influence over the things that happen to me.  
 b) it is impossible for me to believe that chance or luck plays an important role in my life.

I more strongly believe that:

55. a) for the most part teachers give students what they have earned.  
b) taking an objective test is a lot like gambling, if you're lucky you make the right choices.
56. a) in the long run the socially undesirable or inadequate individuals reach their proper level in our society.  
b) there's little use in trying very hard since keeping one's job seems more dependent on economic conditions than on one's ability.
57. a) it is up to the person who isn't liked to figure out why.  
b) people are so unpredictable, that it is hard to really get to know them.
58. a) it would surprise me to learn that a good many people in positions of authority are there largely as a matter of luck and not because of any special talents they have.  
b) luck is an essential ingredient for rising to a position of authority.
59. a) somehow all the effort people put in trying to change social prejudices, doesn't seem to get anywhere.  
b) in the long run people control the politicians, not vice versa.
60. a) in the long run the bad things that happen to us are balanced by the good ones.  
b) most misfortunes are the result of lack of ability, or ignorance, or laziness, or all three.

## II. Instructions to Judges for Selection of Stimulus Words.

After reading carefully the accompanying instructions and definitions of the Internal and External Categories, please indicate which category each of the following words reflects or relates to. For example, does the word "luck" relate primarily to the internal category or the external category? If a word is ambiguous or does not really reflect either category, place it in the "other" category.

A. External Control, i. e. that the occurrence of reinforcements is controlled by the external world. This outlook may be characterized by a number of beliefs held by the individual. Possible beliefs influencing the behavior of such an individual can be enumerated as follows:

1. A generalized belief that the world is unpredictable or that non-rational, non-deterministic influences are responsible for the occurrence of reinforcements.
2. A generalized belief that the course of events is predetermined and that the individual's efforts to effect changes are futile.
3. A generalized belief that the control of reinforcements lies in the hands of other people or influences much stronger than oneself.
4. A generalized belief that the world is too complex to be predicted and the resulting confusion doesn't enable the individual to cope with it.

B. Internal Control, i. e. the occurrence of reinforcements is perceived to be the result of some characteristic or quality within the individual which he might label as skill. The reinforcement is understood as occurring because of his own behavior. His outlook would be primarily deterministic and he would tend not to regard external influences as being the result of chance, but rather, would perceive a well-ordered world on which he is able to exert influence. His obtaining reinforcements would be interpreted as being due to his ability to exert influence on people and events.

TACHISTOSCOPIC AND LEVEL-OF-ASPIRATION MEASURES  
OF THE INTERNAL-EXTERNAL CONTROL VARIABLE

by

GARY LANE STRALEY

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#### ABSTRACT

On the basis of the premise that the internal-external control dimension is an important personality variable, the purpose of the study was to establish the construct validity of the I-E dimension by determining the nature and extent of behavioral and perceptual differences displayed by individuals, selected by the Lickert Scale as occupying extreme positions on the I-E continuum. Three groups of subjects were selected: the internal control group comprised of individuals who ascribe the occurrence of reinforcements to their own efforts; the external control group composed of those individuals who perceive the occurrence of reinforcements as being outside or beyond their control; and a third group who occupy a central position on the continuum.

Several major hypotheses were tested. First, that the visual thresholds, as measured tachistoscopically, of relevant need-related stimulus words would be lower than thresholds for diametrically opposed or neutral stimulus words for a given extreme group. Secondly, that need-related stimulus words would be rated as occurring more frequently in self-usage and usage by others, and as having greater emotional appeal. Thirdly, verbal passages conveying ideas and concepts which were more need-related would be better retained or remembered than passages which dealt with ideas that were alien to the needs of the individual. Lastly, the internal control group would show more variation in their expectancy statements, but fewer unusual shifts, than the external control group when tested on the Level-of-Aspiration Board.

None of the hypotheses were substantiated and the behavioral and perceptual measures failed to discriminate between the groups. On the basis of the results, it was tentatively concluded that the I-E construct is of questionable value as an explanatory and predictive behavioral concept when considered as an important need dimension.