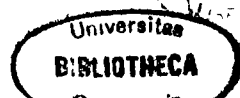


THE EFFECTS OF FAILURE STIMULI ON
PERCENTUAL PERFORMANCE
IN CONFORMERS AND INDEPENDENTS

by James N. Lauber

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Psychology and Education of the
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CURRICULUM STUDIORUM

James N. Leuber was born September 1, 1931, in Cleveland, Ohio. He received the Bachelor of Arts degree in Psychology from the University of Dayton, Dayton, Ohio, in 1953. He received the Master of Arts degree in Clinical Psychology from Bowling Green State University, Bowling Green, Ohio, in 1957. The title of his thesis was Selected Success and Failure Experiences as Factors in Bender-Gestalt Performance.

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INTRODUCTION

Psychological research has seldom progressed from one problem to another in a simple straightforward manner. Controversies and contradictions, more often than not, have stimulated thinking and experimentation. This has been the case in research on perception and motivation. With regard to perception, for example, researchers have been divided into two camps for many years: those who espouse a formal approach and concentrate on the intrinsic laws of perceptual organization, and those who are concerned with the role of perception in the adjustment of the organism. The latter group, called functionalists, emphasize what they consider the central conditions of "set", needs, values, attitudes and motives as being crucial determiners of how individuals will perceive stimuli. Taken together, these variables form a central directive state in that they direct the individual's perceiving of stimuli, although just how this is done is by no means clear at this time.

The present research falls within the general framework of the functional approach with an attempt being made to begin a systematic investigation of motivation-perception relationships. Two of the assumptions underlying the directive state theory of perception have been selected to initiate this investigation. Before we can attempt to

formulate laws stating precisely how motivation directs perception, it is necessary to first determine which relationships do or do not exist.

Specifically, in the present study, the motivating effects of stress on perceptual performance will be observed in conforming and in independent individuals. Past research on stress has often neglected central personality variables as important influencers guiding the perception of stimuli under stressful situations. The relevance of certain aspects of ego strength, for example, as being important personality variables in performance under stress has only been implicitly stated. Yet, there is at present sufficient research evidence to suggest that independence is an important dimension of ego strength. Consequently, independence should be considered as a central personality variable in investigations concerned with the effects of stress on perceptual performance.

It can also be noted that what little research has been done in this area has focused on employing psychological inventories and questionnaires to divide subjects along a particular personality dimension. The difficulty with this procedure is that individuals, in giving self-reports regarding their personality, may deliberately distort their answers to produce a good impression, or they may have genuine misconceptions of their own behavior. In order to

reduce these effects of personal bias, the present study attempts to examine a relevant personality variable directly by using an actual behavioral sample rather than reports given by subjects.

Finally, the use of non-ambiguous stimuli will be used in preference to presentation of ambiguous stimuli, so that more clear-cut effects of stress and personality variables can be reflected in the criterion variable.

A review of research on failure stress will be presented to provide the reader with an understanding of the derivation of the main problem of the present study. The methodology, including the rationale and experimental design, will be followed by a chapter on the presentation and interpretation of the results of the study. The summary, conclusions, and suggestions for future research will be found in the final section.

CHAPTER I

THE BACKGROUND AND THE PROBLEM

In this first chapter the background of pertinent research concerning stress, independence, and perception will be presented along with the interrelationships among these variables. A review of the effects of failure stress on perceptual performance is followed by those studies which considered personality factors in studying these effects. An analysis and interpretation of this research review will be made and related to the problem of the present study. Finally, a theoretical rationale for the selection of a particular central personality factor to be studied under failure stress will be developed.

1. The Effects of Failure Stress on Perceptual Performance.

We might first note past work which studied certain effects of motivation, specifically stress, on perception and performance in order to give perspective to the problem of the present study which cannot be isolated from the total picture of the relationships between motivation and perception. The following survey of research on failure stress gives us an idea of the type of work done as well as indicating results obtained in this area. Studies supporting the hypothesis that failure stress results in a decrement in

perceptual performance are followed by studies indicating that this situation does not always prevail.

Postman and Brown¹ used a level of aspiration situation and verbal disparagements or praise to establish contexts of failure and success experimentally. The experimental task was a span of apprehension test. The level of aspiration of the failure group steadily declined whereas that of the success group showed a progressive increase. In addition, the failure group attempted more responses and made a significantly larger percentage of errors in the experimental task than did the success or the control group.

The purpose of an experiment by Proshansky and Murphy² was to build up by rewards and punishments a tendency to perceive in a predetermined manner, that is, to induce an autism in the individual. Of the two groups of eleven college students each, the failure group had significantly more difficulty than the success group in accurately distinguishing between different sizes and weights and in reporting what they saw.

¹ Leo Postman and Donald R. Brown, "Perceptual Consequences of Success and Failure", Journal of Abnormal and Social Psychology, Vol. 47, No. 2, April, 1952, p. 213-221.

² Harold Proshansky and Gardner Murphy, "Effects of Reward and Punishment on Perception", Journal of Psychology, Vol. 13, 2nd. Half, April, 1942, p. 304-305.

In a study by Sears³ using thirty college students as subjects, it was found that failure stress presented prior to a task of card sorting produced a progressive impairment of the efficiency with which that task was performed. He also found that failure on one task impaired the performance on another task temporally contiguous to the first and carried out in the same external stimulatory setting as the first. He suggested that both facts may be explained as the results of the operation of anticipatory responses to the failure.

In a later study, using high school seniors, Sears⁴ equated two groups of twelve students each on the basis of motility scores. The two groups were given success and failure experiences prior to performing on a card sorting test. Although success experiences did not significantly affect performance on the card sorting, characteristic trends were observed in the reaction to failure:

1. A decrease in general motility level, sharp increase in daydreaming and autistic thinking, and reduction of social responsiveness;

³ R.R. Sears, "Initiation of Repression Sequences", Journal of Experimental Psychology, Vol. 20, No. 1, January, 1937, p. 577-580.

⁴ -----, "Success and Failure", in Studies in Personality, ed. by J. McNemar and M. Merrill, New York, McGraw-Hill, 1942, p. 235-258.

2. Ineffectual continuation of the task at which failure occurred or persistent nonadjustive behavior.

Schafer and Murphy⁵ created an ambiguous situation with contour lines seen as faces, and each contour line of the profile was made the boundary of a vertical semicircle. After a preliminary training period, whereby some of the contours were associated with reward and their opposing aspects with punishment, the contour line was shown in a complete circle. The effect of autism was demonstrated by the significantly higher number of faces seen which had been rewarded as opposed to those punished during the training period.

McClelland and Apicella⁶ used twenty-six college students to study the effects of stress on card sorting. They found that stress induced by false failure scores resulted in significantly more trials before the criterion was reached.

⁵ R. Schafer and G. Murphy, "The Role of Autism in a Visual Figure-Ground Relationship", Journal of Experimental Psychology, Vol. 32, No. 4, April, 1943, p. 335-343.

⁶ David C. McClelland and F.S. Apicella, "Reminiscence Following Experimentally Induced Failure", Journal of Experimental Psychology, Vol. 37, No. 2, April, 1947, p. 169.

Bayton and Whyte⁷ had sixty male college students participate in a level of aspiration experiment on the Minnesota Rate of Manipulation Test. Aspirations, confidence and performance were found to be dependent in part upon whether the immediate experience was characterized by success or failure, and in part upon their sequence order. They found that a success-failure sequence produced poorer performance than a sequence followed by success alone.

That failure stress does not uniformly produce a decrement in perceptual performance, however, is attested to by the following studies.

Using a group testing situation with fifty-six male college students, Steyn⁸ studied the effects of success and failure on tests of cancellation, manual operations and memory which were administered prior to and after the experimental treatments. He found that repetition of the tests resulted in an increase in scores under both conditions with no significant differences between groups.

⁷ James A. Bayton and Esther C. Whyte, "Personality Dynamics During Success-Failure Sequences", Journal of Abnormal and Social Psychology, Vol. 45, No. 4, October, 1950, p. 590-591.

⁸ J.W.S. Steyn, "The Influence of the Will to Succeed on the Performance in Group-given Mental Tests", British Journal of Psychology, General Section, Vol. 31, Part 3, January, 1941, p. 215-216.

Schmidt⁹ contrasted the effects of praise and blame as incentives to learning. He utilized two independent instructors to administer uniform words of praise and blame to grade and high school classes. The results indicated that both instructors found blame more effective in high school classes, but praise was more effective in grade classes. Schmidt concluded that "to employ praise in the belief that a pupil will be made thus to react or produce maximally, is to proceed under false assumptions".

Muenzinger and Vine¹⁰ used six groups of college students roughly matched as to maze learning ability to study the effect of interposed obstacles upon maze performance. They found that the obstacle group learned the maze in about half the trials and with about half the number of errors as the control group. They concluded that obstacles (viewed as stress) rather than reward for correct choices significantly improved maze performance.

⁹ H.O. Schmidt, "The Effects of Praise and Blame as Incentives to Learning", Psychological Monographs, Vol. 53, No. 1, 1942, p. 52-53.

¹⁰ K.F. Muenzinger and D.O. Vine, "The Effect of Interposed Obstacles in Human Learning", Journal of Experimental Psychology, Vol. 29, No. 6, June, 1941, p. 273.

Replicating Schafer and Murphy's¹¹ study, Rock and Fleck¹² used four male and nine female volunteer college students to observe the effects of reward and punishment on the recognition of ambiguous profiles, but they did not find any significant differences between experimental and control groups as did Schafer and Murphy even though all conditions were almost identical.

Employing a group of eighty-six male college students and forty-two female college students, Russell¹³ investigated the effects of severe verbal disparagement on immediate and delayed retention of two lists of twelve 3-letter nonsense syllables. The experimentally induced stress had transitory inhibitory effects only on the first trial of the immediate test of retention (one minute after initial learning) but no noticeable effects on subsequent trials of the immediate test of retention or on the delayed (twenty-four hour) test.

Postman and Solomon¹⁴ administered failure experiences to eighteen college males as they were performing on a series

11 Schafer and Murphy, Op. Cit.

12 Irvin Rock and Frederick S. Fleck, "A Re-Examination of the Effect of Reward and Punishment on Figure-Ground Perception", Journal of Experimental Psychology, Vol. 40, No. 6, December 1950, p. 766-776.

13 Wallace A. Russell, "Retention of Verbal Material as a Function of Motivating Instructions and Experimentally-Induced Failure", Journal of Experimental Psychology, Vol. 43, No. 3, March 1952, p. 207-216.

14 Leo Postman and Richard L. Solomon, "Perceptual Sensitivity to Completed and Incompleted Tasks", Journal of Personality, Vol. 18, No. 3, March 1950, p. 347-357.

of ten 7-letter anagrams equated in difficulty and familiarity. The failure group did significantly better than the control group on the anagram problem and also had a lower recognition threshold for identifying correctly the content of slightly ambiguous figures.

Reynolds¹⁵ employed twenty male freshmen and used Thurstone's Test of the Space Factor and mirror-star drawing test to study the effects of stress on these two tasks. The stress consisted of an oral report of performance to subjects that they were in the bottom twenty per cent of a comparable group. The stress created no difference between the failure and control groups in the space problems. But a difference did appear in the mirror-star problem: both groups improved but the failure group significantly less in both time and errors. Reynolds suggested hypotheses from the data were to the effect that stress increases motivation and improves performance on the single decision space problems. But the beneficial effects of the motivation are hidden as the stress interferes with the more complex and poorly learned cognitive strategies used in the solution of the mirror-star problem. This interference increases directly with the complexity of

15 George S. Reynolds, "Effects of Stress Upon Problem Solving", Journal of General Psychology, Vol. 62, First Half, January 1960, p. 83-88.

the strategy and inversely with the degree to which it has been learned or solidified.

Weinberg¹⁶ used sixty-four college males and sixty-four college females to investigate the effects of two characteristics of failure -- personalization and degree -- upon performance in a verbal speed task. Personalization was defined as the extent to which the failure instructions were intended to disturb or upset the subject, while degree was defined as the subject's percentile rank in a fictitious norm group. The four groups represented combinations of personal or impersonal failure with mild or severe degree of failure. There was also a control group where subjects performed on the criterion variable but received no failure. Results indicated that severe failure led to greater variability within groups than did mild failure. Personalization did not affect variability. Analysis of variance indicated failure, in general, as contrasted with nonfailure, led to superior performance for men but not for women. Neither personalization nor degree by themselves had an overall effect on mean performance. Weinberg suggested a hypothesis to be tested in future research that failure may produce improvement in simple speed tasks and a decrement in complex tasks.

16 Jon R. Weinberg, "The Effects of Degree and Personalization of Failure on Performance", Journal of Personality, Vol. 28, No. 3, September, 1960, p. 266-278.

Before an analysis of the above findings is made, it might be well to include research which considered relationships among failure stress, perceptual performance and personality variables, so that the analysis and interpretation of all research bearing on the problem under consideration can be made at the same time.

2. Past Work on Failure Stress Which Considered Personality Variables.

As research has progressed, note has been taken of the fact that what is intended as praise may be accepted as such by some individuals and actively resented by others. It may be, for example, that the shy person is stimulated by social approval to a more marked degree than the aggressive individual. An introvert may be relatively indifferent to stress, whereas the extrovert may be aroused to greater effort by words of disapproval. Nevertheless, although investigators have tried to control the factors which enter into the experimental situation in the form of external stimuli, they have often overlooked the importance of the effect of personality differences on responses made to these stimuli, particularly in studies on stress.

In reviewing the literature in this area it was noticed that there is a dearth of research on failure stress which considered personality variables as at least in part influencing an individual's response. Some studies have

been done, however, on the effects of stress on individuals differing with respect to intellectual control and self acceptance, academic achievement, anxiety, and need and cognitive control as can be seen from the following studies.

Lazarus and Ericksen¹⁷ studied the effects of failure upon skilled (visual-motor) performance using 188 college students who were stratified according to high and low academic standing. The test used to study these effects was an extended version of the Wechsler-Bellevue Digit Symbol Subtest. Their results indicated that subjects with high academic standing significantly improved performance under stress, while those with low standing did poorly and were more variable.

Goldfarb¹⁸ studied the effects of failure stress on the Wechsler-Bellevue Digit Symbol Test using thirty volunteer fraternity members who were high and low in measures of intellectual control and in self acceptance. Measures of intellectual control were derived from a Rorschach analysis of F plus percentage for the total record, for the

17 Richard S. Lazarus and Charles W. Ericksen, "Effects of Failure Stress upon Skilled Performance", Journal of Experimental Psychology, Vol. 43, No. 1, January, 1952, p. 100-105.

18 Allan Goldfarb, "Performance Under Stress in Relation to Intellectual Control and Self-Acceptance", Journal of Consulting Psychology, Vol. 25, No. 1, February, 1961, p. 7-12.

color cards alone and Sum C/Total C since a high F plus percentage is held to indicate a high degree of intellectual control while the converse relationship is stated for the Sum C/Total C measure according to Beck.¹⁹ Subjects were rated high or low in self acceptance by scores from the Berger Scale of Expressed Acceptance of Self.²⁰

Goldfarb²¹ concluded:

1. Support is lacking for use of the Rorschach test or the Berger scale to predict performance under stress. 2. The personality variables of intellectual control and self-acceptance do not appear to be major correlates of behavior under stress, and 3. Confirmation is lacking for the validity of the Rorschach constructs.

Witt²² hypothesized that individuals who manifested a low level of anxiety would perform more efficiently under stress than those who showed a high level of anxiety. He selected the top and bottom twenty per cent of a group of 160 college males who took the Taylor Manifest Anxiety Scale and observed their performance on a list of ten

19 Samuel J. Beck, Rorschach's Test, Basic Processes, Vol. 1, New York, Grune and Stratton, 1944, p. 113-114, p.155.

20 Emanuel M. Berger, "The Relation Between Expressed Acceptance of Self and Expressed Acceptance of Others", Journal of Abnormal and Social Psychology, Vol. 47, No. 4, October, 1952, p. 778-782.

21 Goldfarb, Op. Cit., p. 12.

22 George Witt, The Differential Effects of Stress on Task Performance as a Function of Anxiety Level, unpublished Ph.D dissertation presented to the Department of Psychology of the University of Wisconsin, 1956, 186 p.

consonants after they had been subjected to failure stress. He found that low anxious subjects recalled significantly more consonants in failure situations than in non-failure situations, while high anxious subjects in failure situations recalled significantly fewer consonants than in non-failure situations. He suggested that future research efforts consider the importance of stratifying according to important personality variables in studying the effects of stress on performance.

Singer²³ divided 147 male undergraduate students into high and low groups on the basis of anxiety, authoritarian tendencies, and reactions to frustration in order to study the interrelationships between these variables. He used the Taylor Manifest Anxiety Scale, the California F Scale for Authoritarianism and the Child-Waterhouse Reactions to Frustration Scale. He found that although highly anxious and highly authoritarian subjects deviate from the norm (seventieth percentile) on the Taylor Scale they perceive themselves as being similar to the average person in the manner in which they react to frustration.

23 Robert D. Singer and Seymour Feshback, "Some Relationships Between Manifest Anxiety, Authoritarian Tendencies, and Modes of Reaction to Frustration", Journal of Abnormal and Social Psychology, Vol. 59, No. 3, November, 1959, p. 404-408.

The work of Hardison and Purcell²⁴ comes closest to the efforts of the present research since they studied the effects of psychological stress in individuals classified as to deference and autonomy (independence) and cognitive control. On the basis of the Edwards Personal Preference Scale 150 male college students were judged to be deferent or autonomous if they scored above the fiftieth percentile on these scales. The same subjects were classified as being constricted or flexible (cognitive control score) by using Kleins Color Word Interference Test. Thus subjects were divided into independent flexible, dependent flexible, independent constricted and dependent constricted groups. The block design subtest of the 1955 Wechsler-Bellevue Test of Intelligence was used as the criterion variable.

The major finding was that the effects of stress on perceptual-motor performance did not appear if individual differences were ignored (i.e. when all subjects were grouped together). This was because some subjects (independent flexible group) significantly improved performance under stress, while others (dependent constricted group) showed a significant decrement in performance, so differences were

²⁴ James Hardison and Kenneth Purcell, "The Effects of Psychological Stress as a Function of Need and Cognitive Control", Journal of Personality, Vol. 27, No. 2, June, 1959, p. 250-258.

obscured. When the personality variables were considered separately, however, both need and cognitive control were significant in differentiating responses to stress.

Hardison and Purcell's study, then, points up the importance of considering relevant personality variables in performance under stress.

3. Analysis and Interpretation of Research on Failure Stress.

Considering the effects of failure stress on perceptual performance, a review of the literature indicates that failure stress does not consistently result in either a decrement or improvement in perceptual performance. In fact, the effects of failure stress seem to be about equally divided between an increase and decrease in perceptual performance.

In interpreting these results several factors can be considered which could account for the difficulty in achieving comparability of results. These include the type of stimuli used to induce stress, the type and difficulty level of the criterion variable, and last but not least, the subject himself as a complex person with past experiences, present expectancies and needs, all interacting within the framework of a unique personality structure.

Regarding the criterion variable first, the importance of considering its difficulty level can be seen from

the review of the literature where it becomes apparent that perceptual performance on relatively simple tasks, as opposed to complex tasks, tended to improve under failure stress. Also, it can be hypothesized that if complex stimuli are used for the criterion variable there are more dimensions to reflect variations in performance, whereas on simpler tests there are fewer dimensions to reflect these variations. The effects of failure stress, for example, can be reflected more clearly on a simple task than on one which is more likely to increase the probability of changes in modes of attack, extraneous distractions, and interference by mental processes other than what the researcher intends to study. The present research employs a relatively simple task to reflect the effects of failure stress, as the following chapter will show.

Regarding the type of stimuli used to induce stress, it can be seen from past experimentation that a wide variety of tasks and techniques have been utilized. An implicit assumption that seems to be made in many studies is that individuals of approximately the same age, sex and intelligence will respond pretty much alike to a standard motivating condition. Results of research here vary considerably however, not only as a function of wide individual differences but also because different tasks used to induce stress have quite different ego involvement value in and by

themselves. The following chapter will highlight the necessity of selecting tasks which have high ego involvement value for the population they are to be used on.

Of singular importance in research on stress is the complex highly differentiated human who is to be subjected to the stress situation. It has already been noted that individuals do not react to stress in the same manner. Yet, as a review of research in this area indicates, there are still relatively few studies which consider individual differences, specifically personality variables, as important variables in performance under stress. Those studies which do investigate relationships between stress and personality variables usually employ questionnaires and psychological tests to categorize people according to different degrees of the personality variable being studied. The difficulty with this procedure is that the individual may deliberately distort his answers to produce a good impression, or he may have genuine misconceptions of his own behavior. In order to reduce the effects of personal bias and to make measurements more precise, the present study attempts to examine a relevant personality variable directly under conditions of controlled observation by using an actual behavioral sample rather than reports given by subjects, as will be seen in the following chapter.

In previous work on stress, reference is often made by the researcher, usually indirectly, to the concept of the individual's ego or self and its ability to withstand stress. Yet few psychologists have attempted to study the effects of stress on the central variable of ego strength or some relevant aspect of it. The following work provides theoretical support for studying the effects of stress on a pertinent aspect of an individual's ego strength.

4. A Relationship Between Ego Strength and Independence.

In devising a scale of ego strength, Frank Barron defined ego strength as "a general factor of capacity for integration".²⁵ In cross validating his scale he found that two hundred normal subjects who achieved high ego strength scores were most frequently described by psychologists as alert, determined and independent, whereas those low on his ego strength scale were described as affected, mannerly, and dependent. In arriving at these descriptions, psychologists used interviews, Rorschachs, TAT's and adjective check lists. It appeared then, as if independence was one relevant aspect of the larger trait of ego strength.

²⁵ Frank Barron, "A Scale of Ego-Strength", Journal of Consulting Psychology, Vol. 17, No. 5, October, 1953, p. 327-333.

In reviewing the literature on the personality characteristics of conforming individuals, Biderman²⁶ found that they are submissive, low in self-confidence and generally lacking in ego strength.

Allport²⁷ in discussing conformity states that, psychologically, one can say that people find all degrees of ego involvement in their habits of conforming; but the person who is more insecure or has less ego strength will have a greater need to be accepted by a group (peer or other) so will tend to conform more than a person who has a greater degree of ego strength. He further states that the greater the conflict or stress facing the individual at a particular time in his life, the greater will he have a need to increase his personal security by conforming, especially if he is fairly insecure initially.

In his work on independence and conformity, Asch has concluded that "The independent person possesses certain sources of strength within himself that enables him to bear a brief ordeal (resistance to group pressure) whereas the yielding person can find safety only by merging anonymously

26 Albert D. Biderman and Herbert Eimler, The Manipulation of Human Behavior, New York, John Wiley & Sons Inc., 1961, p. 259.

27 Gordon W. Allport, The Nature of Prejudice, Cambridge, Massachusetts, Addison-Wesley Publishing Co. Inc., 1954, p. 285-296.

with the group."²⁸ So, Asch also refers to independence as being correlated with ego strength.

Hoffman²⁹ divided subjects into two groups of high and low conformity as a result of their shifting most and least toward false group norms reported for two tasks. High conformers scored significantly lower than low conformers on all Thematic Apperception Test measures of ego strength, and higher on measures of parental dominance, strivings for success and readiness to submit to authority.

5. The Problem of the Present Study.

From the above work on independence, then, there is adequate experimental and theoretical support for the idea that independence is an important aspect of ego strength and that individuals who are low in independence will not be able to withstand psychological stress as well as individuals who are more independent. However, there has been no direct test of the latter hypothesis. We would expect individuals who have a need to conform or yield to group pressures less able to maintain their ego in the face of frustration, specifically failure stress, than individuals who are more

²⁸ Solomon E. Asch, Social Psychology, New York, Prentice-Hall, Inc., 1952, p. 495.

²⁹ M.L. Hoffman, "Some Psychodynamic Factors in Compulsive Conformity", Journal of Abnormal and Social Psychology, Vol. 48, No. 3, July, 1953, p. 383-393.

independent. Since the ego is usually defined as "that aspect of the psyche which is conscious and most in touch with external reality",³⁰ conformers, or people who might be low in ego strength, could be expected to distort reality more than independents when under a stress situation.

In developing the general experimental hypothesis as outlined above, attention was given the work of Postman and Bruner³¹ who included consideration of individual differences of the organism when they urged an extension of their usual paradigm for functional research. They suggested the following objectives to serve as a guiding and unifying outline for research on motivation and perception:

³⁰ Horace B. English and Iva Champney English, A Comprehensive Dictionary of Psychological and Psycho-analytical Terms, New York, Longmans, Green and Co., 1958, p. 171.

³¹ Jerome S. Bruner and Leo Postman, "The Great Task for Perceptual Research", Reflexes to Intelligence, Illinois, The Free Press, 1959, p. 602-613. Reprinted from Jerome S. Bruner and Leo Postman, "Perception, Cognition, and Behavior", Journal of Personality, Vol. 18, No. 3, March, 1949, p. 14-51.

1. To select central, nonperceptual variables, changes in which can be shown to bring about systematic changes in perceptual functioning.
2. To select these variables from various theoretical systems---learning theories, motivational theories, theories of personality---so that these theories may be made continuous with the body of perceptual theory.
3. To postulate and then study those intervening mechanisms which account for the changes in perception which occur when we change the central state of the organism.
4. Finally, to emerge with a unified theory of behavior which treats the organism as an organized whole and which contains laws stating the manner in which perceiving is an instrument of adjustive activity.³²

Regarding point three above, although Allport³³ suggests that there seems to be sufficient evidence to indicate that motivation influences perception indirectly rather than directly, it is by no means clear just how this takes place, and the complexity of the problem suggests that a study of intervening mechanisms is largely beyond the scope of this thesis. Before a study of precisely how motivation directs perception, we ought to first determine what relationships do or do not obtain between these two variables. After enough definitive evidence bears on this problem we can then begin to postulate and study probable specific intervening mechanisms.

32 Bruner and Postman, Op. Cit.

33 Floyd H. Allport, Theories of Perception and the Concept of Structure, New York, Wiley, 1955, p. 399.

With regard to point one, the central nonperceptual variables of personality differences and stress have been selected to observe their general effects on perceptual functioning. Apropos point two, these variables have been selected from the areas of personality and motivation respectively, so that at least a start may be made in attempting to realize point four.

Up to the present time there has been a noticeable lack of a systematic approach in the field of motivation-perception research. Momentary interest in specific directive state theory problems, for example, is manifest only to have these efforts abandoned for what seems to be more timely research in a new area only remotely related to directive state theory. A more feasible approach can and should be attempted. This approach would consist of conducting planned series of comprehensive investigations upon limited aspects of motivation-perception relationships in a manner similar to that suggested by Postman and Bruner.³⁴ The present research could be viewed as taking a small first step in this direction since an investigation is made of the motivating effects of failure stress on a limited area of perceptual performance in conforming and independent individuals.

34 Bruner and Postman, Op. Cit.

Thus, in addition to findings specific to the limited experimental hypothesis of the present study, a first step of a more general investigation of relationships between motivation and perception is made of two assumptions underlying the directive state theory of perception. These two assumptions can be worded as follows:

1. Failure experiences are associated with the perceiving of objects and tend to influence perception.
2. Differences in particular personality variables tend to differentially affect perception.

If the specific experimental hypothesis of the present study is confirmed, weight will be added to the more general relationships between the fundamental behavioral processes of motivation and perception as embodied in two assumptions underlying the directive state theory of perception. This evidence, however, must be considered as a first step only in a study of relationships between motivation and perception prior to the postulation of intervening mechanisms which later can attempt to explain how motivation directs perception.

CHAPTER II

RATIONALE AND METHODOLOGY

In addition to presenting operational definitions and stating the hypotheses of the research, the present chapter will attempt to provide the reader with the experimental design and rationale underlying the selection of particular tests and approaches. In those few places where it is deemed necessary, a brief exposition of theory and/or past research as it relates to the formulation of the experimental design is presented.

1. Hypotheses, Operational Definitions and Stress.

As will be recalled from chapter one, the specific experimental hypothesis of the present study is: under failure stress individuals of conforming tendencies will tend to distort reality more than independent individuals. From this specific hypothesis, two statistical hypotheses can be derived which bear on the two assumptions of the directive state theory of perception, as previously stated. In null form:

1. There will be no significant differences in perceptual performance between individuals who are submitted to failure stress, and those who are not.

2. Under failure stress there will be no significant differences in perceptual performance between conformers and independents.

Referring to the above, a problem exists among researchers in what is meant by the term failure stress since interchangeable words such as failure, frustration, stress, punishment, negative reinforcement and blame have sometimes been used to indicate the same thing. Operational definitions can specify more succinctly the meaning the researcher is referring to however, and this problem can be largely overcome by means of this method of denoting what operations are involved. To identify more precisely the term failure stress as well as other key terms in this research, the following operational definitions are presented here.

Failure Stress This term is used to describe the motivational state that existed after the subjects in the experimental group were told they were to perform on tests related to intelligence and nurse selection and then received standardized expressions and methods indicating they were failing or doing below average on four selected tasks.

Independent or Low Conforming These terms are used interchangeably to describe those individuals who did not yield to group pressure while performing on Asch's Line Test.

Conforming or Conforming Tendencies These terms are used interchangeably to describe those individuals who yielded from one to twelve times to the social pressure of the group of assistants.

Confederates or Assistants These terms are used interchangeably to describe nine student nurses who worked with the investigator and deliberately gave incorrect answers to the naive subjects in an attempt to obtain measures of conformity and independence.

Asch's Line Test This term is used to describe a test involving the estimation of lengths of lines by individuals who are under social pressure to conform to a group who deliberately gave wrong answers in their estimation of these lines.

Although the above operational definitions help to specify meanings more precisely, they do not really come to grips with the problem of subjects reacting differently to the experimenter's manipulations, in this case, experimentally induced failure stress. Keeping standardized methods of presenting failure stress constant from one subject to another, and random assignment of subjects to different experimental groups, aid considerably, but do not entirely obviate this problem. Also, it has already been observed from reviewing the literature that failure stress does not have uniformly consistent effects on perceptual

performance. One suggestion advanced in the present study has been to consider central personality variables that would have a bearing on perceptual performance under stress. The idea here is that if these factors are considered, the beginnings of a more uniform approach in studying the effects of stress on perceptual performance could be made. Considering these personality factors, however, still does not, in itself, ensure that most individuals will react in the same manner to stress even though more accurate generalizations of obtained differences among groups in perceptual performance under stress can be made.

In considering this problem, Lazarus, Deese, and Osler¹ in their review of the literature regarding the effects of psychological stress on performance although pointing out "because people differ in motivations and the way they deal with them it is never really possible to define a general stress situation" mention that we can, nevertheless, select situations threatening to most people and identify stress with the motivations of the people who are being tested.

¹ Richard S. Lazarus, James Deese, and Sonia F. Osler, "The Effects of Psychological Stress Upon Performance", Psychological Bulletin, Vol. 49, No. 4, Part 1, July 1952, p. 294.

More specifically, Vogel, Raymond and Lazarus² note "any typical stressor situation will produce a state of stress only if it threatens important ego-motivations of the subjects". The ego involvement of the person performing under conditions of experimentally induced stress then, becomes of paramount importance in determining whether or not any given person was really under what could be considered a state of stress.

2. Ego Involvement.

English and English³ define ego involvement as "the relationship in which a task or situation is regarded as important to the ego". That ego involvement is important in altering motivation has been borne out in many experiments including the following.

Alper⁴ distinguishes between task-oriented and ego-oriented groups by stating that ego-orientation can be experimentally induced by announcing that the ability to

² William Vogel, Susan Raymond and Richard Lazarus, "Intrinsic Motivation and Psychological Stress", Journal of Abnormal and Social Psychology, Vol. 58, No. 2, March 1959, p. 225.

³ Horace B. English and Ava C. English, A Comprehensive Dictionary of Psychological and Psychoanalytical Terms, New York, Longmans, Green and Co., 1958, p. 172.

⁴ Thelma G. Alper, "Task-Oriented and Ego-Oriented as Factors in Resilience", Journal of Experimental Psychology, Vol. 38, No. 3, June 1948, p. 337, 225.

learn an experimental series is really a measure of intelligence. In the task-oriented group an attempt is made to establish and maintain an impersonal routine work atmosphere. As a test of this hypothesis, he had twenty task-oriented and twenty ego-oriented college students learn nonsense syllables and digits. Although results showed no significant difference between the groups on an immediate recall test, significant differences did appear in favor of the ego-oriented subjects on a delayed recall test.

In a study by Vogel, Raymond and Lazarus⁵ the experimental induction of ego involvement was accomplished through both a preselection of subjects as well as the administration of appropriate instructions. Instructions were high or low ego involving in relation to whether subjects were high in need achievement or high in need affiliation. The effects of ego involving instructions were not only reflected in the criterion variable but also when a more direct measure of motivation, i.e., PGR, was made.

Feather⁶ made use of fairly direct measure of motivation, viz., level of aspiration and her research indicated that when subjects were forced to choose between

⁵ Vogel, et.al., Op. Cit., p. 226, 232.

⁶ M.T. Feather, "Subjective Probability and Decision under Uncertainty", Psychological Review, Vol. 66, No. 1, January 1959, p. 19.

two responses, clear-cut effects from ego involving instructions were obtained.

Since the present study involves failure stress, the question of ego involvement attains considerable importance since, if the subjects do not really care whether they are failing or not, clear-cut effects of the failure stress will not be reflected in the criterion variable.

Regarding this problem of ego involvement, Ferguson⁷ in reviewing the literature in this area points out that stimuli used to evoke ego involvement are not uniform and of even more importance, the experimenter often has to assume his subjects were ego involved without really knowing whether they were or not. The present study has employed several methods to establish ego involvement in the subjects as well as a check to determine whether the subjects were in fact ego involved or not. It is also hoped that an approach to increasing uniformity of presenting failure stimuli to subjects has been initiated.

3. Exploratory Research on Failure Stress.

In order to have the subjects of this study (student nurses) maximally ego involved, the subjects

⁷ Eva Dreikurs Ferguson, "Ego Involvement: A Critical Examination of Some Methodological Issues", Journal of Abnormal and Social Psychology, Vol. 64, No. 6, June 1962, p. 407.

themselves were considered in some detail as to what factors would most personally involve them as a group working toward a common goal, viz., to become nurses. To arrive at realistic instructions and tasks with high ego involving value for the population under consideration, a pilot study on failure stress was instigated. A sample of twelve volunteer second year student nurses was obtained from the University of Ottawa School of Nursing. Three tasks and instructions relating these tasks to intelligence and nursing skills were presented to the student nurses. A post-stress interview was then conducted to determine whether the subjects were ego involved, if they experienced real feelings of failure, and after debriefing, their suggestions were asked to improve the tasks and instructions in terms of making them more realistically related to nursing skills.

The tasks consisted of twelve complex paired associates, digits backwards (up to ten digits) and Design C from the Wechsler Memory Scale presented for six seconds, which is four seconds shorter than the standard administration time.

These three tasks were selected on the following basis. Digits backwards was chosen because it purports to measure concentration and attention span which can be shown to be related to the carrying out of complex orders

of doctors and nursing supervisors. Also digit span tests are frequently included in intelligence tests (the general introduction to the tasks include a statement that the tests measure intelligence), and digits backward are more difficult to do than digits forward thus setting the stage for the probability of failure.

Design C of the Wechsler Memory Scale was used because the slight differences in the visual stimuli of the two designs could be related to the importance of obtaining "an overall visual perspective" in on-the-job nursing situations.

The paired associates seemed to be a logical choice for stressing the importance of memory functions which, in turn, was related to learning disease symptomatology.

The instructions to the tasks will be presented in a later section of this chapter.

Several pertinent findings emerged from the exploratory research which were incorporated into the major research project. With regard to the examiner's observations of the task performance, it was noted that the paired associates and digits backward were too difficult as initially conceived in terms of maintaining an atmosphere of credibility. Thus, the paired associates were cut to ten rather than twelve, and the digits backward were revised in number from ten digits to eight digits backward. On the

Wechsler Memory Scale, however, the time had to be sheared from the initial six seconds to four seconds as too many of the subjects were accurately copying the design. The revised tasks are presented in Appendix 1. Despite lack of perfection in the tasks and instructions, the girls did seem to experience failure as noted by behavioral signs as well as actual task performance which was generally disorganized and below what one would expect from persons of average intelligence.

From the student nurses' point of view, the post-stress interview revealed that they had experienced strong failure feelings, and believed the tasks to be realistic although several of the girls suggested changes in wording in the instructions to the specific tasks relating these instructions to the tasks more realistically in line with actual on-the-job nursing situations.

Several student nurses suggested a test in which "you do something with your hands like blocks, or fitting circles into circular holes" since this kind of test could be "seen" by the subjects as being realistically related to the nursing procedures of handling instruments and materials as well as effectively dealing with the patient's unit. Thus, a test of manual operations was deemed feasible as part of the battery, and in trying to decide between the O'Connor Tweezer Dexterity Test and the Purdue Pegboard,

the latter was selected. This was not only because fingers and hands are used more by nurses than tweezers in skilled operations, but also because there are more complex operations possible with the Purdue Pegboard which could be more realistically related to nursing skills.

As a final check on the findings that emerged from the pilot study, three registered nurses were administered the revised failure stress procedure including the Purdue Pegboard. The results were quite satisfactory, so revisions and additions that resulted from the pilot study were accepted and incorporated into the major research procedure.

It may be that a more uniform and realistic method of arriving at failure stimuli can be achieved by considering the population in some detail, either in terms of a pilot study or past research findings, than merely by hoping that a statement relating tests to intelligence or some other a priori method will produce a failure situation. Post-experimental interviews can then be conducted to further improve presentation of failure stimuli.

4. The Main Research.

The Subjects.- The subjects of this study were eighty female student nurses on psychiatric affiliation at Toledo State Hospital, Toledo, Ohio. They were all third year students, almost all twenty years old, their age

ranging from nineteen to thirty-two years, with the mean age at 20.8. Age was recorded to the nearest birthday. They could be considered to be equivalent for age, sex, education, and roughly equivalent for I.Q. and socio-economic status. All subjects were naive as to the real purpose of the experiment and none had previously participated in psychological research or performed on the Bender-Gestalt Test. Thus, these subjects comprised a very homogeneous group which is one reason why they were selected since differences in age, education and I.Q. have been shown to significantly affect Bender-Gestalt Test performance.⁸ Another reason for selecting student nurses is that this category of students is usually quite highly motivated to attain a common goal, viz., to become nurses. Hence, a more uniformly high degree of ego involvement of these subjects is not so difficult to achieve as it would be with a group that pursues a wide range of goals, as for example college students.

5. Tests Used and Reasons for Selection.

a) The Bender-Gestalt Test.- The Bender-Gestalt Test consists of nine geometric forms or designs drawn in black on a piece of white cardboard of about postcard

⁸ Gerald K. Pascal and Barbara J. Suttell, The Bender-Gestalt Test, New York, Grune and Stratton, 1951, p. 20-24.

size.⁹ The subject is presented with the designs, one at a time, and asked to reproduce them on the available paper as best he can. There is no time limit. The test is not one of visual memory, but rather one of perception. Perceptual behavior is regarded in the test as involving sensory reception of the figures, interpretation at the central levels of the nervous system, and motor performance. This total process of perception and reproduction can be distorted by neural injury, emotional maladjustment in the perceiving individual and by variations in the level of intellectual performance.¹⁰

The Bender-Gestalt Test is also capable of reflecting motivational change, specifically failure experiences,¹¹ which is one of the reasons for its selection, since Bender-Gestalt Test scores would be of little value as a criterion variable if they could not measure the effects of failure stress.

Furthermore, the test itself is a simple one, employing unambiguous stimuli to more clearly reflect the

9 Pascal and Suttell, Op. Cit., p. 3-4.

10 Frank S. Freeman, Theory and Practice of Psychological Testing, New York, Henry Holt and Company, 1950, p. 442.

11 E.G. Rosenberg and James Leuber, "Selected Success and Failure Experiences as Factors in Bender-Gestalt Performances", The Journal of General Psychology, Vol. 64, First Half, January 1961, p. 31-38.

effects of the independent variable. As already noted, in a test with complex stimuli there are more dimensions to reflect variations in performance, whereas on simpler tests there are fewer dimensions to reflect these variations. The effects of failure stress can be reflected more clearly on a simple task than on one which is more likely to increase the possibility of changes in modes of attack, and interference by mental processes other than what the researcher intends to study. For this reason, the Bender-Gestalt is an ideal test to measure distortions of reality as represented in simple clear-cut stimuli.

In addition, the Bender-Gestalt Test can be objectively scored so quantitative factors are enhanced and subjective factors are minimized.

The average test-retest reliability for the Bender-Gestalt Test as calculated by Pascal and Suttell¹² is .71 which, although not unusually high, is interpreted by these authors as indicating a remarkable consistency of individual adjustment. In any event, for research purposes, .71 seems adequate as a reliability coefficient.

Practice effects from one testing to another are negligible since only copying of geometrical figures is involved.

12 Pascal and Suttell, Op. Cit., p. 17.

b) Ash's Line Test.- Researchers have employed a variety of stimulus materials in studying conformity. The nature of the material has been attitudinal,^{13,14,15} expressive of personal preferences,^{16,17,18} and factual.^{19,20}

13 Harry Nelson, Robert R. Blake, and Jane S. Mouton, "An Experimental Investigation of the Effectiveness of the 'Big Lie' in Shifting Attitudes", Journal of Social Psychology, Vol. 48, First Half, August 1956, p. 51.

14 David Wheeler and Howard Jordan, "Change of Individual Opinion to Accord with Group Opinion", Journal of Abnormal and Social Psychology, Vol. 24, No. 2, July-September, 1929, p. 203-206.

15 Raymond L. Gordon, "Interaction Between Attitude and the Definition of the Situation in the Expression of Opinion", American Psychological Review, Vol. 17, No. 1, February 1952, p. 50-51.

16 Harold H. Kelley and Thomas W. Lamb, "Certainty of Judgment and Resistance to Social Influence", Journal of Abnormal and Social Psychology, Vol. 55, No. 1, July 1957, p. 137.

17 Richard S. Crutchfield, "Conformity and Character", American Psychologist, Vol. 10, No. 5, May 1955, p. 191.

18 Heloisa Marinko, "Social Influence in the Formation of Enduring Preferences", Journal of Abnormal and Social Psychology, Vol. 37, No. 4, October 1942, p. 467.

19 Abraham S. Luchins and Edith H. Luchins, "On Conformity with True and False Communications", Journal of Social Psychology, Vol. 42, First Half, August 1955, p. 283.

20 Solomon E. Asch, "Studies of Independence and Conformity: A Minority of One Against a Unanimous Majority", Psychological Monographs, Whole No. 416, Vol. 70, No. 9, p. 69.

Regarding the attitudinal material and that expressive of personal preference, the stimuli used to effect changes in attitude or personal preferences have usually been vague or ambiguous. As a result, it has not been too difficult to bring about changes in attitudes or preferences, especially when these may not be held too strongly by the individual in the first place. Even with certain material classified as factual there are guesses involved, such as estimating the number of beans in a bottle, deciding which square has the largest number of dots, common information items and memory tasks.

The studies referred to above generally agree in confirming the prediction that susceptibility to conforming is less when subjects have the opportunity to employ an objective frame of reference.

Two researchers whose tests fall within the factual category have utilized an objective frame of reference by using a matching of lines procedure. Luchins²¹ set up a rather complex line matching comparison where lines extended outward at different angles and distances from the sides of squares. Due to the somewhat complex nature of the task, not all control subjects (ninety per cent) were able to accurately perceive the correct answers.

²¹ Luchins and Luchins, Op. Cit., p. 302.

Asch,²² however, employed a simple straightforward task of matching a standard line with three comparison lines and a control group (under no conformity pressure) indicated the differences between lines were clearly distinguishable as over ninety-nine per cent of the group gave correct answers in their matchings. In view of the clarity of the stimuli then, the effects of social pressures would reflect more representative measures of conformity than in situations where ambiguous material was used.

Asch's Line Test consists of the comparison of a standard vertical line on one card with three other vertical lines of varying length on another card. The lines are vertical black crayoned lines $\frac{3}{8}$ inch wide on white cardboards which are $17\frac{1}{4}$ inches by 6 inches. All lines started at the same level, their lower ends being $2\frac{1}{2}$ inches from the lower edge of the cards. The standard line was placed in the center of the one card and the comparison lines were separated by a distance of $1\frac{1}{2}$ inches on the other card. The comparison lines were numbered 1, 2, 3, left to right with black figures $\frac{1}{2}$ inches long. These figures are placed directly underneath the lines and $\frac{1}{2}$ inch from their lower end. The standard and matched comparison lines are

22 Asch, Op. Cit., p. 3.

always separated by forty inches. The cards are placed on the ledge of a blackboard in front of the room fifteen feet from the row of subjects. The procedure followed for the administration of this test under social pressure will be spelled out in the procedure section of this chapter.

6. Experimental Design - Main Research.

a) Overview - Skeletal Paradigm

The following paradigm presents an outline of the experimental design so as to enable the reader to obtain an overview of the main research of this study. A detailed explanation of each step of the research design will follow.

Part I - All Subjects

1. Lecture to student nurses on importance of research and request for volunteers for an experiment in perception.
2. Selection of assistants and instructions to them.
3. Administration of Asch's Line Test.
4. Division of subjects into independents and conformers.
5. Random assignment to experimental and control groups.

Part II

<u>Experimental Group</u>	<u>Control Group</u>
1. Administration of failure stress	Phase I <u>Bender-Gestalt</u> administration
2. <u>Bender-Gestalt</u> Administration	Phase II Retest on <u>Bender-Gestalt</u>
3. Post-experimental interview	Phase III
4. Debriefing and importance of confidentiality	1) Retest on <u>Asch's Line Test</u> under social pressure with different assistants ii) Post-conformity interview
b) Skeletal Paradigm Explained - Part I	

Step 1 - Lecture to Student Nurses.- A lecture to all student nurses was the first step in the main research of this study. This talk to the student nurses gave a brief history of psychology, discussed the role of the psychologist in a mental hospital, stressed the importance of research methods as opposed to broad generalizations derived from armchair speculation, and also included a request for volunteers for an experiment on perception. Subjects were requested to wear glasses for the experiment if they needed them.

The purpose of the talk was twofold. First of all, it enabled the group to see the experimenter was a staff psychologist engaged in research, which set an atmosphere conducive to having them take the research seriously.

Secondly, the "set" of "research on perception" was provided for the conformity part of the experiment where Asch's Line Test was employed. This "set" seemed fairly nonthreatening so that when the experimental group was told later (just prior to testing on part two) that the second part of the experiment was concerned with intelligence and nurse selection and how these variables were related to perception, the sudden shock of this information would indeed be ego involving to the experimental subjects.

Step 2 - Selection of Assistants and Instructions to Them.- Nine assistants or confederates were selected from the student nurse sample to work with the investigator during part one of the experiment. Their role was to attempt to influence in varying degrees naive subjects into conforming to the social pressure of a group of peers who gave incorrect answers to a matching of lines procedure.

To preclude the possibility of any one assistant unduly influencing a naive subject to conform because of this assistant's prior reputation as some type of leader, the following precautions were taken. The director of nursing and two nursing supervisors were asked to jointly select about ten "happy medium" assistants who seemed neither superior nor inferior in intellectual or personality factors. In addition to this, the confederates were asked to change seats with reference to the naive subject during

every testing session. In this way the effect of the group as a whole could be seen to operate rather than the systematic effects of one particular assistant.

After the selection of confederates, three meetings were held to familiarize them with the procedure of the experiment as well as to increase their ego involvement for the research. Regarding this last aspect, they were asked to observe the reactions of their classmates and attempt to predict their behavior on the basis of earlier knowledge about them. The procedure was explained to them in detail and several "dry-runs" were practiced to assure understanding of their role in the experiment. The assistants were requested either not to mention where they were going or what they were doing when it was time to participate in the experiment or if asked directly to inform a questioner they were going to the library or some other place which seemed plausible. The exception to this was if they would be seen heading to or from the testing area and then questioned. To this they would reply that they were going to be tested (or had been tested) for research on perception. In the unlikely event that the same person saw them heading for the testing area more than once and questioned them about this, they would comment about their need to go to the recreation room (located on the same floor) to get a break from

studying. The ingenuity of the assistants was shown by several other excuses they concocted in the event they had to use them.

The confederates were also instructed to wait in a hallway prior to testing or be just entering the waiting room as the naive subject entered the testing area. To further the impression they were equally new to the experiment, the confederates were to take turns asking questions from time to time to "clarify" the task of the subjects on the "perception" test. For example, they would ask whether there would always be a comparison line equal to the standard line or for a repetition of the way in which the responses were to be answered.

Step 3 - Administration of Asch's Line Test.- A description of the cards containing Asch's lines has already been made. The administration of this test under conditions of group influence is presently noted.

The administration itself consisted of employing nine assistants, three at a time, whose goal was to influence the naive subject to conform to the social pressure of the group of three who gave increasingly incorrect answers in the estimating of lines procedure. Asch²³ has

²³ Solomon E. Asch, "Effects of Group Pressure Upon the Modification and Distortion of Judgments", Groups, Leadership and Men, (H. Guetzkow, Ed.), Carnegie Press, Pittsburgh, 1951, p. 122.

varied the number of assistants giving erroneous reports from 1, 2, 3, 4, 6 to 16. He reported direct but unequal increments in shifting for increases from one to two to three assistants but no significant increases for a larger number. Luchins²⁴ also believes three is the optimal number to use in an estimation of lines procedure. Thus, three was the number of assistants selected for the present study.

Signs were placed in the testing area directing the subjects to the waiting room where one or more of the assistants was either waiting or just entering, as the naive subject arrived. The third assistant was often last to enter so as to increase credibility for the situation. The waiting area was connected to the testing room by a door, and the researcher would open this door and ask the group to enter the testing room when it was time for testing. The assistants would enter the room silently but in order to position them together and the naive subject to their left, the researcher would casually ask the naive subject to close the door of the testing room and asked the "girls" to sit in a row of four chairs positioned fifteen feet from Asch's lines.

The assistant furthest from the naive subject had a small notebook with the answers she was to give, and the

24 Luchins and Luchins, Op. Cit., p. 288.

other two assistants would follow her lead throughout. As previously mentioned, however, at least one assistant would ask questions to clarify the procedure in order to maintain the atmosphere of credibility.

The instructions to the group were as follows:

This experiment in perception involves the discrimination of lengths of lines. Before you is a pair of cards. On the left is a card with one line; the card at the right has three lines differing in length; they are numbered 1, 2, 3, in order. One of the three lines at the right is equal to the standard line at the left. You will decide in each case which is the equal line. You will state your judgment in terms of the number of the line. There will be eighteen comparisons in all. As the number of comparisons is few and the group small, I will ask each of you in turn to announce your judgments, which I shall record here on a prepared form. Please be as accurate as possible. Suppose you give me your estimates in order starting at the (pause--begin pointing to left), well, it really doesn't matter, let's say the right.

On the two opening trials the assistants gave correct answers and thereafter gave answers that were increasingly incorrect as indicated in Table I.

After one run through the cards, the group was asked to close their eyes while the cards were supposedly reshuffled, and the same order was then presented to obtain a total of eighteen comparisons, twelve of the eighteen being incorrect answers given by the assistants.

There was approximately equal exposure of all nine assistants to the subjects being tested. The three assistants changed places after every testing session to

Table I.-

Majority Responses to Standard and Comparison Lines on Successive Trials of Asch's Line Test.^a

Trial	Length of Standard Line (in inches)	Comparison Lines (in inches)			Correct Response	Group Response	Majority Error (in inches)
		1	2	3			
1	10	8½	10	8	2	2	-
2	2	2	1	1½	1	1	-
3	3	3½	4½	3	3	<u>1</u> ^b	+½
4	5	5	4	6½	1	<u>2</u>	-1.0
5	4	3	5	4	3	3	-
6	3	3½	4½	3	3	<u>2</u>	+1½
7	8	6½	8	6½	2	<u>3</u>	-1½
8	5	5	4	6½	1	<u>3</u>	+1½
9	8	6½	8	6½	2	<u>1</u>	-1½
10	10	8½	10	8	2	2	-
11	2	2	1	1½	1	1	-
12	3	3½	4½	3	3	<u>1</u>	+½
13	5	5	4	6½	1	<u>2</u>	-1.0
14	4	3	5	4	3	3	-
15	3	3½	4½	3	3	<u>2</u>	+1½
16	8	6½	8	6½	2	<u>3</u>	-1½
17	5	5	4	6½	1	<u>3</u>	+1½
18	8	6½	8	6½	2	<u>1</u>	-1½

^a Solomon E. Asch, "Studies of Independence and Conformity: A Minority of One Against a Unanimous Majority", Psychological Monographs, Whole No. 416, Vol. 70, No. 9, 1956, p. 6.

^b Underlining designates the erroneous estimates by the majority.

maximize group influence and minimize individual effects. To further the achievement of this goal, the researcher acted as an impartial chairman who gave instructions, presented the cards, and recorded responses.

At the end of a testing session, the three assistants would leave the testing area with the naive subject to maintain plausibility of the testing, as well as to obtain feedback from the naive subject if she volunteered any information. This was also part of a three-fold check to determine whether any of the naive subjects were overly suspicious of the procedure. The other two checks consisted of behavioral observations by the experimenter and the post-experimental interview. As the three assistants gradually made their way back to the testing area (via an elevator and a stairway at the opposite end of the testing area) three other assistants would begin the identical procedure with another naive subject. This not only served the purposes mentioned above, but also prevented any naive subject from seeing the same assistants present in two successive testing sessions. Three other assistants were always "on call" in the event that one or more assistants could not be present for testing or were called away.

Step 4 - Division of Subjects into Independents and Conformers.- Although initial consideration was to divide subjects into independents and conformers via a median

separation, further consideration of this plan suggested that this approach might not be feasible. In a median separation there are often several subjects who fall within the same class interval and hence could be placed either above or below the fiftieth percentile. Regarding the present study, those subjects who conformed once, twice or even more times might have been arbitrarily classified as independent. To obtain a more representative and "pure" measure of conformity and independence it was decided to divide subjects into conformers and independents on the basis of whether they conformed or yielded to group pressure versus those who did not conform at all. Hence, those subjects who did not yield at any time to group pressure were classified as independents, and those who yielded one or more times were classified as conformers.

Step 5 - Random Assignment to Experimental and Control Groups.- Edwards'²⁵ method of control by random selection was followed. The conformity protocols were shuffled and assigned numbers from 0 to 79. The point of entry to a table of random numbers was selected at random. This was done by assigning numbers corresponding to the rows and columns to a pack of cards and then after shuffling

²⁵ Allen L. Edwards. Statistical Analysis for Students in Psychology and Education, Rinehart and Company Inc., New York, 1951, p. 289.

thoroughly, selecting two of these cards, the first one to represent the column, the second one the row to be entered. The table was then entered and reading downward one column and upward the adjoining one using two digit numbers until forty unlike numbers of the protocols below eighty were selected. Any number eighty or above was skipped as was a repetition of a number previously read. The first forty unlike numbers were put into one group, and the second forty were placed in another group. A coin was flipped to decide which group would be experimental and which control.

Part II - Treatment of Experimental Group

Step 1 - Administration of Failure Stress.- To rule out subjective bias during the administration of stress, the subjects were coded by number, and the investigator did not know whether a particular subject being tested was independent or conforming, but only that she was an experimental or control subject.

The subjects were again requested to wear glasses if they needed them for the "perception research".

The administration of stress consisted of a general introduction relating the tests they were to perform on to intelligence and nursing skills, specific introductions to each of the tests in terms of nursing abilities, and finally

communication to them that they were failing or doing below average on the tests.

The general introduction to the subjects was as follows:

The wide sampling of abilities of the following tests gives us a measure of general intelligence and, at the same time, has been used in nurse selection and evaluation programs in many parts of the country. I also want to see how I.Q. and nursing skills are related to perception.

This last statement tied in the idea of "perception research" with a new unexpected dimension that was hopefully threatening to their major ego-motivations to become nurses.

The first test they were to perform on was the paired associates test, and the introduction for this test was:

The conceptualization and verbal abilities this test measures are important in such things as learning the symptoms associated with different disease conditions. Listen carefully for I'm going to name two words together now and later I'll say one of the words and ask you to say the other.

After the first trial, the experimenter said:

No, let me read the words again and this time pay careful attention to the two words that go together.

After the second trial:

Well, ----- that was below average ----- let's go on to the next test.

The second test was Design C of the Wechsler Memory Scale. The introduction to this test was:

The visual perspective inherent with this test allows us to predict how well a nurse can achieve the overall perspective of a situation. For example, entering a ward of patients and being able to immediately size up a state of emergency which is not obvious to a casual onlooker. I'm going to hold up a card on which there are two designs, then I'm going to take it away and ask you to copy the designs. So observe every detail. Pay close attention since you won't have too long to look at it. (Stopwatch held in full view.) After four seconds: Well, you almost got that one, but not quite.

The third test was digits backwards with the following introduction:

The concentration and intake of detailed information on this test is important not only in general nursing procedure, but also in specific procedures such as carrying out complex orders of doctors and nursing supervisors. I'm going to say some numbers, and when I'm through, say them after me, backwards.

Beginning with four digits, the subjects were finally asked to repeat backwards eight digits from memory. After all eight digits backwards were presented: "Well, I guess that is pretty hard for some of us."

The fourth test was the Purdue Pegboard with this introduction: (stopwatch in full view)

The manual abilities this test taps are necessary for actual on-the-job situations such as speed and accuracy in handling sterile instruments and facility in dealing with a patient's unit. It also measures ability to follow directions. Take these pegs first with the left hand and place them in this hole. Then put the washer, then the sleeve over it and finally another washer to make a unit. Then do the same thing with the right hand and finally with both hands. Keep repeating this procedure until twelve rows (six on each side) are finished. Work as rapidly as you can.

At the end of the fourth row: "Stop! time's up; I'm afraid I'll have to ask you to take another test." At this point the Bender Gestalt Test was administered to the subject.

Step 2 - Bender-Gestalt Administration.- The stopwatch was put away and the subjects in the experimental group were given the following instructions for the Bender-Gestalt:

I have here nine designs which you are to copy, free hand on this paper. Each design is on one of these cards which I will show you one at a time; I would like you to copy these figures as well as you can. There is no time limit on this test. You can take as much time as you need.

Step 3 - Post-Experimental Interview.- Immediately after the Bender Gestalt administration, a post-experimental interview was conducted with the subjects in the experimental group. Six open-ended questions were asked with specific questions following if they seemed necessary.

These six questions were:

1. How do you feel about this whole thing?
2. How do you think you did?
3. How do you feel about these tests?
4. Do you feel these are important tests to evaluate student nurses?
5. What was the purpose of the line test you took a few days back?
6. What was the real purpose of this study?

The results of this post-experimental interview will be found in the following chapter.

Step 4 - Debriefing.- To preclude the probability that many of the student nurses would be emotionally upset for several days following the testing situation, they were debriefed immediately after the post-experimental interview. In addition to being told that they did not really do poorly on the tests, the purpose of the entire experiment was explained to them, and they were then asked how they felt about the whole thing. These comments will also be found in the next chapter.

The extreme importance of confidentiality in terms of their not telling anyone about the experiment or even indicating indirectly in a non-verbal way that something was fishy when questioned by their peers was emphasized.

Part II - Treatment of Control Group

Phase I.- Regarding the control group, the first phase consisted of a routine Bender-Gestalt administration with instructions to subjects as previously noted.

Phase II.- From three to eight days after the initial Bender-Gestalt administration, subjects of the control group were retested on the Bender-Gestalt to obtain an index of test-retest reliability for this sample. Explanation for the retest was to the effect that for precision of measurement the average of two scores was needed for this test as a kind of "test of the test".

Phase III.- From fourteen to twenty-four days after the initial testing on Asch's Line Test, subjects of the control group were retested on Asch's Line Test with different assistants. The explanation for the retest here was the same as that for the Bender-Gestalt retest. The purpose of the retest was two-fold. First of all, there is no evidence in the literature to suggest that the trait of conformity is a stable relatively permanent trait. Thus, a test of the consistency of the trait of conformity was attempted. Secondly, a test-retest reliability of Asch's Line Test has not yet been obtained. The apparent reason is that subjects would become too suspicious of a second testing under social pressure. This does not obviate the necessity of obtaining a measure of the test's reliability, however, and since different assistants were used in the present study, it was hoped that this objection to retesting could be largely overcome. As a check on this latter possibility, however, a post-conformity interview was conducted on this phase of the research. Results of this interview will be found in the following chapter.

CHAPTER III

PRESENTATION AND INTERPRETATION OF RESULTS

This chapter will present the results of the study with interpretations of these results as they are presented. This will be followed by a general discussion of the results in terms of their relation to the main problem and hypotheses of the study. The presentation of results will generally follow the sequence of the different phases or steps of the research as outlined and elaborated in chapter two. Raw data for this investigation is found in Appendix 2.

1. The Conformity-Independence Distribution.

The distribution of conformity-independence scores for the eighty female student nurses after having performed on Asch's Line Test is presented in Figure 1. As can be seen from this figure, the general shape of the curve is an L, referred to currently as a J-curve. It is interesting to note that Asch¹ obtained a similar distribution using 123 male college students with a mean age of twenty years. His results indicated that twenty-five per cent of the group did not yield to social pressure while performing on

¹ Solomon E. Asch, "Studies of Independence and Conformity: A Minority of One Against a Unanimous Majority", Psychological Monographs, Whole No. 416, Vol. 70, No. 9, p. 68.

Frequencies

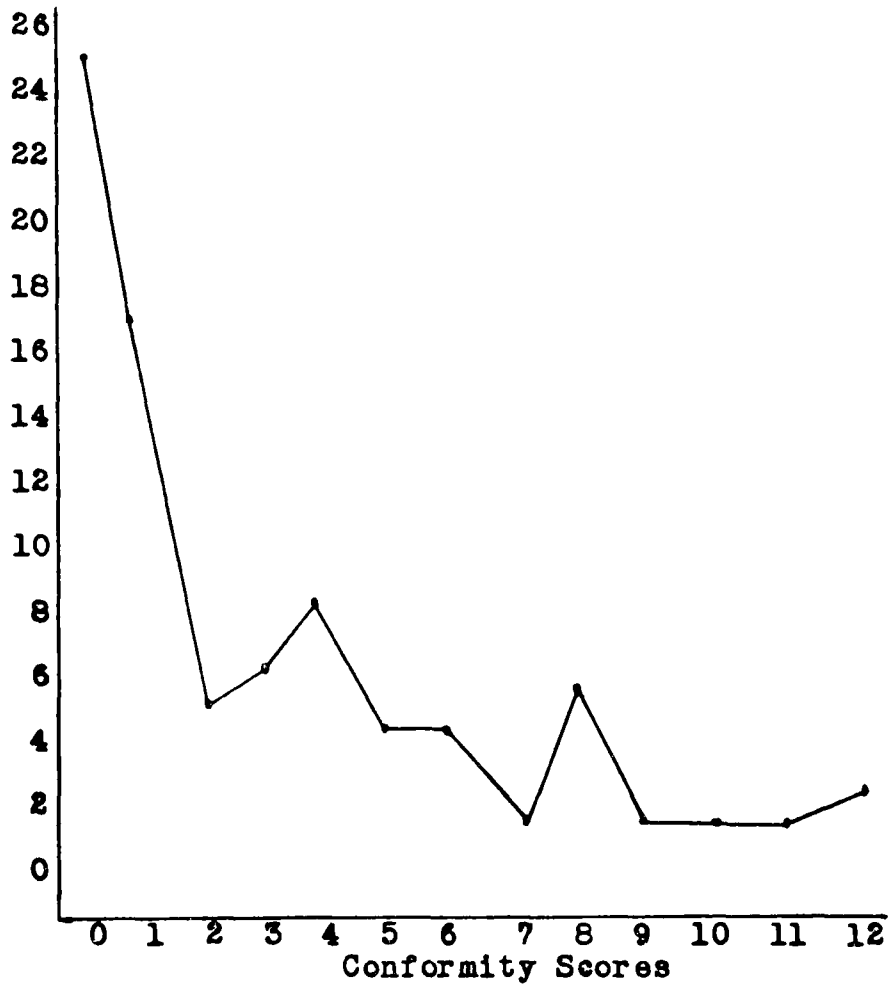


Figure 1.- Distribution of Conformity Scores for Eighty Female Student Nurses.

Asch's Line Test as compared with thirty-one per cent who did not yield in the present study.

In discussing his results, Asch referred to Allport's J-curve hypothesis of conforming behavior,² but noted that unlike Allport's J-curve, the mode in the type of social pressure research being considered occurs not at a point determined by convention or by the pressure of a group, but rather at the truth value, i.e., to say at the opposite extreme from the majority position. Regarding this distribution, Asch states:

The obtained distribution is clearly the resultant of the two major forces acting upon the subjects, viz., the stimulus situation and the stand of the majority.³

The distribution of conformity scores after random assignment to the experimental and control groups can be seen in Figure 2. The proximity of the two curves indicates that effective randomization was achieved. There was a near equal distribution of conformity and independence scores for all levels of conformity in the experimental and control groups. So with regard to the trait of conformity the two groups could be considered practically identical. It can also be assumed that in addition to age, education, and I.Q.,

² Floyd H. Allport, "The J-Curve Hypothesis of Conforming Behavior", Journal of Social Psychology, Vol. 5, First Half, January 1934, p. 141-183.

³ Asch, Op. Cit., p. 62.

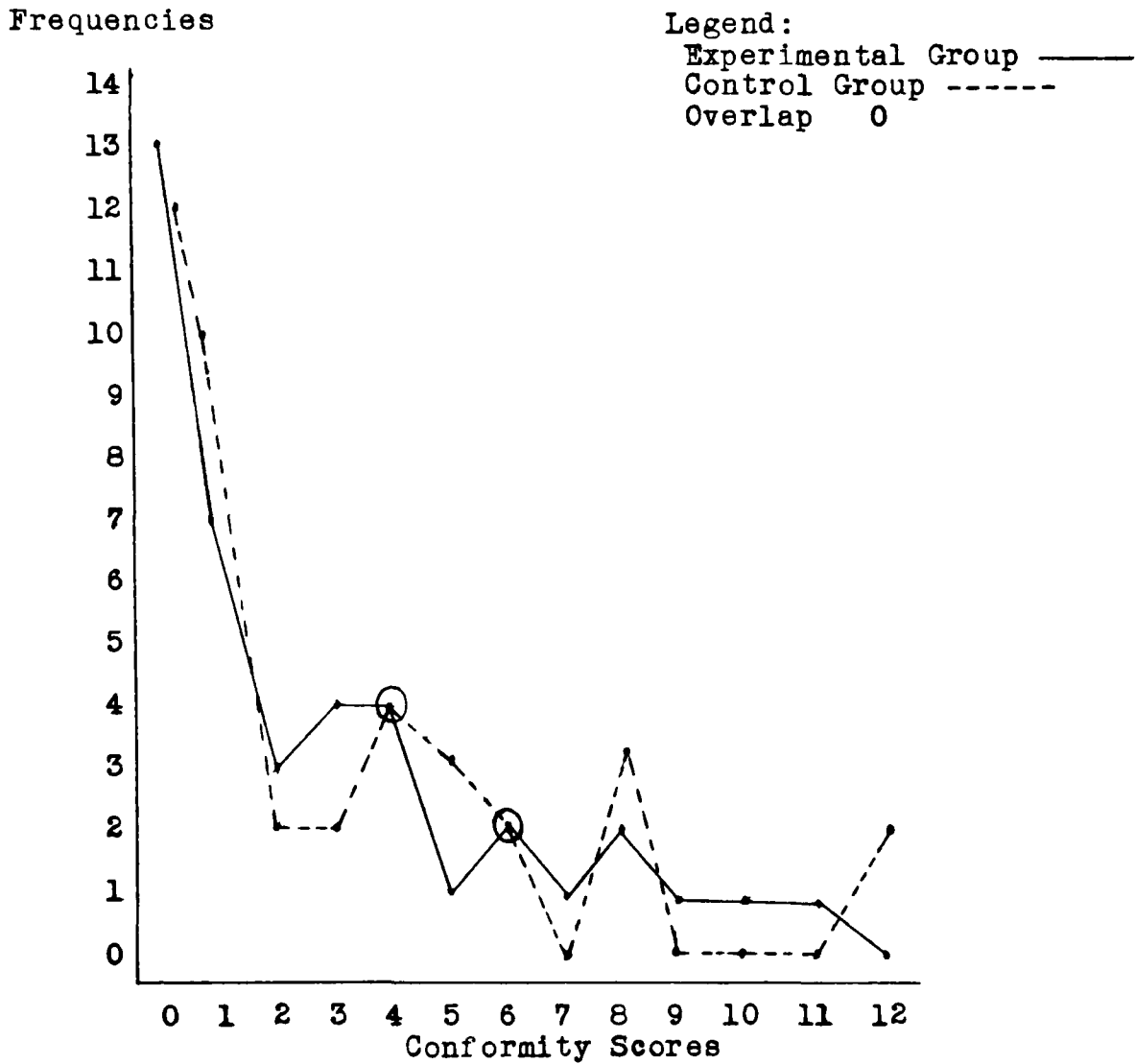


Figure 2.- Distribution of Conformity Scores for Eighty Female Student Nurses after Random Assignment to Experimental and Control Groups.

other factors which might affect the criterion variable are also randomly distributed in the experimental and control groups so as to preclude the operation of systematic uncontrolled variables. Thus, the effects of failure stress can be more clearly mirrored in Bender-Gestalt performance than if this type of randomization had not been accomplished.

2. Scorer Reliability.

Bender-Gestalt protocols were scored according to Pascal and Suttell's method of scoring⁴ by the investigator's wife. Protocols were coded so that the scorer did not know to which individual or group a particular protocol belonged. Raw scores were used for all calculations rather than z-scores corrected for educational level since all subjects were of the same educational standing. Twenty-five of Pascal and Suttell's records were scored and checked by the scorer to gain practice with the method. Twenty of Pascal and Suttell's records were then scored without reference to the completed score sheets in order to obtain a comparison of scores between the scorer and the authors of the scoring system. It was suggested that a reliability coefficient be calculated on these scores. The authors

⁴ Gerald R. Pascal and Barbara J. Suttell, The Bender-Gestalt Test, New York, Grune and Stratton, 1951, p. 107-207.

of the scoring system suggested a coefficient of $r = .90$ be obtained before the scoring system be applied to actual test records. A Pearson r was calculated and a reliability coefficient of $r = .922$ was obtained, indicating a substantial degree of agreement between the scorer and the authors of the scoring system.

3. Test-Retest Reliability.

a) The Bender-Gestalt Test.- To obtain an index of stability of the Bender-Gestalt scores over a period of time, the forty subjects of the control group were re-administered the Bender-Gestalt Test from three to eight days after the initial testing on the Bender-Gestalt. The bulk of the subjects (twenty-eight) were tested five to six days after the first Bender-Gestalt administration. The Pearson Product Moment Method of Correlation was employed since the two assumptions underlying use of this method were fulfilled. These assumptions are random assignment of subjects to experimental conditions and rectilinearity. Random assignment has already been discussed and a straight line relationship does exist between the first and second testings on the Bender-Gestalt. The formula used in the calculation of the Pearson r was:

$$r = \frac{\frac{\sum XY}{N} - M_x M_y}{\sigma_x \sigma_y}$$

The stability coefficient calculated by the above formula was $r = .695$. Since normality of distribution for each testing, random assignment, and rectilinearity were achieved, testing the significance of r was also accomplished. For thirty-eight degrees of freedom the obtained r of .695 was significant at the one per cent level of confidence. Consequently we can reject the hypothesis at the one per cent level that r is zero in the population from which the forty subjects were drawn. There would be less than one chance in a hundred of obtaining a sample r of .695 if the population r were zero.

This reliability coefficient is quite comparable to the test-retest coefficient of .71 reported by Pascal and Suttell⁵ who used a non-clinical group of forty-four subjects and a time interval of twenty-four hours between testings. One reason mentioned by Pascal and Suttell⁶ for not obtaining a higher coefficient is the fact that scorer reliability is not perfect. Nevertheless, for the research purposes of the present study, the obtained test-retest r of .695 for the Bender-Gestalt seems quite acceptable, and the measurements are largely free from uncontrolled sources of variation.

5 Pascal and Suttell, Op. Cit., p. 17.

6 Ibid., p. 6.

b) Asch's Line Test.-- As mentioned in the previous chapter, an index of test-retest reliability for Asch's Line Test has not yet been obtained. The reason is apparently that past researchers feared the subjects would become too suspicious of a second testing under social pressure. The present study hoped to at least partially circumvent this problem by using different assistants. By following this procedure, an attempt was also made to arrive at an estimate of the stability of the trait of conformity.

Data on eight of the forty subjects in the control group had to be eliminated from final analysis because they correctly guessed the real purpose of Asch's Line Test. A later section of this chapter which considers post-experimental interview results will elaborate on this. Since there was a rectilinear relationship between the two testing times, a Pearson r was calculated on thirty-two subjects of the control group as an index of test-retest reliability for Asch's Line Test. The r was found to be .671. This coefficient seems to suggest a fair degree of stability of conformity scores over a short period of time (fourteen to twenty-four days) with the sample used in this study.

The distribution of conformity scores for each of the testings when considered separately was not normal, however, so the significance of the r was not calculated. The distributions of conformity scores for each of the two

testings resembled a J-curve which was similar in shape to the overall distribution of conformity scores of the eighty subjects on the initial conformity testing. Since we cannot be sure that the population r is not zero in terms of conformity scores, there is some question about the stability of the conformity scores in the population from which the sample was drawn. Furthermore, it cannot be concluded in any clear cut fashion that the trait of conformity is a relatively stable, permanent trait in the population at large from the results of this study. Even less likely is the probability that individuals will or will not conform consistently under different circumstances, since even under the same conditions there is a fair amount of variability.

4. Bartlett's test for Homogeneity of Variance.

To preclude the possibility that the variances within the various samples were quite dissimilar, Bartlett's test for homogeneity of variance was applied to the four groups of this study. If there was significant within group variance, then differences between means of the four groups might not be due solely to the experimental treatments. These samples consisted of the conformers and independents in both the experimental and control group. The procedure for unequal n 's was followed.

A chi-square of 1.88 was obtained which, for seventy-six degrees of freedom, was not significant. The failure to find significant differences here indicates that we can accept the hypothesis of common population variance. The results of Bartlett's test, then, can be explained in terms of the limits of random sampling from a population with a common variance and the hypothesis of homogeneity of variance is therefore tenable. The data can now be treated further using analysis of variance techniques.

5. The Two by Two Analysis of Variance.

The two major assumptions of analysis of variance techniques in terms of interpreting the F test; namely, homogeneity of variance and normal distribution of Bender-Gestalt scores, seemed to be satisfied in the present study. A two by two analysis of variance procedure for unequal n's was followed. The initial two by two factorial analysis of overall sums of squares between and within groups for four groups of unequal size is found in Table II. The four groups of subjects are the conformers and independents for both the experimental (stress) and control (nonstress) groups.

As can be seen from Table II, $F = 7.67$ which, for three and seventy-six degrees of freedom, is significant beyond the .1 per cent level of confidence. The hypothesis of random sampling from a common normal population can be

Table II.-

Overall Analysis of Variance of Bender-Gestalt Scores for
Conformers and Independents in Stress and Nonstress
Groups.

Source of Variation	SS	df	MS	F	P
Between groups	3,118.12	3	1,039.37	7.67	P < .001
Within groups	10,494.63	76	138.08		
Total	13,612.75				

rejected at the above level of confidence. Since population homogeneity has already been demonstrated in terms of within group variance for the four groups, it can be concluded that the experimental treatments were the main operative influences on Bender-Gestalt performance.

To locate the major variables responsible for the significant differences between groups, the sum of squares between groups was partitioned into three sections. These sources of variation are referred to as the stress-nonstress dimension, the conformity-independence dimension, and the interaction of these two overall dimensions. A summary of this analysis is found in Table III. The F value of 21.73 for the stress-nonstress dimension is significant beyond the .1 per cent level of confidence. The conformity-independence dimension as well as the interaction between this dimension and the stress-nonstress dimension failed to attain statistical significance.

The results indicate that failure stress effected significantly different results than no failure stress on Bender-Gestalt performance. Since the higher the score, the more the distortion of reality, according to the scoring system, failure stress resulted in significantly poorer Bender-Gestalt performance in this sample than the absence of failure stress. When the dimension of conformity-independence is considered, however, failure stress had no

Table III.-

Partitioned Analysis of Variance of Bender-Gestalt scores for
 Conformers and Independents in Stress and Nonstress
 Groups.

Source of Variation	SS	df	MS	F	P
Stress-Nonstress	3,001.25	1	3,001.25	21.73	P<.001
Conformity-Independence	16.57	1	16.57		
Interaction: S-N x C-I	100.30	1	100.30		
Within groups	10,494.63	76	138.08		
Total	13,612.75	79			

differential effect on the conformers and independents. This, coupled with the fact that the interaction effects of the two main variables of the study were not significant, indicated that no further statistical analysis was necessary. Table III reveals that almost all of the source of variation responsible for the significant F value is accounted for by the differential effects of the stress-nonstress dimension as reflected in Bender-Gestalt performance.

6. Post-Experimental Interview Results.

As a kind of bridge between statistical results and discussion of results, as well as an introduction to the interpretation of overall results, findings from the post-experimental interviews are now presented. The primary goals of the post-experimental interview were to arrive at an indication of the feelings of the subjects while they were being tested, to determine whether they suspected the true nature of the research, and to aid in improving design procedures for future research.

a) Post-Stress Interview.- We might first consider the responses of the experimental group to six questions posed to them during the post-stress interview, and then their reactions to the experiment after the debriefing.

The first question asked of the forty experimental subjects immediately after their performance on the

Bender-Gestalt Test was, "How do you feel about this whole thing?" The general tone of their responses indicated strong feelings of failure, frustration, tension and conflict. The following responses were typical of their replies: "boy"; "not good"; "awful"; "upset"; "I didn't know what to expect"; "frustrated"; "I was so nervous"; "under a tension"; "guess I'm not as smart as I thought"; "I feared I'd mess it all up"; "I wish I could've done better"; et cetera.

To the more specific question, "How do you think you did?", thirty-five of the forty felt they had done very poorly and seemed to have experienced genuine feelings of failure. Typical comments were: "lousy"; "terrible"; "so badly"; "below normal"; "not so good"; "just awful", et cetera. Interestingly enough, two subjects felt they had done "average" and three subjects thought they had done "a little below average", so not all forty subjects experienced strong failure feelings, or else were able to conceal their true feelings from the experimenter, and perhaps even themselves. Although not all forty subjects experienced equally strong feelings of failure, post-stress interviews combined with behavioral observations suggested that almost all subjects experienced fairly strong failure feelings.

In responding to the question, "How do you feel about these tests?", common answers were: "they were good"; "pretty clever"; "O.K."; "they made me nervous"; "wish I had done better"; et cetera. Four subjects expressed mixed or negative feelings about the tests as, for example, "O.K., but practical experience is important too", and "they were too impersonal", or "I.Q. tests are important but you can do bad on them and still be a good bedside nurse".

When the more specific question, "Do you feel these tests are important to evaluate student nurses?" was asked, the majority replied in the affirmative although more subjects than before gave negative replies. Those who replied in the affirmative stated: "oh yes, especially for association and memory (or coordination, et cetera)"; "good for selection"; "yes, very much so, but it makes me nervous to have a professional watch me"; "that manual test was very good for following directions"; et cetera.

Of all the tests used to aid in inducing failure stress, the Furdue Pegboard was most frequently mentioned as being the most effective, although for different reasons. Some stressed its complexity, others its realism and practicality, and still others its relationship to bedside nursing or operating room procedures.

On the negative side, seven subjects wondered about the usefulness of the tests or expressed outright dislike

of them. They commented: "I don't know, I have mixed feelings"; or "no, not under these conditions, we didn't have enough time"; "some were too hard"; "there should be ward observations of nurses also". It is not known to what extent these nurses really disliked the tests or were searching for reasons to justify their "poor" performance, but this latter phenomenon probably did operate to some extent. There was no systematic relationship between verbal expressions of liking or disliking the tasks and Bender-Gestalt performance.

To the question, "What was the purpose of the line test you took a few days back?", no subject verbalized the correct answer, but instead gave responses relating the test to some aspect of perception, vision, or reaction time. Several expressed disgust over their performance for a variety of reasons, but further questioning on this point was restricted to the forty subjects in the control group during the post-conformity interview after the retest on Asch's lines.

In answering the question, "What was the real purpose of this study?", most subjects seemed quite puzzled that this question was asked. Then they repeated what the examiner had told them about perception, intelligence tests and student nurse selection tests. Several did reply, "no idea", "to see if you're neurotic", "I don't know but I'm

curious". Thus, there may have been some doubts from time to time, but as far as could be determined, no subject guessed the true nature of this phase of the research.

As soon as the subjects were debriefed, they were asked for their feelings and comments, and it is interesting to note that in addition to being extremely relieved, they became quite involved in the study and asked intelligent questions about it. Of particular interest was the fact that many subjects who said negative things about the tests earlier, now "saw" how worthwhile the tests could be in a nurse selection program. Even after it was explained to them that it had not been established that the tests were effective in nurse screening programs, they persisted in their beliefs that these were indeed fine tests.

b) Post-Conformity Interview.- After the second testing on Asch's Line Test, the forty subjects in the control group were asked what the purpose of the test was, and to elaborate on their feelings during the course of taking the test.

During the post-conformity interview, six subjects admitted having guessed the real nature of Asch's Line Test by the time they were halfway through the second testing. Of these six, half of them suspected something was fishy toward the end of the first testing or a few days after this first testing, and the other half guessed before they had

finished the second testing. These six were among the eight subjects eliminated from the calculation of test-retest coefficients on Asch's Line Test. Their admissions jibed with assistants' reports and experimenter's observations as to their probable knowledge regarding the research. Two other subjects, although they were not sure of the real purpose of the test, had some doubts; to be on the safe side, they were eliminated, especially since assistants' reports and behavioral observations by the experimenter also suggested that they might have known the true purpose of Asch's Line Test. The eight student nurses referred to above stated they had not discussed their suspicions with others but arrived at their conclusions independently.

There did not seem to be any systematic effect on first testing conformity scores or Bender-Gestalt scores of these eight subjects. Since they were not sure of the purpose of Asch's Line Test until after the first testing, their Bender-Gestalt scores could be analyzed along with the rest of the subjects. The results here do suggest, however, that this manner of obtaining a behavioral sample of conformity is quite risky in terms of at least some subjects being able to figure out the true nature of the experiment.

Regarding the feelings of the forty subjects in the control group during the social pressure situation, several findings are worth mentioning. Most of the subjects

experienced conflict upon discovering that the responses of the majority were frequently different from their own.

In discussing their feelings, the conformers gave a wide range of reasons as to why they went along with the rest of the group. Reasons given included: "I wasn't sure, but they seemed so confident"; "I thought I misunderstood the directions"; "they shouldn't have followed the first one"; "I wondered if it was an illusion"; "I thought it was a difference in the angle"; "maybe my glasses interfered"; et cetera. Most of the conformers came to doubt their own judgments, but there were a few who felt they were right but were afraid to appear different or in some way inferior to the others, so went along with the group.

Most of the independents, on the other hand, claimed they felt quite certain they were right and had to give their answers as they saw them. Many independents believed that the first person was somehow in error and the rest incorrectly followed her. Several independents became quite angry with the group and either developed mild withdrawal symptoms by trying to totally disregard the group, or became quite stubborn in clinging to their own answers even if they weren't always sure of the correctness of their responses.

There did not seem to be any pattern as to when conformity was at a maximum in terms of time of conforming,

since there was about equal conforming at the beginning as there was at the end, though there was a slightly greater tendency to conform more at the beginning of the test.

7. Discussion of Overall Results.

As will be recalled, the main problem of this study was to begin a systematic investigation of some of the relationships between motivation and perception. It was mentioned earlier that before one postulates intervening mechanisms to explain how motivation influences perception, one must first have secure evidence bearing on specific relationships between motivation and perception, which has so far been lacking. Two assumptions underlying the directive state theory of perception were selected to begin this investigation. The first assumption was: Failure experiences are associated with the perceiving of objects and tend to influence perception. It will be noted that this first assumption does not state the manner in which motivation directs perception.

Referring to the results of the present study as they bear on this first assumption, it can be seen that when the differential effects of failure stress are compared with nonstress in the experimental and control groups (conformity-independence dimension ignored), there are clearly significant differences between these two effects. Failure stress is

significantly ($P < .001$) associated with a decrement in perceptual performance as reflected in Bender-Gestalt Test scores. Thus, within the limitations of sampling; namely, third year female student nurses, weight is lent to this first assumption of the directive stateists. Within the framework of the population sampled, it appears as though failure stress, as operationally defined in this study, tends to result in a distortion of perception when non-ambiguous stimuli are employed as the criterion variable.

In addition to providing support for the first assumption of the directive state theory of perception, the results of the present study agree with the findings of researchers such as Postman and Brown,⁷ Sears,⁸ McClelland and Apicella,⁹ et. al. who found that failure stress results in a decrement in perceptual performance. In a sense, the work of these researchers can be viewed as being extended, since almost all used male subjects, whereas in the present study, female subjects were used; so increased generality of findings can be postulated.

7 Leo Postman and Donald B. Brown, "Perceptual Consequences of Success and Failure", Journal of Abnormal and Social Psychology, Vol. 47, No. 2, April 1952, p. 213-221.

8 R.R. Sears, "Initiation of Repression Sequences", Journal of Experimental Psychology, Vol. 20, No. 1, January 1937, p. 577-580.

9 David C. McClelland and F.L. Apicella, "Reminiscence Following Experimentally Induced Failure", Journal of Experimental Psychology, Vol. 37, No. 2, April 1947, p. 159.

At the same time, the results of the present study, in addition to agreeing with much psychoanalytic theory which states that regression usually follows stress, also offer considerable support to Hochberg's¹⁰ interference or disruptive hypothesis which states that emotional-affective responses to stimuli can interfere with an ongoing perceptual act, resulting in a decrement in overall perceptual performance.

Results of the present study also lend support to Postman and Bruner's¹¹ visualization of the effects of stress wherein the disruption of behavior following upon the thwarting of goal-directed activity is behavioral regression or primitivation.

Turning now to the second assumption of the directive state theory of perception, there is more difficulty in interpreting the results. The second assumption was: Differences in particular personality variables tend to differentially affect perception. As will be recalled, the personality variables studied in the present research are conformity and independence where independence is viewed

¹⁰ Charles M. Soley and Gardner Murphy, Development of the Perceptual World, New York, Basic Books, Inc., 1960, p. 49.

¹¹ Leo Postman and Jerome S. Bruner, "Perception Under Stress", Psychological Review, Vol. 55, No. 1, January 1948, p. 315.

as one aspect of ego strength. It was postulated that individuals of more independence, and probably, therefore, of greater ego strength, would be able to withstand failure stress better than those lower in ego strength, and hence not distort reality to as great an extent.

The specific experimental hypothesis of the present study which bears on the second assumption of the directive state theory of perception when stated in null form reads: Under failure stress there will be no significant differences in perceptual performance between conformers and independents. It has already been pointed out that this hypothesis as worded in null form, must be accepted since there was no significant difference between conformers and independents as they performed under failure stress. Under the conditions of the present study then with the particular sample used, weight is not lent to the second assumption of the directive state theory of perception. It is not yet known in reality whether there are significant differences in the direction expected from this study in the universe, but the design and sampling of the present study failed to reveal any.

There are several probable reasons for failure to obtain significant results here.

Returning for a moment to an earlier theoretical formulation of this study, independence has been viewed as

an important aspect of ego strength. Even though experimental evidence seems to support this notion, it may well be that there are also other equally important aspects of ego strength which may have counterbalanced the effects of independence as defined in this study. It may be, for example, that flexibility is equally as important as independence in terms of being a core determiner of one's ego strength. Flexibility in this sense might enable an individual to know when the most propitious times are for conforming and when to "buck the group" as it were. These decisions as to when to conform and when not to might, in turn, aid in most effectively adjusting to the stresses in one's environment.

That conformity and independence are not simple bipolar traits has just recently been demonstrated by Appley and Moeller¹² who attempted to correlate conformity as measured by an Asch's line situation with thirty-eight personality scales, largely of the questionnaire and inventory type, which would supposedly yield predictions of conforming behavior. The authors signally failed to arrive at definitive conclusions (only one personality measure and yielding to social pressure resulted in a

¹² Mortimer H. Appley and George Moeller, "Conforming Behavior and Personality Variables in College Women", Journal of Abnormal and Social Psychology, Vol. 66, No. 3, March 1963, p. 288-290.

fair sized correlation coefficient) other than:

(...) it must be expected that attempts to replicate successful predictions of acquiescence from measures of supposedly enduring personality characteristics must meet with only occasional and adventitious success.¹³

Thus it appears that conformity and independence are highly complex factors in themselves which are only one of the many ways in which more fundamental aspects of personality may be expressed.

Also, the results of the present study tend to discourage the belief that conformity and independence are stable, relatively permanent personality traits. Test-retest correlation on Asch's Line Test yielded only .67 which was based on a short period of time between testings (fourteen to twenty-four days). Also, since individual conformity distributions were not normally distributed in the sample used, we cannot be sure that the population correlation is not zero in terms of conformity scores, since the significance of r cannot be calculated when there is marked departure from a normal distribution. The very nature of Asch's line situation makes for difficulty in retestings even when different assistants are used, as results of the present study indicate.

¹³ Appley and Moeller, Op. Cit., p. 290.

Thus it appears as if more research will have to be done on the complex and elusive trait of conformity before we know how it stands in relation to ego strength, how stable it is as a trait, what are the different dimensions of conformity, and what are the relationships between different types of conformity. Once more understanding of these relationships is achieved, it will be better understood why there is not a simple direct relationship between conformity and stress. It may well be, for example, that in some situations conforming behavior allows one to withstand stress better than independent behavior. One of the goals of future research could be the isolation and study of the conditions related to these phenomena.

Another probable reason which could account for negative results bearing on the second assumption of the directive state theory of perception is simply that the failure stress was so overwhelming to the sample used, that it made little difference whether the subjects were independent or conforming in a particular social situation, when it came time to perform on a perceptual task under failure stress conditions. It has already been noted that a pilot study was carried out to arrive at realistic and stressful tasks for student nurses, and post-experimental interview results indicate the subjects did indeed experience strong failure feelings. Thus, if equally important aspects of

ego strength are operating along with independence, the strength of realistic failure stress may well have a direct bearing on counterbalancing what minor differences there may be between independence and conformity as reflected in the perceptual task used as the criterion variable of this study. It is difficult to say to what extent differences in conformity and independence are reflected in Bender-Gestalt scores and this, too, needs investigation in the future.

Probably there are several of the above factors operating together in a complex manner which resulted in negative results for the second assumption of the directive state theory of perception. The following section, in addition to presenting a summary and conclusions, will provide the reader with specific recommendations for future research which arose out of the present study and which, hopefully, will aid in continuing a systematic investigation of specific relationships between motivation and perception.

SUMMARY AND CONCLUSIONS

This section presents a summary of the overall research efforts of the present study along with conclusions derived from the research results. Specific suggestions for future research which resulted from this study are also mentioned as an aid for possible improvements in functional research.

The present study was hopefully a small first step aimed at instigating a series of systematic investigations on the relationships between motivation and perception. It was felt that too often complex intervening mechanisms are postulated to explain how motivation specifically directs perception, when there is yet insufficient evidence regarding what relationships do or do not exist between motivation and perception. To initiate this investigation, two assumptions underlying the directive state theory of perception were selected and delimited for specific study, the selection generally following Postman and Bruner's guide for perceptual research. These two assumptions underlying the directive state theory of perception are:

1. failure experiences are associated with the perceiving of objects and tend to influence perception;
2. differences in particular personality variables tend to differentially affect perception.

For purposes of the present study, these two assumptions were delimited so that assumption one was specifically concerned with the motivating effects of failure stress on perceptual performance and assumption two was concerned with the personality variable of conformity - independence, where independence is viewed as one aspect of ego strength. These more limited experimental hypotheses, when worded in null form, read:

1. There will be no significant differences in perceptual performance between individuals who are submitted to failure stress, and those who are not.
2. Under failure stress there will be no significant differences in perceptual performance between conformers and independents.

Prior to the actual testing of these hypotheses, a pilot study was instigated to arrive at truly stressful tasks and instructions for the population being considered in this study.

A review of the literature suggested that personality variables have been neglected in studying performance under stress. Theoretical formulations as well as some past research suggested that some aspect of ego strength would be an important variable for study under failure stress conditions. It also appeared as if independence could be viewed as one important aspect of ego strength.

To obtain high and low measures of independence, an actual behavioral sample of independence was obtained

rather than using psychological questionnaires or inventories. This approach was used because with inventories and questionnaires it is possible to deliberately distort one's answer to produce a good impression, or the individual may have genuine misconceptions of his own behavior.

After measures of conformity and independence were obtained on eighty female student nurses, the subjects were randomly assigned to experimental and control conditions. Thus, there were equal amounts of conforming in both experimental and control groups. Failure stress was then administered to the experimental group in a manner already described, whereas no failure stress was given to the forty control subjects.

The control group, in addition to its usual function, served as subjects for a measure of test-retest reliability which was acceptable ($r = .695$) for the research purposes of this study. There was difficulty, however, in obtaining a measure of test-retest reliability for Asch's Line Test as eight of the forty subjects in the control group guessed the real nature of this test during the second testing. This fact, coupled with lack of knowledge of the distribution of conformity in the universe, indicated that we cannot be sure that conformity is a stable, relatively permanent trait.

Post-experimental interviews did disclose, however, that almost all subjects experienced strong feelings of failure and, as far as could be determined, none discovered the true nature of the failure stress phase of the research. Interview results also revealed that subjects gave a wide range of reasons to justify their behavior during the social pressure part of the experiment. It appeared as though many subjects were unable to resist group pressure for fear of appearing different or inferior in the eyes of the group. Yet, it did not seem to make any difference whether subjects conformed or were independent, in terms of their later perceptual performance under failure stress, for no significant differences were found between the conformers and independents. Thus, weight was not lent to the second assumption of the directive state theory of perception in terms of the results of the present study. It was concluded from this phase of the research that conformity is a complex elusive trait, rather than a simple unidimensional trait, and is probably only one aspect of ego strength which may or may not be the most important one. Other aspects of ego strength, for example flexibility, may well be equally strong in determining one's perceptual performance under failure stress, so could result in a counterbalancing effect, masking any differences between conformers and independents.

Also, the realistic nature of the failure stress may have overrode any differences in conformity and independence, when it came time to perform on the perceptual task which was the criterion variable of this study. It has yet to be demonstrated whether the Bender-Gestalt Test effectively reflects differences in conformity and independence as measured in this research.

Weight was provided for the first assumption underlying the directive state theory of perception, since the specific experimental hypothesis bearing on it was upheld. That is, failure stress did significantly affect perceptual performance in a manner quite different from no failure stress. For third year female student nurses, failure stress tends to result in a significantly poorer perceptual performance when simple non-ambiguous stimuli are employed as the criterion variable. This finding, in addition to supporting the first assumption of the directive state theory of perception, agrees with current psychoanalytical theory which states that most individuals tend to regress or exhibit decrements in performance under stressful situations.

Several findings which emerged from the present study seem useful in terms of approaches to future functional research problems. Results of this study suggest that pilot studies to arrive at specific information

regarding the realism of stimuli to be presented to subjects is quite helpful and sometimes even necessary. Especially when a high degree of ego involvement is required of subjects this becomes a necessary procedure.

Likewise, post-experimental interviews are indispensable in research where the feelings of subjects must be known, their reactions to the experiment, and knowledge as to whether they were able to arrive at the real purpose of the experiment, when this purpose must be concealed from them. To add precision and, perhaps, objectivity some method of quantification such as a psychogalvanometer and measures of pulse and respiration rate could be incorporated in the basic design to substantiate covert physiological changes. This would help to verify the presence of underlying emotional and motivational changes that one sought to establish.

Of considerable importance to the present study in terms of replication, is the personality variable that will be associated with perceptual performance under failure stress conditions. In view of the conclusions of the present study regarding the complexity of the trait of conformity, it is suggested that a pure measure of conformity, as defined in this study, not be used by itself in studying the effects of stress on performance until further research is done on the trait of conformity itself. It should first

be determined how permanent a trait conformity is, what are its specific relationships to ego strength, what are the different dimensions of conformity, and what are the relationships between different types of conformity. While this information is being gathered, an interim type of investigation relating to the specific problems of this study is suggested. It appeared as though interactive effects of independence with some other aspect of ego strength were the core determiners of perceptual performance under stress. It may well have been that the flexible individual could conform at the most appropriate times, thus aiding his adjustment to stressful situations. In view of this line of reasoning, it is suggested that independence as well as flexibility be viewed as important aspects of ego strength, and stratification of pre-selection factors consider both these factors in observing perceptual performance under failure stress. Behavioral measures as well as standardized psychological tests could both provide samples of these two traits so that a cross-check on the trait under consideration could be obtained.

Before proceeding with a replication or further study in this area, it also now seems imperative to determine, perhaps by pilot study, to what extent differences in conformity and independence are reflected in Bender-Gestalt performance, before stress is administered, if the

Bender-Gestalt is to be used as the criterion variable. There is no doubt regarding the Bender-Gestalt's capacity to reflect failure stress, but results of the present study posed the question as to whether the Bender-Gestalt can effectively mirror differences in conformity as it was measured in this study.

A continuing series of investigations in this area would gradually include and manipulate more and more variables which seem pertinent to understanding relationships between motivation and perception. Besides increasing the size of the samples, and including males as subjects to give greater generality to the findings, a series of tasks used as the criterion variable could gradually be increased in difficulty level with each succeeding study. For the present, however, it might be well to work with simple non-ambiguous stimuli which permit a clearer reflection of the effects of the independent variable. This seems feasible especially in view of the importance of exerting considerable effort in attempting to understand interactive effects of complex personality variables which have a pertinent bearing on helping us to understand the multi-dimensional relationships between motivation and perception.

ANNOTATED BIBLIOGRAPHY

Allport, Floyd H., Theories of Perception and the Concept of Structure, New York, Wiley, 1955, p. 304-361.

An extensive and critical review of the major theories of perception with a lucid explanation of their nature and function. The directive state theory of perception is given extensive treatment and critique, as well as the related experimental evidence.

The book is quite verbal, almost pedantic in spots, but if the time is taken to read and re-read, the depth and comprehensiveness of coverage will more than reward the reader. It is recommended for a broad background and sound basis of perceptual theory, as well as an excellent formulation of the six assumptions underlying the directive state theory of perception.

Asch, Solomon E., "Studies of Independence and Conformity: A Minority of One Against a Unanimous Majority", Psychological Monographs, Whole No. 416, Vol. 70, No. 9, 1956, 70 p.

This study was concerned with conditions of independence and lack of independence in the face of group pressure. It is a classical work in its field and initiated many other investigations of conformity by Asch and others.

The manner of obtaining a behavioral sample of conformity with a simple line test was quite noteworthy, but the author minimized the fact that some of the subjects discovered the true purpose of the experiment. No attempt was made to obtain test-retest reliability for Asch's Line Test, nor was any reason explicitly stated for not accomplishing this. Nevertheless, several noteworthy findings regarding independents and conformers were garnered and interpretations held fairly close to the facts.

Bruner, Jerome S. and Leo Postman, "The Great Task for Perceptual Research", Reflexes to Intelligence, Illinois, The Free Press, 1959, p. 602-613; reprinted from Jerome S. Bruner and Leo Postman, "Perception, Cognition, and Behavior", Journal of Personality, Vol. 18, No. 3, March 1949, p. 14-31.

In stressing the functional approach to studying perception, the authors point out the necessity for selecting non-perceptual variables from several theoretical systems including motivational and personality theories, to better understand the individual as an organized whole in his manner of adjusting to the environment. A guide is provided for a systematic analysis of relationships between motivation and perception and, although the functional approach is

maximized, the authors are well aware of the importance of also studying the structural conditions of perception as well.

A succinct presentation is made of a complex set of motivation-perception relationships, where the goal is to enable one to more fully understand from several different approaches how the organism, by perceiving, comes to adapt to his ever-changing external world.

Hoffman, M.L., "Some Psychodynamic Factors in Compulsive Conformity", Journal of Abnormal and Social Psychology, Vol. 48, No. 3, July 1953, p. 383-393.

In referring to psychoanalytic formulations, the author postulated that individuals who were overprotected as children, forbidden to explore their environment, and were forced to repress hostility, would not only conform to their parents' wishes, but to the demands of groups and society, in a compulsive manner in order to minimize guilt feelings.

A well designed experiment provided objective measures of conformity by having subjects judge two short distances in the face of incorrect answers given by a majority of confederates.

Personality measures of the high conforming subjects, especially as garnered from the Thematic Apperception Test, revealed that conformers were higher in parental dominance, repressed aggression toward parents, and guilt, and were lower in measures of ego strength. High ego strength was measured by the central figure (in TAT stories) realistically attacking problems to achieve goals, and low ego strength was measured by the central figure being depicted as sheltered and generally finding it difficult to cope with problems of life.

Low conforming or independent subjects were found to be high on measures of ego strength and it appeared as though independence was one important aspect of ego strength.

A careful but thorough analysis was also made of differences between conforming individuals and those with authoritarian personalities.

Lazarus, Richard S., James Deese, and Sonia F. Osler, "The Effects of Psychological Stress Upon Performance", Psychological Bulletin, Vol. 49, No. 4, Part 1, July 1952, p. 293-317 p.

The authors provide an excellent review of past research on the effects of psychological stress on performance. They attempt an analysis of the concept of stress, review experimental techniques used to induce stress, and list and discuss the different kinds of performance which have been studied under stressful conditions.

Especially helpful to experimenters working in this area is the presentation of common methodological problems encountered in attempting to induce experimental stress in subjects.

In their review of experimental findings in this area, they found that stress results in decrements in performance as well as improvements, though more studies resulted in the former conclusion. Although possible reasons for decrements in performance under stress are analyzed, there is no consideration of why performance is sometimes improved under stressful conditions.

There is a caution made regarding attempts to analyze a single individual's performance under stress, and the authors conclude that because of wide individual differences in reacting to stress, interpretations about any single individual's performance should not be made.

The importance of post-experimental interviews to obtain subjective reports of the subject's feelings while performing under stress is stated with realistic reasons given for this belief.

Pascal, Gerald R. and Barbara J. Suttell, The Bender-Gestalt Test, Grune and Stratton, New York, 1951, v-274 p.

A succinct presentation of an objective scoring system for the Bender-Gestalt Test. Standardization, reliability, and validity of the test are concisely dealt with, and scored protocols are provided to aid the beginning scorer in familiarizing himself with the scoring system. Handling of the clinical uses of the test is perhaps too brief, being largely restricted to children and those with cortical deficit, but an attempt is made to provide the reader with a feeling for test records of psychogenic disorders as well.

Solley, Charles M. and Gardner Murphy, Development of the Perceptual World, Basic Books, Inc., New York, 1960, vii-352 p.

An invaluable reference work which brings together and nicely dovetails a large body of current research dealing with relationships between motivation and perception. The nature of perception, the learning mechanisms involved in perception, and the theoretical relationships between perception and motivation by way of learning is handled in a concise, yet thorough manner.

Vogel, William, Susan Raymond, and Richard Lazarus, "Intrinsic Motivation and Psychological Stress", Journal of Abnormal and Social Psychology, Vol. 58, No. 2, March 1959, p. 225-233.

In addition to cognitive control, the authors believed that intrinsic motivation is also important in observing performance under psychological stress. They hypothesized that individuals who are high in both achievement motives and affiliation motives would perform poorer under psychological stress than individuals low in these motives. Results of their study supported their hypotheses and lent weight to their proposition that any typical stressor condition produces a state of stress only if it threatens important ego-motivations of the subject.

The careful thinking of the authors is manifest in their conclusions which emphasize the importance of considering the population which is to perform under stress in some detail as to its predominate motive patterns.

APPENDIX 1

TASKS USED IN THIS STUDY

APPENDIX 1

TASKS USED IN THIS STUDY

Task 1.- Paired Associates

1. Prevaricate Rocks
2. Sensitivity Dinosaur
3. Mountain Telling
4. Stylus Hamper
5. Ramify. Earthworm
6. Monotony. Tenderness
7. Chronology. Pedestrian
8. Modifications Tenuous
9. Turbojet. Ameliorate
10. Avowed. Truncate

Task 2.- Design C of Wechsler Memory Scale presented for four seconds.

Task 3.- Digits Backward.

3897
26521
936417
4626319
72813946

Task 4.- Purdue Pegboard modified for present study as explained in main body of thesis.

APPENDIX 2

RAW DATA

APPENDIX 2

RAW DATA

Table IV.-

Bender-Gestalt Scores for Eighty Female Student Nurses.

<u>Experimental Group</u>		<u>Control Group</u>	
<u>Conformers</u>	<u>Independents</u>	<u>Conformers</u>	<u>Independents</u>
1. 39	1. 17	1. 3	1. 19
2. 38	2. 29	2. 11	2. 23
3. 33	3. 8	3. 8	3. 30
4. 24	4. 30	4. 22	4. 1
5. 51	5. 28	5. 21	5. 54
6. 26	6. 33	6. 12	6. 12
7. 37	7. 26	7. 2	7. 17
8. 39	8. 50	8. 26	8. 8
9. 39	9. 23	9. 14	9. 11
10. 31	10. 50	10. 22	10. 18
11. 15	11. 33	11. 18	11. 12
12. 15	12. 18	12. 26	12. 40
13. 8	13. 34	13. 6	
14. 23		14. 27	
15. 22		15. 7	
16. 36		16. 22	
17. 32		17. 12	
18. 21		18. 2	
19. 38		19. 12	
20. 21		20. 43	
21. 14		21. 16	
22. 35		22. 9	
23. 52		23. 10	
24. 45		24. 43	
25. 40		25. 30	
26. 25		26. 18	
27. 34		27. 17	
		28. 20	

Table V.-
Test-retest Scores on Bender-Gestalt Test
Control Group.

	1st Testing	2nd Testing		1st Testing	2nd Testing
1.	3	3	21.	7	3
2.	19	13	22.	22	8
3.	23	18	23.	12	45
4.	11	15	24.	2	9
5.	30	21	25.	12	15
6.	8	7	26.	17	23
7.	1	2	27.	8	7
8.	54	42	28.	11	24
9.	22	30	29.	16	19
10.	12	13	30.	12	6
11.	21	21	31.	43	17
12.	12	13	32.	16	43
13.	2	11	33.	40	22
14.	26	37	34.	9	12
15.	14	11	35.	10	10
16.	22	16	36.	43	42
17.	16	2	37.	30	30
18.	26	28	38.	18	17
19.	6	14	39.	17	18
20.	27	29	40.	20	17

Table VI.-
 Test-Retest Scores on Leach's Line Test^a
 Control Group

	1st Testing	2nd Testing		1st Testing	2nd Testing
1.	3	3	17.	9	9
2.	3	1	18.	7	8
3.	2	1	19.	7	11
4.	1	3	20.	5	4
5.	1	2	21.	4	3
6.	4	3	22.	2	2
7.	1	7	23.	1	1
8.	1	2	24.	1	1
9.	3	1	25.	9	7
10.	2	1	26.	4	2
11.	2	4	27.	7	3
12.	2	1	28.	2	1
13.	5	4	29.	6	4
14.	9	8	30.	5	1
15.	13	10	31.	3	5
16.	5	2	32.	1	5

^a One has been added to all scores to eliminate working with zeros.

APPENDIX 3

ABSTRACT OF
The Effects of Failure Stress on Perceptual Performance
in Conformers and Independents

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ABSTRACT OF

The Effects of Failure Stress on Perceptual Performance in Conformers and Independents¹

In order to initiate a systematic series of investigations on relationships between motivation and perception, two assumptions of the directive state theory of perception were selected by following Postman and Bruner's guide for perceptual research, and delimited for purposes of the present study. These two assumptions are:

1. Failure experiences are associated with the perceiving of objects and tend to influence perception.
2. Differences in particular personality variables tend to differentially affect perception.

In delimiting these two assumptions, the following specific experimental hypotheses were formulated in null form which bear directly on the two assumptions stated above:

1. There will be no significant differences in perceptual performance between individuals who are submitted to failure stress, and those who are not.
2. Under failure stress there will be no significant differences in perceptual performance between conformers and independents.

¹ James N. Leubor, doctoral thesis presented to the School of Psychology and Education of the University of Ottawa, Ontario, June 1963, ix-103 p.

A pilot study was instigated to arrive at realistically stressful tasks and instructions, and post-experimental interviews helped assess the effects of these tasks which resulted in the experiencing of strong feelings of failure by almost all subjects in the experimental group.

A behavioral sample of different degrees of conformity among eighty female student nurses was obtained, and failure stress was administered to forty subjects who differed in amount of conformity, and no failure stress to the forty in the control group who had a similar distribution of conformity scores. All subjects performed on a perceptual task consisting of simple non-ambiguous stimuli.

Results supported the first assumption of the directive state theory of perception but not the second. These results were discussed in some detail along with recommendations for future research.