ANXIETY AS A FUNCTION OF TASK PERFORMANCE FEEDBACK AND INTROVERSION-EXTROVERSION

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CHAPTER I

INTRODUCTION

In contrast to early research in education and psychology, present day experimentation is attempting to focus on organismic variables. These variables may either enhance or interfere with the effects that the manipulations of stimulus variables have on the learning process. This change has resulted from the general recognition that individual differences do exert an undertermined influence on the responses given by individuals in the same stimulus situations. For those who are concerned with facilitating the individual learning process, scientific investigation must now be directed toward determining the characteristics which interact with various teaching variables.

The intent of this investigation was to determine the effect that various types of feedback information have upon students' anxiety levels. The kind of feedback information seems to be crucial in determining one's reaction to his performance. Learning theory, in part supported by empirical evidence, suggests that knowledge of results following termination of performance is necessary for subsequent modification of the learning process and for future facilitation of appropriate task performance (Baker, 1960). Not only is feedback necessary for modification of task performance, but the type of feedback seems to have an effect on the subject's anxiety level. It is known, for instance, that anxious students who receive negative feed-

back do poorly in future task performance (Sarason and Mandler, 1952). Little is known, however, about various types of feedback information and its effect upon individual student characteristics.

Students characterized as introverts and extroverts are known to exhibit unique patterns of academic performance in the classroom (Lynn and Gordon, 1961; Estrabrook and Sommer, 1960). Determining reactions to the results of their performance would thus seem to have implications for teachers in facilitating the learning process. Therefore, this study attempts to explore anxiety levels relative to introverts and extroverts and types of feedback (see Appendix E).

Contrary to common belief, introversion and extroversion as popular terms did not originate with Carl Jung (1923); nevertheless, much of their current usage can be attributed to him. Eysenck (1965) for example, notes that the terms were in use prior to Jung's book on psychological types. Although Eysenck derived much of his theory of introversion-extroversion from Jung, he was also influenced by Hull (1952) and Pavlov (1927). Much of Eysenck's approach to personality was derived through factor analytic techniques and criterion analysis (Eysenck, 1952). As a consequence, Eysenck, has stimulated research in learning, motivation, perception, and motor behaviorbased on his personality theory of introversion-extroversion (1947, 1952, 1953, 1957).

Although attempts have been made to relate the introversion-extroversion concepts to the learning process in an educational setting, no attempt has been made to focus on the type of task feedback and its effect on anxiety. Therefore, this study has attempted to focus on the effects that various types of feedback (positive,

negative or no feedback) might have on the anxiety levels of persons identified as introverts and extroverts.

In the following chapter, Eysenck's theory on introversion-extroversion has been explored together with investigations concerning the basic behavioral differences between the two orientations.

CHAPTER II

REVIEW OF THE LITERATURE

In order to clarify the behavioral differences between introverts-extroverts, a brief synopsis of Eysenck's theory is presented. This presentation is followed by a review of empirical investigations on the characteristics of these two personality types.

Eysenck has postulated that there are constitutional differences between the inherited aspects of personality or genotypes of introverts and extroverts. These differences are amenable to modification by the environment and are considered crucial to the introversion-extroversion dimension. The phenotype, or the observable personality, results from the interaction of the genotype and the environment. The genotype, however, is in part responsible for differences in cortical activity of the brain. Following Pavlov (1927) and Hull (1952), Eysenck (1957) hypothesizes that introverts and extroverts differ in the speed at which cortical excitation and inhibition are produced and dissipated.

The excitation-inhibition dimension falls on a continuum with individuals at the extremes differing markedly in personality. Those in whom excitatory potentials develop slowly and weakly, and in whom reactive inhibition develops quickly and dissipates slowly, are likely to develop extroverted patterns of behavior. In contrast, there are those individuals in whom excitatory potentials develop quickly and in whom reactive inhibition develops slowly, thus facilitating learning.

These individuals are, therefore, likely to develop introverted patterns of behavior. Eysenck (1965) hypothesized that because of these presumed physiological differences, introverts and extroverts differ in a large number of behavioral characteristics. He suggested, for example, that extroverts tend to be sociable, less persistent on a variety of tasks, and easily bored. Introverts, on the other hand, are quiet, persistent, and less sociable (Eysenck, 1962).

The following review of literature is divided into three sections: The first describes the role of conditioning as it applies to the introversion-extroversion dimension; the second describes the role of inhibition as it applies to introversion-extroversion; the third discusses educational differences between introverts-extroverts and anxiety in academic situations.

The Role of Conditioning

According to Eysenck's theory (1952), introverts are expected to condition more rapidly and lastingly than extroverts. Relevant experiments cited in this area have to do with eye-lid and verbal conditioning. Eysenck (1959), Sarason (1958), and Costello (1967), for example, found that subjects identified as introverts were able to use a high frequency of certain words with simple reinforcement. Further support of the rapid conditionability of introverts comes from Spence and Spence (1964). In their investigation, a typical eyelid conditioning paradigm was used. The results suggested that introverts condition more rapidly than extroverts. The results of other investigations, however, conflicted with the above findings. Laungani (1968) for example found no significant statistical difference in verbal

conditioning between introverted and extroverted secondary school children. Similarly, Goodstein (1967) with verbal conditioning, and Piers and Kirchner (1969) with eyelid conditioning investigations found that there was no difference in the conditionability of introverts and extroverts.

Considering the results of these conditioning experiments and their educational implications, some enlightening behavioral patterns for introverts and extroverts become apparent. Research suggests, for example, that extroverts have higher cheating rates in school than introverts (Keehn, 1956), and that extroverts are more resistent to learning phobias than introverts. That is, due to their poor conditioning tendencies, extroverted children are more resistent to developing exaggerated fears and phobias. Introverts, however, are more susceptible to phobias which results from their greater tendency to form conditioned emotional responses. The same reasoning holds true for cheating rates in school. That is, extroverts tend towards anti-social behavior which results from low conditionability. Furthermore, extroverted children generally fight, swear, and are disobedient. In contrast, introverts tend to be seclusive, sensitive, and nervous (Eysenck, 1952). This suggests, perhaps, that extroverts are undersocialized. That is, they do not condition well relative to society's demands. For use in this context, oversocialization (as opposed to undersocialization) refers to the high rate of compliance to the demands of society and the attention given its ethical values.

The Role of Inhibition

Eysenck (1957) identifies two types of inhibition - temporal and

spatial. The former, which is the concern of this investigation, is crucial in its effect on conditioning and task performance of introverts and extroverts. Briefly stated, spatial inhibition is similar to Pavlov's external inhibition; it is exemplified in performance decrement by some other form of action occurring simultaneously and resulting in distractions. That is, the distraction (external inhibition) interferes with ongoing performance. More important, however, is temporal inhibition which is similar to Pavlov's internal inhibition and Hull's reactive inhibition. This type of inhibition refers to a performance decrement resulting from mass practice. The rate of the accumulation of inhibition is one of the primary qualities which differentiates introverts from extroverts. It is expected, according to theory, that inhibition grows slower in introverts while the reverse is true for extroverts. For example, extroverts accumulate inhibition more quickly while performing on a task than introverts.

Eysenck's theory postulated that extroverts not only accumulate reactive inhibition rapidly, but dissipate it slowly (Eysenck, 1957). Perceptual investigations by Eysenck support this theory. Using a visual task in which subjects were requested to view a spiral, Eysenck found as the extroverted individual fixated on the spiral, reactive inhibition was generated. Inhibition was measured on the basis of his lack of persistence in viewing the spiral and the length of time during which a retinal after-image of the spiral was experienced. Consequently, inhibition is produced in two ways; it is accumulated while perceiving the stimulus and it is generated in the production of the after-image. These two processes tend to make introverts experience more after-effect than extroverts. Using after-images, Lynn (1960)

supported Eysenck's findings that extroverts are characterized by the rapid accumulation of inhibition. For example, Lynn found a negative correlation with the length of the after-effect and extroversion. That is, extroverts were unable to produce after-effect of long duration due to the rapid accumulation of inhibition. Moreover, massed practice tended to interfere with after-images in extroverts, although a rest period tended to restore their ability to produce after images. For extroverts, rest periods allow the accumulated inhibition to dissipate thus removing interference for subsequent performance involving motor or sensory modalities.

In another typical investigation demonstrating inhibition, Star (1963) used the pursuit rotor and administered four periods of massed practice with intervening rest periods of ten minutes. The results again supported Eysenck's theory of inhibition. In this investigation, extrovert's pursuit rotor performance manifested a decrement after massed practice and a sharp increment in performance following an intervening rest period.

In an earlier investigation, however, Costello and Eysenck (1961) found that persistence on physical tasks for introverts and extroverts was different. Using a handynamometer, it was found that extroverts were able to persist for a significantly longer period of time. Apparently this contradicts the theory that extroverts build up inhibition more easily than introverts. However, Lynn and Eysenck (1961) found that introverts nevertheless persist better at mental tasks while extroverts persist better at physical tasks.

The role of inhibition may be generalized and applied to the quality of academic performance in such areas as grade point average

and various study habits. For example, Eysenck (1962) found that introverts are more likely to demonstrate greater academic achievement than extroverts. The higher academic achievement of introverts seems reasonable in light of their greater capacity for conditioning. Essentially, the review suggests that introverts accumulate inhibition at a slower rate than extroverts. Consequently, they seem to be able to persist at academic tasks for a longer period of time. Academic performance for the extroverts, on the other hand, is hindered by the rapid accumulation of inhibition.

Educational Differences Between Introverts-Extroverts and Anxiety in Academic Situations

Students appear to differ in their capacity for sustained and persistent work habits in the educational process. Lynn (1959) found two personality characteristics associated with academic achievement. Neuroticism, the first characteristic, is reflected in those individuals who are over-emotional and motivated by high drive levels. It appears that neuroticism has different effects on educational achievement: it may disorganize learning and performance in the face of stressful situations or it may facilitate learning by motivating individuals to maintain sustained work levels. The second characteristic, and perhaps the most important, is introversion. Lynn's study, along with investigations involving academic performance, has indicated that introverted students tend to be better achievers (Broadbent, 1958; Bendig, 1960; Estrabrook and Sommer, 1960). This could be attributed to their ability to persist on tasks for an extended period of time.

After identifying introverted and extroverted college students with the Maudsley Personality Inventory, Estrabrook and Sommer, (1960)

found distinct differences in study habits between the two groups. Introverted college students tended to study more on Friday nights than extroverts. When studying, extroverts preferred to sit on a couch or bed while introverts studied at a desk or table. Extroverts lacked persistence when studying, as evidenced by frequent study breaks, often in the company of others. With their lack of persistent study habits and frequent rest periods (probably to relieve inhibition), extroverts achieved considerably lower grade point averages than introverts.

Relative to educational achievement, Lynn and Gordon (1961) indicate that there are at least three major variables in which introverts differ from extroverts; speed of learning (with extroverts tending to form conditioned responses more slowly than introverts), work persistence (with introverts tending to be superior in tasks demanding sustained work or attention) and accuracy and speed (with extroverts tending to be quick and inaccurate while introverts tend to undertake tasks slowly and accurately).

Although extroverts and introverts are known to exhibit different patterns of persistence in the classroom, little is known about the effects of anxiety producing situations on their academic behavior. Evidence exists, however, that college students who rank high in test anxiety show increased tension, as measured by the Galvanic Skin Response (GSR), when given unsolvable tasks. Conversely Ss with low test anxiety do not show increased GSR levels when given unsolvable tasks (Kissel and Littig, 1962). Results of the same study noted that subjects can accurately report having emotional reactions during stressful testing conditions.

Another investigation (Smith, 1965) dealing with anxiety in an

academic situation made use of Sarason and Mandler's Test Anxiety Questionnaire. In the first group (neutral), no instructions were given to arouse the subjects, although they were requested to complete the TAQ. In the second group (aroused) subjects were requested to complete the Otis Intelligence Test as a means of arousal. Group two was then given the TAQ to assess the influence of the arousal situation. The results of the investigation indicated no differences in measured anxiety between the two groups. Smith consequently concluded that the TAQ does not reflect situational changes in a person's anxiety level.

In a similar study, however, psychology students were administered the Today version of the Affect Anxiety Check List (AACL) on five successive class meetings before the day of their first examination (Zuckerman and Biase, 1962). On the exam day, they were again administered the AACL and a self-rating sheet concerning their "worry" about the exam. The results revealed that those students who rated themselves as being worried on the exam day also demonstrated elevated AACL scores. In comparison, the group of students which rated themselves as being less worried demonstrated significantly lower AACL scores. In conclusion, the Kissel and Littig study suggests that academic anxiety can be measured physiologically. Similarly, the Zuckerman and Biase investigation indicates that academic anxiety may be effectively measured by employing a paper and pencil test.

Although it is evident that anxiety occurs in academic situations, its relationship with personality types remains problematical. Yet this relationship is crucial in the practical classroom situation for effective student-teacher interaction. Recognizing the need to clearly delineate this relationship, the present investigation focuses on

students characterized as introverts and extroverts subjected to anxiety arousing situations.

Statement of the Problem

Behavioral differences between introverts and extroverts are largely the consequence of rate of conditioning and the accumulation of inhibition. Extroverts, characterized by the rapid accumulation of task inhibition, are resistent to conditioning. Introverts, on the other hand, condition or learn more rapidly. Considering variations in conditionability it appears likely that introverts and extroverts differ with respect to anxiety levels when exposed to anxiety provoking situations.

The problem pursued in this investigation then was to determine the effects of anxiety levels on introverts and extroverts when given either positive, negative or no feedback regarding their performance on a prescribed task. The following null hypotheses were designed to investigate this problem.

Hypotheses

1. Differences in information given students concerning their performance on the Digit Symbol Test will not differentially influence their performance on an anxiety scale.
2. Differences on the introversion-extroversion dimension will not differentially influence performance on the anxiety scale.
3. The results of performance on the anxiety scale will not be significantly influenced by the interaction of the introversion-extroversion dimension and the type of feedback given students concerning their performances on the Digit Symbol Test.

CHAPTER III

METHOD

Subjects

The population consisted of 200 students enrolled in Educational Psychology courses from a Mid-Western University. Both male and female Ss participated on a voluntary basis. Ss were requested by the examiner to complete the Maudsley Personality Inventory (MPI) if willing to participate in a follow-up task situation. The Maudsley Personality Inventories were administered by the examiner, with the following instructions:

> THIS IS PART OF A RESEARCH PROJECT AT OKLAHOMA STATE UNIVERSITY AND THE RESULTS ARE CONFIDENTIAL SO FAR AS WHO MADE WHAT SCORE IS CONCERNED. YOU ARE ASKED TO COMPLETE THE MAUDSLEY PERSONALITY INVENTORY ONLY IF WILLING TO PARTICIPATE IN A FOLLOW-UP TASK SITUATION.

The sample population of 200 students was administered the Maudsley Personality Inventory during regular class time. Extroverts were identified as those students who scored in the highest 15% (N=30) of the total population tested with the MPI. Similarly, the 15% (N=30) with the lowest scores were identified as introverts. Students scoring between these extremes (N=140) were dropped from the study. The introverts and extroverts meeting these criteria were selected as Ss for participation in the investigation and were contacted by the examiner. The Mann-Whitney U Test was used to determine if there was a significant difference between the two groups.

Instruments

The following pages describe the Maudsley Personality Inventory, the Digit Symbol Test, and the Multiple Affect Adjective Check List in the same sequence in which they are used in this investigation.

Maudsley Personality Inventory (MPI)

In this investigation, the Maudsley Personality Inventory was used to identify the experimental populations of introverts and extroverts.

The MPI was designed by Eysenck (1962) to provide two relatively pure, pervasive measures of personality, introversion-extroversion, and neuroticism. The MPI is a 48 item, self-administered, trichotomous response questionnaire to which the subject reacts by indicating his answer as "true", "false", and "?". Out of the 48 items comprising the MPI, 24 are devoted to the E (extroversion) scale, and the remaining 24 for the N (neuroticism) scale. Administration takes less than 15 minutes, and scoring is performed by placing a stencil over the completed questionnaire. In scoring the MPI, two points are given for the keyed responses. Essentially this indicates that the E scale may be scored with a possible range of 0 to 48 points. One point is given for the "?" responses.

Split half reliability coefficients for the E scale (introversion-extroversion) range from .75 to .85 with the majority above 80. The split half reliabilities of the N (neuroticism) scale lie between .85 and .90 (Eysenck, 1962). Test-retest reliabilities on many samples were found to range from above .70 to .90 (Bartholomew and Marley, 1959; Knowles, 1960). In another investigation, Bendig (1959) reports

Kuder-Richardson reliabilities for various college student groups ranging in size from 33 to 100 students with reliabilities ranging from .73 to .90 for both scales.

S. G. B. Eysenck (1962) had judges identify people who they considered to be extreme extroverts. Members of a university psychology department acted as judges. They were instructed to nominate friends and acquaintances whose behavior seemed to be outstandingly high or low with respect to extroversion.

The identified groups were administered the MPI, and the mean extrovert scores for those nominated as being most extroverted were 18 points higher than those nominated most introverted. The validity for the MPI in discriminating between groups reached a significance level of beyond .001. The MPI has been demonstrated to correlate highly (r's ranged from .65 to .79) with other scales purporting to measure the same dimension such as the Heron Introversion Scale (Heron, 1956), and the ITPA Contact Personality Test that measures introversion and extroversion (Cattell, 1954).

The method of developing the MPI was factor analytic, and standardization is presented for various occupations as well as nationalities. Standardization date for the MPI are presented in the test manual (Eysenck, 1962). Representative of the standardization for the E scale (which measures introversion as well as extroversion) are the following: American University Students norm group, mean 28.7, SD 8.18; and English University Students 25.2, SD 10.2. The extroversion scale has been found to have negligible correlations with non-personality factors such as sex, age, and intelligence, (Eysenck, 1962).

From the above, it seems reasonable to use the MPI scale with some degree of assurance that it is a relatively reliable and valid instrument for discriminating between introverts and extroverts (see Appendix A).

Digit Symbol Test

The Digit Symbol Test was administered to the experimental subjects (extroverts and introverts), and the type of feedback was randomly assigned.

The Digit Symbol Test was constructed by Wechsler (1947) for the use with the Wechsler Adult Intelligence Scale. The digit symbol is one of eleven subtests comprising the whole WAIS. The subtest requires the examinee to associate specific symbols with certain other symbols. Nine digits, enumerated one through nine are associated with nine different symbols and the S is provided 90 spaces in which to make the appropriate associations. For purposes of this study, the Digit Symbol Test was used to aid in inducing anxiety. All groups were given 100 seconds in which to make as many associations as possible (see Appendix B).

Multiple Affect Adjective Check List (MAACL)

The MAACL was used to measure the anxiety levels of introverts and extroverts immediately following the experimental treatments.

The MAACL was designed by Zuckerman and Lubin (1965) and is a 132 item self-report inventory which provides measures of three negative affects: anxiety, depression, and hostility. The MAACL seldom requires more than five minutes to administer. Two forms of the test are

available, "General" and "Today" forms. Both use the same test items, only the latter requires the subjects to check questions asking how he feels "now" or "today" while the former has instructions for the subject to check words describing how he "generally" feels. By specifying the exact time referant for recording feelings, the test becomes more sensitive to changes in affect.

The anxiety scale of the MAACL was developed in response to a need for an instrument to measure changes in verbalized anxiety (Zuckerman, 1960). In completing the MAACL, the subject is required to make a check or not to make a check in a box next to each adjective. According to the Manual of the Multiple Affect Adjective Check List, all adjectives used in the check list are at or below the eighth grade reading level.

Scoring is done by placing three stencils individually over the completed questionnaire and getting a numerical score for the three negative affects. The MAACL was designed as a paper and pencil test which would be sensitive to changes in negative affect as evidenced by feeling anxiety, depression, and hostility. The anxiety scale of the Today Form of the MAACL (Zuckerman, 1960) has been administered on several consecutive college class periods prior to an examination. On each administration of the scale, anxiety increases were recorded. The anxiety increase was also greater for students who obtained low test grades on the examinations than for students who obtained high grades. Zuckerman (1960), Zuckerman and Biase (1962), and Zuckerman, Lubin, Vogel, and Valerius (1964) have also demonstrated that anxiety as measured with the Check List increases just prior to examinations. In addition, comparable changes in other measured negative affects such as hostility and depression have been demonstrated.

Age was not significantly correlated with the "General" or the "Today" anxiety scale of the MAACL in college students (Zuckerman, 1960). In a review of the literature, Zuckerman and Lubin (1965) found that sex differences are negligible and consequently concluded that combining male and female subjects is an acceptable procedure. In another unique study involving validation of the MAACL, Winter, Ferreira and Ransom (1963) established base line anxiety level scores of college students by administering the test to the students the day after reviewing a humorous film. In this case, the mean base line anxiety score was seven, and the mean anxiety score increased on the two days in which the students anticipated examinations to a statistically significant level of 11. Furthermore, in the Manual of the MAACL, Zuckerman and Lubin (1965) report a similar study in which the three scales of the MAACL were significantly elevated on days when the students were expecting an examination.

Although a relatively new test and used chiefly with examination anxiety, the MAACL has been used in perceptual isolation, drug and hypnotic studies (Zuckerman and Lubin, 1965). The Taylor Manifest Anxiety Scale (Taylor, 1953) has been shown to have significant correlations with clinically rated anxiety. According to Zuckerman and Lubin (1965), the TMAS (Taylor Manifest Anxiety Scale) and the MAACL have been shown to correlate (r's=.44 and .52) when the mean anxiety of the MAACL is taken over several different occasions.

Split-half or item intercorrelations for the anxiety scale of the MAACL showed correlations significant at the .01 level. For college students, the intercorrelations ranged from r's of .79 to .85 (Zuckerman, et al, 1964). The "Today" form of the MAACL shows high

internal reliability. Since subjects' moods vary from day to day, test-retest reliability, however, presents a different problem for the "Today" for of the MAACL. The "Today Form," used in this investigation, is considered by the authors to be sensitive to fluctuations in affect such as anxiety. The authors claim (Zucerkman and Lubin, 1965) that "a test attempting to measure affect should not be statistically reliable from day to day if it is truly sensitive to these individual fluctuations" (see Appendix C).

Procedure

The experimental subjects were separated into two groups according to their scores on the MPI. The 15% (N=30) who scored lowest on the E scale of the Maudsley Personality Inventory (Eysenck, 1962) constituted the introverts, and the subjects who scored in the highest 15% (N=30) on the MPI comprised the extroverts. With the use of a table of random numbers, the extroverts were assigned to the three experimental treatment situations. (The experimental treatment conditions consisted of positive, negative, or no feedback comments with regard to the subjects' performance on the Digit Symbol Test). However, as there were fewer males than females in the original MPI population, the male extroverts (N=12) were randomly assigned to the three experimental treatment conditions in an identical but separate process to the female subjects (N=18). Such a process insured a consistent ratio of male subjects to female subjects in the three experimental conditions. Thus, each condition had ten subjects consisting of four males and six females. The identical procedure was used for the introverts.

Subjects in the three conditions were taken into the experimental

situation in random order, i.e., no pattern such as treatment condition one, two, or three was used. Each subject was tested individually by the examiner who was seated across the desk from him. The following instructions were given:

> HERE (the E shows the Digit Symbol to the S(S)). LOOK AT THESE DIVIDED BOXES OR SQUARES AT THE TOP OF THE PAGE. NOTICE THAT EACH HAS A NUMBER ON THE UPPER PART AND MARK ON THE LOWER PART. NOW LOOK HERE (E points to the sample where the boxes have numbers, but the squares beneath have no marks). I WANT YOU TO PUT IN EACH OF THESE SQUARES THE MARKS THAT SHOULD GO THERE LIKE THE ONES AT THE TOP OF THE PAGE. DO YOU HAVE ANY QUESTIONS ABOUT WHAT YOU ARE TO DO? (E removes the Digit Symbol Test from the S(S)).
>
> THIS TEST CALLS FOR THE ABILITY TO ORGANIZE AND TRANSCRIBE MATERIAL AND HAS BEEN FOUND TO BE DIRECTLY RELATED TO INTELLECTUAL LEVEL. YOUR PERFORMANCE ON THE TASK WILL BE COMPARED TO OTHER COLLEGE STUDENTS, BUT THE RESULTS WILL NOT BE RELEASED TO YOUR TEACHER OR THE UNIVERSITY. YOU WILL BE ALLOWED 100 SECONDS TO WORK ON THE TASK. REMEMBER THIS TASK HAS BEEN FOUND TO BE DIRECTLY RELATED TO INTELLECTUAL LEVEL OF COLLEGE STUDENTS, SO WORK AS RAPIDLY AND ACCURATELY AS YOU CAN.
>
> DO YOU HAVE ANY QUESTIONS?

The examiner handed the subject the Digit Symbol Test and told him to start as soon as the examiner said, "BEGIN." A stop watch was used to monitor the 100 seconds time limit allowed for completion of the Digit Symbol Test. At the end of the allowed time, the examiner said, "STOP" and removed the task from the subject. After examining the subject's digit symbol performance, the examiner proceeded to give one of the three sets of feedback information to the subject. The type of feedback information (positive, negative, and no feedback information) was determined by previous randomization. The three feedback statements are given below:

1. POSITIVE FEEDBACK: YOUR PERFORMANCE AS INDICATED BY THE

OBTAINED SCORE ON THE DIGIT SYMBOL TEST WAS ABOVE THE STANDARDIZED POPULATION OF STUDENTS TESTED THROUGHOUT NUMEROUS COLLEGES AND UNIVERSITIES. THIS SUGGESTS YOUR INTELLECTUAL POTENTIAL OR CAPACITY IS MUCH GREATER THAN THAT OF THE AVERAGE COLLEGE STUDENT.

2. NEGATIVE FEEDBACK: YOUR PERFORMANCE AS INDICATED BY THE OBTAINED SCORE ON THE DIGIT SYMBOL TEST WAS BELOW THE STANDARDIZED POPULATION OF STUDENTS TESTED THROUGHOUT NUMEROUS COLLEGES AND UNIVERSITIES. THIS SUGGESTS YOUR INTELLECTUAL POTENTIAL OR CAPACITY IS MUCH LOWER THAN THAT OF THE AVERAGE COLLEGE STUDENT.

3. NO FEEDBACK: IT IS IMPOSSIBLE TO GIVE YOU INFORMATION RELATIVE TO YOUR PERFORMANCE ON THE DIGIT SYMBOL TEST AT THIS TIME, BECAUSE THE STANDARDIZATION OF THE UNIVERSITIES AND COLLEGES IS NOT YET COMPLETE. PERHAPS AT SOME LATER DATE YOU WILL BE INFORMED AS TO THE RESULTS OF YOUR PERFORMANCE.

Immediately after reading the feedback statements, the subjects were

handed the MAACL and the following instructions were read by the examiner:

> ON THIS SHEET YOU WILL FIND WORDS WHICH DESCRIBE DIFFERENT KINDS OF MOODS AND FEELINGS. MARK AN "X" IN THE BOXES BESIDE THE WORDS WHICH DESCRIBE HOW YOU FEEL RIGHT NOW REGARDING YOUR PERFORMANCE ON THE DIGIT SYMBOL TEST. SOME OF THE WORDS MAY SOUND ALIKE, BUT I WANT YOU TO CHECK ALL THE WORDS THAT DESCRIBE YOUR FEELINGS. WORK RAPIDLY.

When the subject had finished, the examiner thanked him and escorted him from the room. After completing all aspects of the study the subjects were informed that the comments regarding the interpretation of their Digit Symbol Test performance were given for experimental purposes only.

CHAPTER IV

RESULTS

Maudsley Personality Inventory Population

The results are presented in the following sequence. In order to test the three hypotheses effectively, it was necessary to determine if there were significant differences between the two orientations, introverts-extroverts and to explore the relationship of males to females.

High scoring subjects on the Maudsley Personality Inventory (MPI) are considered extroverts, whereas low scoring subjects are considered introverts (Eysenck, 1962). Thus, for the purposes of this study, subjects who scored in the top 15% and bottom 15% of the population tested on the MPI were identified as extroverts and introverts respectively. Table I focuses upon the obtained scores on the MPI for the 30 introverts and 30 extroverts. A large mean and range discrepancy exist between the two orientations. Eysenck (1962) suggests discrepancies such as these are favorable toward finding differences between the two orientations (I-E). The extrovert orientation had obtained mean scores on the MPI of 40.1 which is more than twice that of the mean score of introverts. A second factor in Table I is the similar dispersion of scores in the two orientations as revealed by a standard deviation of 4.01 and 4.04 for introverts and extroverts respectively.

TABLE I

RANGES, MEANS AND STANDARD DEVIATIONS OF THE MAUDSLEY PERSONALITY INVENTORY SCORES ON INTROVERTS AND EXTROVERTS

Orientations	N	Range	Mean	SD
Introverts	30	4-22	16.1	4.01
Extroverts	30	36-46	40.1	4.04

The Mann-Whitney U Test comparisons of the introvert and extrovert scores on the MPI are summarized in Table II. The scores of the extrovert orientation group were significantly higher than those of the introvert group ($P<.001$).

TABLE II

MANN-WHITNEY U COMPARISON OF INTROVERT-EXTROVERT MPI SCORES

Inter-Group Comparisons	U	P
Introverts VS. Extroverts	920	<.001 S

The ranges, means and standard deviations of the Maudsley Personality Inventory scores for male and female Ss of the two orientations (I-E) are presented in Tables III and IV. Table III reveals that the mean scores for the male and female extroverts are almost identical. Although the total number of male introverts (N=12) is less than the total female extroverts (N=18), the dispersion of male scores (SD=5.20) appears greater than that for the females (SD=3.22).

TABLE III

RANGES, MEANS AND STANDARD DEVIATIONS OF THE MAUDSLEY PERSONALITY INVENTORY (MPI) SCORES OF MALE AND FEMALE EXTROVERTS

Extroverts	N	Range	Mean	SD
Males	12	37-44	40.2	5.20
Females	18	36-46	40.0	3.22

In contrast to the variation of male extrovert scores, the same did not hold true for the male introverts, as is shown in Table IV. The range scores of male introverts on the Maudsley Personality Inventory ran from 4 to 27 and the females ranged from 7 to 21. However, the greater dispersion of scores occurred within the female introverts (SD=4.92) than in the male introverts (SD=2.52). Male and female introverts, as did male and female extroverts, showed almost identical mean scores on the MPI.

TABLE IV

RANGES, MEANS AND STANDARD DEVIATIONS OF THE MPI SCORES OF MALE AND FEMALE INTROVERTS

Introverts	N	Range	Mean	SD
Males	12	4-27	16.0	2.52
Females	18	7-21	16.1	4.92

Moreover, no significant sex differences were found within each

orientation (I-E) as indicated in Table V.

TABLE V

MANN-WHITNEY U COMPARISONS OF SEX DIFFERENCES WITHIN THE TWO ORIENTATIONS OF INTROVERTS-EXTROVERTS

Intro-Group Sex Comparisons	U	P
Introverts-Males and Females	109	>.05 NS
Extroverts-Males and Females	125	>.05 NS

Hypotheses Tested

The raw scores from the MAACL (anxiety scale) were found to range from 4 to 16. The variances within groups were found to be relatively homogeneous (the ratio of maximum variance to minimum variance yielded an F value of 4.74 which is not significant at the .05 level). Consequently, the results were analyzed by a 2x3 model I analysis of variance design. The analysis of the differences among the various treatment groups on the MAACL anxiety scale is summarized in Table VI.

Hypothesis I

Differences in information given students concerning their performance on the Digit Symbol Test will not differentially influence their performance on an anxiety scale.

Table VI should serve to clarify the following discussion. In this study the type of feedback given Ss significantly influenced the anxiety scores as measured by the MAACL. That is, there were

statistically significant anxiety level differences among the three treatment conditions, (eg., positive, negative, and no feedback groups) regardless of the subjects' extroversion-introversion orientation.

TABLE VI

SUMMARY TABLE FOR THE ANALYSIS OF VARIANCE FOR THE THREE HYPOTHESES

Source of Variation	ss	df	MS	F	
Treatments (Feedback)	290.233	2	145.117	45.822	**
Levels (Introversion-Extroversion)	45.067	1	45.067	14.230	**
Interaction (F x I-E)	71.433	2	35.717	11.278	**
Error	171.000	54	3.167		
Total	577.733	59			

** P<.001

As indicated by Table VI above, the null hypothesis was thus rejected at the P<.001 level of significance (F=45.82 with 2 and 54 df). Duncan's Multiple-Range Test was used to determine which of the three groups (positive, negative, and no feedback) differed significantly from each other. The Duncan's Multiple-Range Test (P<.01) revealed that negative feedback produced significantly greater mean anxiety than either positive or no feedback. Furthermore, there was no significant difference between the positive and no feedback means. Table VII serves to clarify this interpretation.

TABLE VII

MEAN SCORES OF VARIOUS TREATMENT GROUPS ON THE MAACL

	Positive Information	Negative Information	No Information	Combined
Extroverts	5.70	8.60	6.90	7.066
Introverts	6.20	13.40	6.80	8.800
Combined	5.95	11.00	6.85	7.933

Figure 1 presents a graphic comparison of the range and mean anxiety scores for introverts and extroverts following positive, negative and no feedback experimental treatment conditions.

Hypothesis II

Differences on the introversion-extroversion dimension will not differentially influence performance on the anxiety scale.

In this investigation, the particular orientation, extroversion or introversion, was significantly related to the anxiety scores. Disregarding, for example, the three experimental treatment conditions while looking at the two orientations alone, it was found that the introverts had significantly higher anxiety scores than did the extroverts. The second null hypothesis was rejected at the $P<.001$ level of significance ($f=14.23$ with 1 and 54 df). See Table VI, page 27.

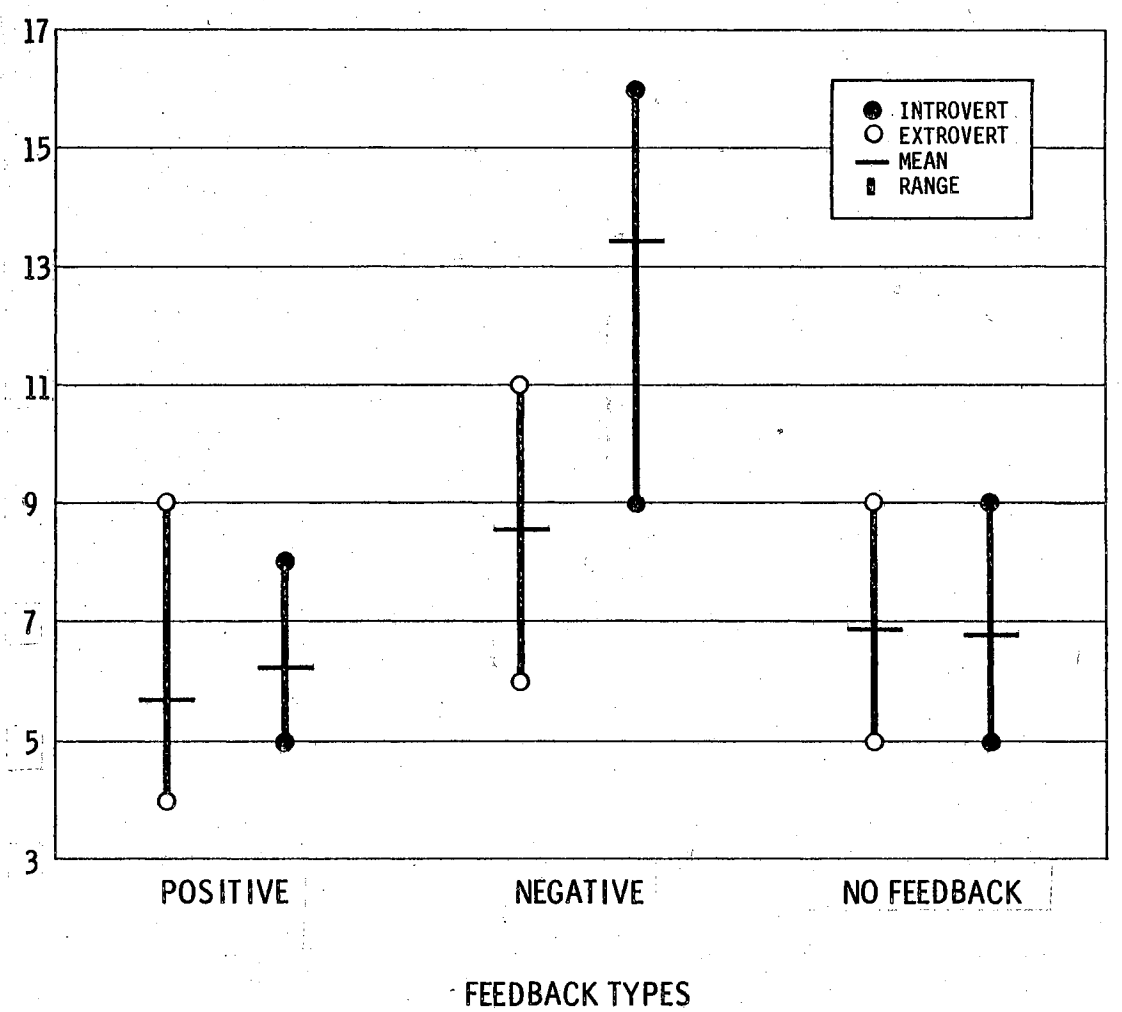

Figure 1. Comparisons of the Mean and Range MAACL Anxiety Scores for Introverts and Extroverts Following the Three Treatment Conditions; Positive Feedback, Negative Feedback and No Feedback

Hypothesis III

The results of performance on the anxiety scale will not be significantly influenced by the interaction of the extroversion-introversion dimension and the type of feedback given students concerning their performance on the Digit Symbol Test.

As is shown in Table VI, page 27, the third null hypothesis was rejected at the $P<.001$ level of significance ($f=11.27$ with 2 and 54 df). The feedback given Ss significantly interacted with the type of orientation (extroversion or introversion) to help shape the scores made on the anxiety scale. Furthermore, analysis of simple interactive effects revealed that the significant interaction with introversion-extroversion was between negative and positive feedback ($p<.001$) and between negative and no feedback ($p<.001$). Thus the effect on the anxiety measure exerted by introverts and extroverts was dependent on the differences in the type of feedback given. More specifically, introverts given negative feedback demonstrated significantly higher anxiety scores than did extroverts given negative feedback ($p<.001$). Moreover, no significant differences were found between extroverts and introverts on positive or no feedback treatments. The interactive effect is graphically presented in Figure 2.

Raw scores for the anxiety scale of the MAACL are presented in Appendix D.

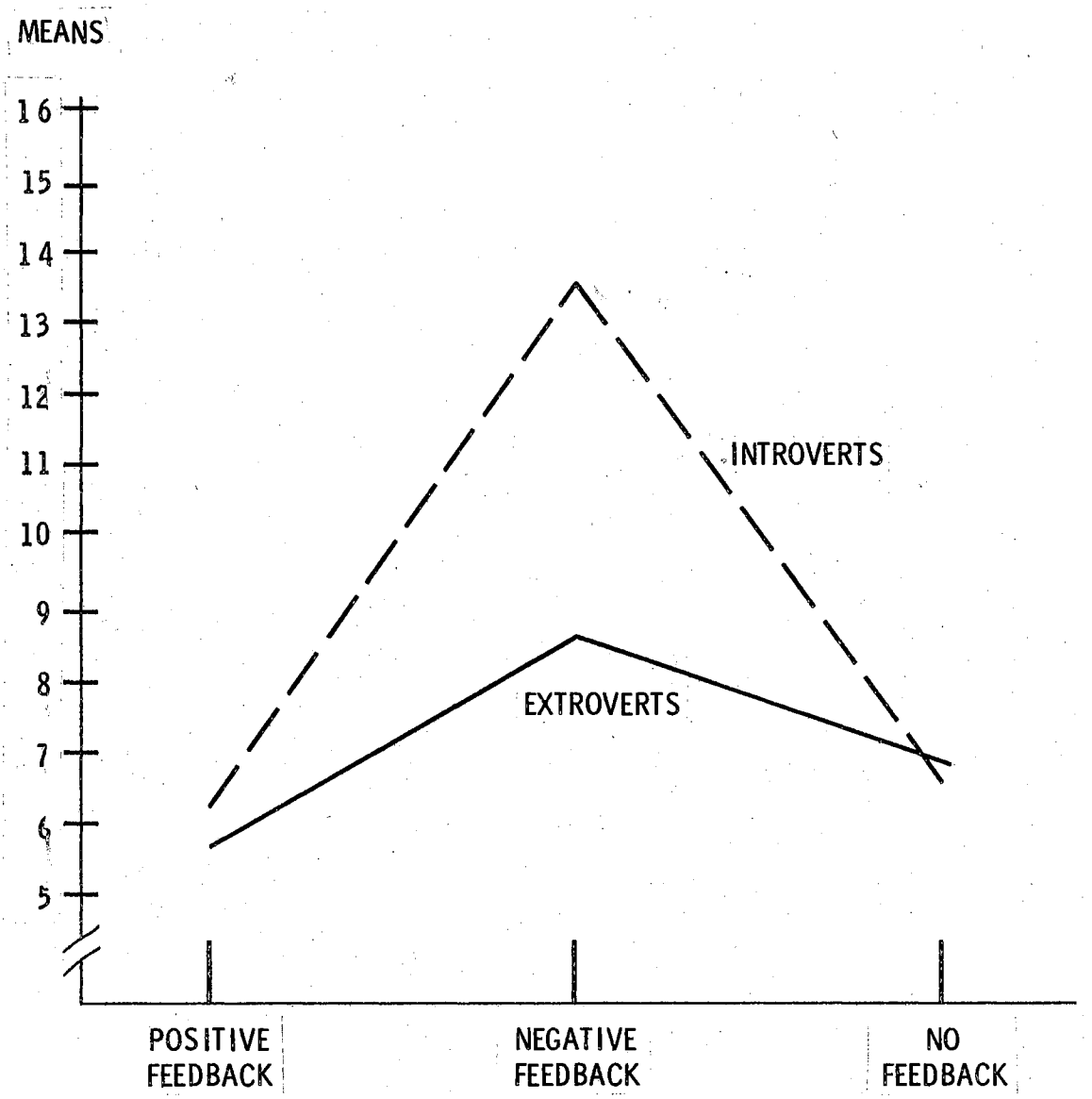

Figure 2. Effect of Introversion-Extroversion Dimension and Feedback Information on Scores Made on the MAACL

CHAPTER V

DISCUSSION

Main Experimental Results and General Applications

The purpose of the current study was to test the following null hypotheses: (1) positive, negative, or no feedback information will not significantly influence the anxiety levels of introverts and extroverts; (2) there will be no significant differences in the anxiety levels of introverts and the anxiety levels of extroverts following the three treatment conditions; and (3) there will be no significant interaction between the introversion-extroversion dimension and the three treatment conditions as indicated by anxiety scores.

The three null hypotheses were rejected at the .001 level. The rejection of the first null hypothesis indicated that there was a significant difference in anxiety levels among subjects given negative feedback, positive feedback, and no feedback. Secondly, it was found that there was a significant difference between the anxiety levels of extroverts and anxiety levels of introverts following the three feedback conditions; more specifically, the introverts had significantly higher anxiety scores than did the extroverts. Thirdly, there was a significant interaction between the introversion-extroversion dimension and the type of feedback given. Furthermore, it was found that the negative feedback groups had significantly higher mean anxiety scores than the positive and no feedback groups. That is, both the introverts

and extroverts given negative feedback evidenced significantly greater anxiety than did introverts and extroverts given positive feedback or no feedback. This suggests that negative feedback given college students, whether introverts or extroverts, tends to produce more anxiety than when the same groups are given positive or no feedback.

Several additional comparsions were made. It was found that the introverts given negative feedback demonstrated significantly higher anxiety scores than did the extroverts given the same treatment. However, there were no significant differences found between extroverts and introverts on the positive and no feedback treatments.

Though one must be careful not to generalize the findings of this investigation beyond the limited population from which it was drawn, several implications are suggested. Teachers, for example, would do well to be aware of the consequences of negative feedback upon some of their students. Since students are known to experience elevated anxiety upon receiving negative feedback, it is likely that future performance becomes impaired as a consequence. It follows that it then becomes the task of the educator to arrange for successful learning experiences for all students. Students can then be positively influenced by feedback conducive to future performance.

Relation to Eysenck's Theory

The results of this study may be considered in the context of Eysenck's theory. The elevated anxiety levels of the negative feedback introvert group differed significantly from that of the negative feedback extrovert group. Specifically, it is this finding which has implications for Eysenck's theory of the rapid conditionability of

introverts based on the classical conditioning model.

In classical conditioning paradigms, it is the unconditioned stimulus which elicits the unconditioned response. It may be construed that the negative feedback in this study served as an unconditioned stimulus. Likewise, the unconditioned response might be identified as anxiety. Therefore, the unconditioned response of anxiety was elicited by the unconditioned stimulus, negative feedback. Consequently, since both an unconditioned stimulus and unconditioned response are identified, the design in this study may be considered, in part, a conditioning paradigm. Furthermore, as has been stated, some empirical research suggests that introverts condition more rapidly than extroverts. In light of the above, it is expected that introverts, in arousing situations, would manifest greater anxiety levels. This study, then, lends support for Eysenck's theory.

Suggestions for Further Research

Further research might employ other means of measuring anxiety as a dependent variable. For example, in replicating the experimental paradigm in this investigation, one could make use of a physiological measure of anxiety such as the GSR (Galvanic Skin Response) rather than a paper and pencil anxiety check list. The GSR could be used to assess anxiety immediately following feedback given to subjects. In addition, the GSR could be employed to monitor the duration of anxiety.

Although introverts given negative feedback reacted with greater anxiety levels than extroverts given identical feedback, it is not known if the elicited anxiety would perpetuate itself and interfere with future task performance. Further research, therefore, could focus on

the effects of aroused anxiety in introverts in relation to immediate and subsequent academic performance.

Limitations of the Study

Subjects of this investigation were not considered representative of the population in general. Specifically, the sample population consisted of extreme extroverted and introverted college students. Therefore, generalizations concerning types of feedback and their effects must be withheld until the study has been replicated with other samples. Considering that feedback was given directly following the task situation, and that anxiety levels were assessed immediately thereafter, only short term effects on the feedback situation could be assessed. In essence, this investigation concludes nothing about long term or lasting effects of anxiety on introverts and extroverts. This limitation has now become the domain of future experimentation.

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APPENDIX A

MAUDSLEY PERSONALITY INVENTORY

MAUDSLEY PERSONALITY INVENTORY

By H. J. Eysenck

Name_____ Age_____ Sex_____

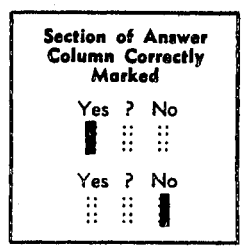
Grade or Occupation_____ Date_____

School or Firm_____ Marital Status_____

INSTRUCTIONS

Here are some questions regarding the way you behave, feel and act. After each question is a space for answering "Yes," "?" or "No."

Try and decide whether "Yes," or "No" represents your usual way of acting or feeling. Then blacken in the space under the column headed "Yes" or "No." If you find it absolutely impossible to decide, blacken in the space headed "?", but use this answer only occasionally.



Work quickly, and don't spend too much time over any question; we want your first reaction, not a long drawn-out thought process. The whole questionnaire shouldn't take more than a few minutes. Be sure not to omit any questions. Now turn the page over and go ahead. Work quickly, and remember to answer every question. There are no right or wrong answers, and this isn't a test of intelligence or ability, but simply a measure of the way you behave.

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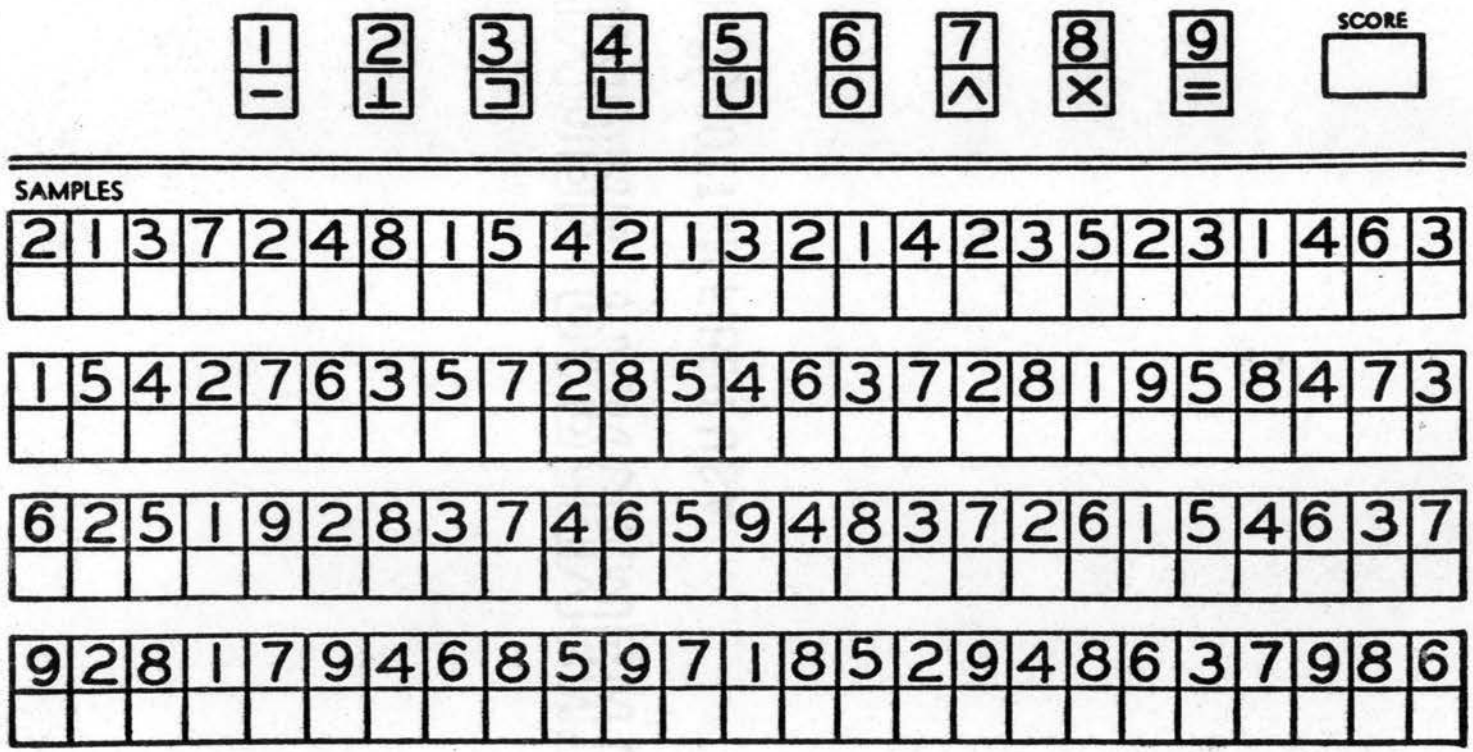
E N P

	Yes	?	No
1. Are you happiest when you get involved in some project that calls for rapid action?	⁝	⁝	⁝
2. Do you sometimes feel happy, sometimes depressed, without any apparent reason?	⁝	⁝	⁝
3. Does your mind often wander while you are trying to concentrate?	⁝	⁝	⁝
4. Do you usually take the initiative in making new friends?	⁝	⁝	⁝
5. Are you inclined to be quick and sure in your actions?	⁝	⁝	⁝
6. Are you frequently "lost in thought" even when supposed to be taking part in a conversation?	⁝	⁝	⁝
7. Are you sometimes bubbling over with energy and sometimes very sluggish?	⁝	⁝	⁝
8. Would you rate yourself as a lively individual?	⁝	⁝	⁝
9. Would you be very unhappy if you were prevented from making numerous social contacts?	⁝	⁝	⁝
10. Are you inclined to be moody?	⁝	⁝	⁝
11. Do you have frequent ups and downs in mood, either with or without apparent couse?	⁝	⁝	⁝
12. Do you prefer action to planning for action?	⁝	⁝	⁝
13. Are your daydreams frequently about things that con never come true?	⁝	⁝	⁝
14. Are you inclined to keep in the background on social occasions?	⁝	⁝	⁝
15. Are you inclined to ponder over your past?	⁝	⁝	⁝
16. Is it difficult to "lose yourself" even at a lively party?	⁝	⁝	⁝
17. Do you ever feel "just miserable" for no good reason at all?	⁝	⁝	⁝
18. Are you inclined to be overconscientious?	⁝	⁝	⁝
19. Do you often find that you have made up your mind too lote?	⁝	⁝	⁝
20. Do you like to mix socially with people?	⁝	⁝	⁝
21. Have you often lost sleep over your worries?	⁝	⁝	⁝
22. Are you inclined to limit your acquaintances to o select few?	⁝	⁝	⁝
23. Are you often troubled about feelings of guilt?	⁝	⁝	⁝
24. Do you ever take your work as if it were a matter of life or death?	⁝	⁝	⁝
25. Are your feelings rather easily hurt?	⁝	⁝	⁝
26. Do you like to have many sociol engagements?	⁝	⁝	⁝
27. Would you rate yourself as a tense or "highly-strung" individuol?	⁝	⁝	⁝
28. Do you generally prefer to take the lead in group activities?	⁝	⁝	⁝
29. Do you often experience periods of loneliness?	⁝	⁝	⁝
30. Are you inclined to be shy in the presence of the opposite sex?	⁝	⁝	⁝
31. Do you like to indulge in a reverie (daydreaming)?	⁝	⁝	⁝
32. Do you nearly always have a "reody answer" for remarks directed at you?	⁝	⁝	⁝
33. Do you spend much time in thinking over good times you have had in the post?	⁝	⁝	⁝
34. Would you rate yourself as a hoppy-go-lucky individual?	⁝	⁝	⁝
35. Have you often felt listless and tired for no good reason?	⁝	⁝	⁝
36. Are you inclined to keep quiet when out in a social group?	⁝	⁝	⁝
37. After a critical moment is over, do you usuolly think of something you should have done but failed to do?	⁝	⁝	⁝
38. Can you usuolly let yourself go and have a hiloriously good time at a gay party?	⁝	⁝	⁝
39. Do ideos run through your head so that you cannot sleep?	⁝	⁝	⁝
40. Do you like work that requires considerable attention?	⁝	⁝	⁝
41. Have you ever been bothered by having a useless thought come into your mind repeatedly?	⁝	⁝	⁝
42. Are you inclined to take your work casually, that is as a matter of course?	⁝	⁝	⁝
43. Are you touchy on various subjects?	⁝	⁝	⁝
44. Do other people regard you as a lively individual?	⁝	⁝	⁝
45. Do you often feel disgruntled?	⁝	⁝	⁝
46. Would you rate yourself as a talkative individual?	⁝	⁝	⁝
47. Do you have periods of such great restlessness that you cannot sit long in a chair?	⁝	⁝	⁝
48. Do you like to play pranks upon others?	⁝	⁝	⁝

APPENDIX B

DIGIT SYMBOL TEST

DIGIT SYMBOL TEST



APPENDIX C

MULTIPLE AFFECT ADJECTIVE CHECK LIST

MULTIPLE AFFECT ADJECTIVE CHECK LIST

Today Form

By

Marvin Zuckerman

and

Bernard Lubin

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A D H

1 ☐ active
2 ☐ adventurous
3 ☐ affectionate
4 ☐ afraid
5 ☐ agitated
6 ☐ agreeable
7 ☐ aggressive
8 ☐ alive
9 ☐ alone
10 ☐ amiable
11 ☐ amused
12 ☐ angry
13 ☐ annoyed
14 ☐ awful
15 ☐ bashful
16 ☐ bitter
17 ☐ blue
18 ☐ bored
19 ☐ calm
20 ☐ cautious
21 ☐ cheerful
22 ☐ clean
23 ☐ complaining
24 ☐ contented
25 ☐ contrary
26 ☐ cool
27 ☐ cooperative
28 ☐ critical
29 ☐ cross
30 ☐ cruel
31 ☐ daring
32 ☐ desperate
33 ☐ destroyed
34 ☐ devoted
35 ☐ disagreeable
36 ☐ discontented
37 ☐ discouraged
38 ☐ disgusted
39 ☐ displeased
40 ☐ energetic
41 ☐ enraged
42 ☐ enthusiastic
43 ☐ fearful
44 ☐ fine
45 ☐ fit
46 ☐ forlorn
47 ☐ frank
48 ☐ free
49 ☐ friendly
50 ☐ frightened
51 ☐ furious
52 ☐ gay
53 ☐ gentle
54 ☐ glad
55 ☐ gloomy
56 ☐ good
57 ☐ good-natured
58 ☐ grim
59 ☐ happy
60 ☐ healthy
61 ☐ hopeless
62 ☐ hostile
63 ☐ impatient
64 ☐ incensed
65 ☐ indignant
66 ☐ inspired
67 ☐ interested
68 ☐ irritated
69 ☐ jealous
70 ☐ joyful
71 ☐ kindly
72 ☐ lonely
73 ☐ lost
74 ☐ loving
75 ☐ low
76 ☐ lucky
77 ☐ mad
78 ☐ mean
79 ☐ meek
80 ☐ merry
81 ☐ mild
82 ☐ miserable
83 ☐ nervous
84 ☐ obliging
85 ☐ offended
86 ☐ outraged
87 ☐ panicky
88 ☐ patient
89 ☐ peaceful
90 ☐ pleased
91 ☐ pleasant
92 ☐ polite
93 ☐ powerful
94 ☐ quiet
95 ☐ reckless
96 ☐ rejected
97 ☐ rough
98 ☐ sad
99 ☐ safe
100 ☐ satisfied
101 ☐ secure
102 ☐ shaky
103 ☐ shy
104 ☐ soothed
105 ☐ steady
106 ☐ stubborn
107 ☐ stormy
108 ☐ strong
109 ☐ suffering
110 ☐ sullen
111 ☐ sunk
112 ☐ sympathetic
113 ☐ tame
114 ☐ tender
115 ☐ tense
116 ☐ terrible
117 ☐ terrified
118 ☐ thoughtful
119 ☐ timid
120 ☐ tormented
121 ☐ understanding
122 ☐ unhappy
123 ☐ unsociable
124 ☐ upset
125 ☐ vexed
126 ☐ warm
127 ☐ whole
128 ☐ wild
129 ☐ willful
130 ☐ wilted
131 ☐ worrying
132 ☐ young

APPENDIX D

RAW ANXIETY SCORES FROM THE MULTIPLE AFFECT ADJECTIVE CHECK LIST

Page 48 Follows p. 50

TABLE OF RAW SCORES

MULTIPLE AFFECT ADJECTIVE CHECK LIST

(Anxiety Scale)

	INTROVERTS		EXTROVERTS	
NEGATIVE	14	14	8	10
	16	13	7	11
	16	12	6	11
	16	9	6	10
	15	9	7	10
	$\bar{X}$ 13.4, SD 2.68		$\bar{X}$ 8.6, SD 2.01	
POSTTIVE	8	6	5	5
	8	5	5	4
	5	5	7	6
	7	5	5	4
	7	6	7	9
	$\bar{X}$ 6.2, SD 1.23		$\bar{X}$ 5.7, SD 1.57	
NO FEEDBACK	8	7	9	6
	5	7	9	8
	7	5	5	8
	9	7	6	5
	7	6	6	7
	$\bar{X}$ 6.8, SD 1.23		$\bar{X}$ 6.9, SD 1.52	

APPENDIX E

OPERATIONAL DEFINITIONS

OPERATIONAL DEFINITIONS

Introvert -- those 15% of students scoring lowest on the E scale of the Maudsley Personality Inventory.

Extrovert -- those 15% of students scoring highest on the E scale of the Maudsley Personality Inventory.

Anxiety levels -- students performance on the Multiple Affect Adjective Check List.

Positive feedback -- the verbal comment given to Ss stating that from the results of the Digit Symbol Test, it would appear that they had performed higher than did most college students.

Negative feedback -- the verbal comment given to Ss stating that from the results of the Digit Symbol Test, it would appear that they had performed lower than did most college students.

No feedback -- the verbal comment given to Ss stating that no information was available concerning their Digit Symbol Test performance.

VITA

Theodore Stanton Fremont

Candidate for the Degree of

Doctor of Education

Thesis: ANXIETY AS A FUNCTION OF TASK PERFORMANCE FEEDBACK AND INTROVERSION-EXTROVERSION

Major Field: Educational Psychology

Biographical:

Personal Data: Born in New York City, New York, June 6, 1941 the son of Regina and Stanton Fremont.

Education: Attended grade school in Garden City, New York; graduated from high school in 1961; received Bachelor of Arts degree from Nebraska Wesleyan University with a major in Psychology, in June, 1965; received Master of Science degree from Fort Hays Kansas State College with a major in Experimental Psychology in August, 1966; completed requirements for the Doctor of Education degree with a major in Educational Psychology in July, 1970.

Professional Experience: Served as psychologist at Larned State Hospital, Larned, Kansas from 1966 to 1967; served as a graduate teaching assistant in Educational Psychology at Oklahoma State University, from 1968 to 1969 and served an internship at the Wichita Guidance Center, from 1969 to 1970.

Professional Organizations: Member of the Association for the Psychophysiological Study of Sleep; Psi Chi; and an Associate Member of the American Psychological Association.