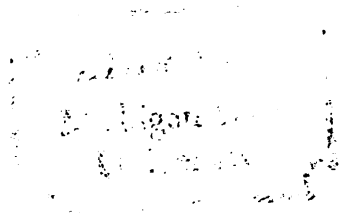
THE RELATIONSHIP BETWEEN PERSONALITY TYPE AND THE REDUCTION OF TEST ANXIETY

Thesis for the Degree of M. A.

MICHIGAN STATE UNIVERSITY

DOROTHY VAN BUREN

1975



ABSTRACT

THE RELATIONSHIP BETWEEN PERSONALITY TYPE AND THE REDUCTION OF TEST ANXIETY

By

Dorothy Van Buren

The hypothesis has been advanced that personality type affects the outcome of various conditioning procedures. In this study it was hypothesized that introverts would exhibit a significantly greater reduction in test anxiety than extraverts; that externals would exhibit a significantly greater reduction in test anxiety than internals; and that high anxious subjects would exhibit a significantly greater reduction in test anxiety than low anxious subjects, following participation in a counterconditioning treatment program for the reduction of test anxiety.

The subjects for this study were 25 female and 27 male undergraduates who were either volunteers that responded to notices in the campus newspaper for participation in a test anxiety reduction study or referrals from the university counseling center. The Maudsley Personality Inventory [Eysenck, 1962] was selected to measure introversion-extraversion, while the Rotter Internal-External Locus of Control

Scale [Rotter, 1966] was used to measure internal-external locus of control. The Test Anxiety Scale (TAS) [Sarason, 1957], the S-R Inventory of Anxiousness - "Exam" Form [Endler, Hunt and Rosenstein, 1962] and the Taylor Manifest Anxiety Scale (TMAS) [Taylor, 1953] were used to measure level of anxiety. The subjects were assigned to one of five experimental conditions: 1) systematic desensitization, 2) cue-controlled relaxation, 3) combined desensitization and cue-controlled relaxation, 4) attention-placebo, and 5) no treatment. The experimental design consisted of a repeated measures paradigm with assessments of anxiety occurring one week before and one week after the treatment program. Pre-treatment measures of the personality dimensions were also obtained. A total of five one-hour treatment sessions were held over a six-week period. Results for this investigation are based on data from the 30 treatment subjects assigned to either the systematic desensitization, the cue-controlled relaxation or the combined desensitization and cue-controlled relaxation condition.

The findings of this investigation failed to support the hypothesis that introverts would exhibit a significantly greater reduction in test anxiety than extraverts following treatment. The hypothesis that externals would exhibit a significantly greater reduction in test anxiety than internals following treatment was supported by results on the TAS and TMAS. The third hypothesis, that high anxious

subjects would exhibit a significantly greater reduction in test anxiety than low anxious subjects following treatment, was not supported. An additional finding was that the mean pre-treatment TMAS score of introverts was found to be significantly greater than that of extraverts.

Suggestions for future research include designing test anxiety reduction procedures which would be more effective for internals and examining whether subjects change regarding classification on the dimensions of introversion-extraversion and internal-external control following treatment for reduction of test anxiety.

Richard K. Russell

June 30, 1975

THE RELATIONSHIP BETWEEN PERSONALITY TYPE AND THE REDUCTION OF TEST ANXIETY

By

Dorothy Van Buren

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Psychology

1975

DEDICATION

To my parents and grandparents, who encouraged me and were supportive during the difficult times.

To Willie, a true friend who shared her wisdom and had faith in me.

ACKNOWLEDGMENTS

I would like to express my appreciation to Dr. Richard Russell, chairman of my thesis committee, for his assistance in completing this study. I would also like to thank Dr. Douglas Miller and Dr. Gordon Williams for serving as members of my thesis committee.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Personality type is a dimension which distinguishes one individual from another. A great deal of research has been conducted to explore the hypothesis that certain personality types respond differently to learning situations. In particular, the hypothesis has been advanced that personality type affects the outcome of various conditioning procedures.

Regarding the reduction of test anxiety through various conditioning and treatment procedures, the question arises as to whether subjects with a particular personality type are more successful in test anxiety reduction programs than others. In light of the above question, this study is an investigation of the relationship between the personality dimensions of introversion-extraversion and internal-external control and the differential effectiveness of treatment for the reduction of test anxiety among these personality types. The relationship between level of anxiety and the effectiveness of treatment for the reduction of test anxiety will also be investigated.

CHAPTER II

REVIEW OF LITERATURE

Introversion-Extraversion

Eysenck [1957] combined some concepts from the theories of Hull and Pavlov in hypothesizing that introverts condition better than extraverts. He described introverts as having strong excitatory tendency and weak inhibition, while extraverts have weak excitation and strong inhibition. The physiological make-up of introverts favors conditioned responses which form easily and extinguish with difficulty, while the reverse is true for the makeup of extraverts. Results from experiments in conditioning the eye-blink reflex were used to support his hypothesis. In a later work Eysenck [1966] noted that introverts condition better than extraverts only under certain conditions. He stated that the following parameters must be controlled in order to obtain positive results:

(1) Partial reinforcement favours introverts; 100 per cent reinforcement does not.

(2) Weak unconditioned stimuli favour introverts; strong UCS do not.

(3) Small CS-UCS intervals favour introverts; large CS-UCS intervals do not [Eysenck, 1973, p. 158].

Eysenck [Knapp, 1962] described extraverts and introverts in the following manner:

> The typical extravert is sociable, likes parties, has many friends, needs to have people to talk to, and does not like reading or studying by himself. He craves excitement, takes chances, often sticks his neck out, acts on the spur of the moment, and is generally an impulsive individual. He is fond of practical jokes, always has a ready answer, and generally likes change. He is carefree, easygoing, optimistic, and likes to 'laugh and be merry.' He prefers to keep moving and doing things, tends to be aggressive and may lose his temper quickly. His feelings are not kept under tight control, and he is not always a reliable person.
>
> The typical introvert is a quiet, retiring sort of person, introspective, fond of books rather than people; he is reserved and distant except to intimate friends. He tends to plan ahead, 'looks before he leaps,' and distrusts the impulse of the moment. He does not like excitement, takes matters of everyday life with proper seriousness, and likes a well-ordered mode of life. He keeps his feelings under close control, seldom behaves in an aggressive manner, and does not lose his temper easily. He is reliable, somewhat pessimistic and places great value on ethical standards [p. 4].

Relationship of Introversion-Extraversion to Conditionability

The results of some verbal conditioning experiments support Eysenck's hypothesis regarding the relationship between introversion-extraversion and conditionability. Costello [1967] investigated the relationship between the variables of introversion-extraversion and neuroticism, as measured by the Eysenck Personality Inventory, and the clinical conditioning of the connotative meanings of words. The results of his classical conditioning experiment supported Eysenck's hypothesis that conditioning correlates positively with introversion. He found no difference in

the conditionability of subjects scoring high or low on neuroticism.

Holmes [1967] investigated the relationship between speed of neural transmissions, conditionability (verbal) and personality. Speed of neural transmissions was inferred from speed of pupillary constriction and dilation. He found a significant relationship between speed of neural transmissions, rapid verbal conditioning and introversion as measured by self-report and peer ratings.

Investigations of the work and study behavior of introverts and extraverts also support the ideas hypothesized by Eysenck. Cooper [1967] studied the relationship between introversion-extraversion, work behavior, absenteeism and tolerance for monotonous tasks in an English factory. Using the Eysenck Personality Inventory, he found that extraversion correlated positively with work absences and negatively with length of service. He related these findings to individual differences in arousal which affected the degree of stimulation needed from the environment. Thus, extraverts, because of their low arousal level, required more stimulation than would be provided by a routine or monotonous factory job.

Estabrook and Sommer's [1966] findings in regard to the study habits of introverts and extraverts supported Cooper's conclusions. Using the Maudsley Personality Inventory and a study habits questionnaire, the researchers

found a significant difference in the study habits of the two groups. They found that extraverts, to a greater extent than introverts, wanted to spend study breaks with other people. It appeared that the extraverts needed some form of auditory and visual stimulation in order to maintain their interest, since they preferred to study in large study halls in the visual presence of others.

Relationship of Systematic Desensitization to Introversion-Extraversion

Wolpin and Raines [1966] explored the necessity of using either relaxation or a hierarchy in reducing anxiety and avoidance behavior in regard to snakes through deconditioning. The Maudsley Personality Inventory was used to examine whether there were correlations between it and success with the deconditioning procedure. The authors concluded "that the lower the extraversion score the more reasonable any of the procedures seemed to a given subject and the more they were willing to go along with us" [p. 36]. They felt that there "might be some value in pursuing the possibility that scores on the E scale may predict, more generally, willingness to comply or conform" [p. 36]. In addition, they suggested that the results were related to the fact that the introverted subjects may have had more practice with visual imagery since they live in fantasy more. The ability to produce strong, clear visual images

is essential to the effective functioning of the desensitization process.

Costello [1957] studied the differences between normals, dysthymics (neurotic introverts) and hysterics (neurotic extraverts) in their ability to control their visual imagery. He found a distinction between subjects "who are unable to control their imagery because their images are vivid and of an autonomous nature and those who cannot control their imagery because their images are weak and of an unstable nature" [p. 847]. The first type of imagery was associated with dysthymic disorders, while the second type was associated with hysteric disorders.

Weinstein [1968] investigated the effect of the personality dimension of introversion-extraversion, as measured by the Eysenck Personality Inventory, on the outcome of two counseling techniques used to reduce test anxiety among college students. The techniques employed were group systematic desensitization and structured group interaction. She hypothesized that introverts treated by group systematic desensitization would exhibit significantly less test anxiety than extraverts. The results did not support this hypothesis since group systematic desensitization was not more effective for introverts than extraverts.

Independence of Personality Type and Neuroticism

The question of whether or not neuroticism is independent of introversion-extraversion has been raised frequently in the literature. Eysenck [1947, 1952, 1953] has demonstrated that the two factors are orthogonal, and Franks' [1956] work supports his findings. Franks conducted a classical conditioning experiment (eye-blink reflex) with dysthymics, hysterics and normal subjects to investigate whether conditionability was related to neuroticism or introversion-extraversion. He concluded that "conditionability is related to introversion-extraversion and not to neuroticism, the extraverted subjects tending to condition much less well than the introverted ones" [p. 149]. His results also suggested that "manifest anxiety is related to strong conditionability only to the extent that anxious people are introverted" [p. 149].

Internal-External Locus of Control

The construct of locus of control is based upon Julian Rotter's social learning theory [1954]. According to the theory, "a reinforcement acts to strengthen an expectancy that a particular behavior or event will be followed by that reinforcement in the future" [Rotter, 1966, p. 2]. Locus of control refers to the extent to which individuals perceive the events in their lives as resulting from their own actions. Internally controlled

individuals perceive their life events as being the consequence of their own actions, while externally controlled individuals perceive these events as being unrelated to their own behavior and due to chance, fate or luck.

Much research on internal-external control has been generated by the belief that this variable is important in understanding the nature of the learning process in various situations, and that individuals differ in the extent to which they attribute personal control to the attainment of reward in identical situations.

Locus of Control and Resistance to Influence

One area which has been investigated in depth is the relationship between internal-external control (I-E) and resistance to influence attempts. Lefcourt [1972] points out that "persons who view themselves as responsible for their own fates should be more cautious about what they accept from others than should those who do not perceive themselves to be in active control of their fate" [p. 3].

In investigations conducted by Strickland [1970] and Getter [1966], a verbal conditioning paradigm was employed in which the locus of control was used to predict the response to verbal reinforcements. Strickland found a relationship between I-E and the denial of having been influenced by verbal reinforcements; internals denied influence more frequently than externals. In addition,

internals who were aware of the reinforcement contingency tended to exhibit less conditioning than internals who were unaware of the contingencies. Also, internals who were aware of the contingency tended to exhibit less conditioning than all external subjects regardless of whether or not they were aware of the contingencies. Getter found that the subjects most successfully conditioned were the most external. The "latent conditioners" (those subjects who did not exhibit the conditioned response until the extinction trial when reinforcement had ceased) were the internal group.

The results of the Strickland and Getter studies indicate that internals behave in a manner which is oppositional to the direction of influence. Biondo and MacDonald [1971] questioned the idea that internals are more likely to react against covert as opposed to overt influence conditions. They examined the effect of subtle versus overt influence attempts upon the tendencies of internals and externals to resist influence. They used three levels of influence (no, low and high) and found that externals did not respond differentially to the low and high levels of influence (they conformed under both levels of influence). There was no support for the hypothesis that internals would react against the low-influence message since they were negatively influenced by the high-influence message only.

The relationship between I-E and the susceptibility to influence appeared more complex in a study by Ritchie and Phares [1969]. They examined the influence of arguments attributed to high and low-status individuals upon the attitude changes of internals and externals regarding governmental budgeting. Externals exhibited more attitude change under conditions of high-prestige as opposed to low-prestige. They changed more than internals when both groups were influenced by a high-prestige source. Internals demonstrated some shift in the direction of the influencer's opinion, but they did not vary with influencer status. Neither the internals nor externals were consistently resistant or susceptible to the influence attempts.

Results of these studies indicate that under certain circumstances internals are more resistant to influence attempts than are externals. Externals appear more ready to accept the experimenter's directions and suggestions and are more influenced by opinions of high-status individuals.

The Relationship Between Locus of Control and Anxiety

Watson [1967] investigated the relationship between locus of control and anxiety, as measured by the Taylor Manifest Anxiety Scale (MA) and the Alpert-Haber Achievement Anxiety Test, for a large sample (N = 648). He found that the more external the subject, the more anxiety he

reported on both scales. According to Rotter [1966], Ware found a significant correlation between the I-E scale and the MA scale for a smaller group of subjects (N = 111). He also reported that Efran used a shortened form of the MA and of the I-E scale and found a 0.00 correlation (N = 114). Hersch and Scheibe [1967] found a positive significant correlation between I-E scores and anxiety as measured by the MMPI. Hersch and Scheibe's results support the idea that internality is "consistently associated with indexes of social adjustment and personal achievement" [p. 613].

The Relationship Between Conditionability and Anxiety

Spence [1964] reviewed the results of experiments on the relationship of eyelid conditioning and anxiety. He found that "the proportion of instances in which the conditioning performance of the high anxiety group was higher than that of the low anxiety group is much greater than one would expect by chance" [p. 133]. He concluded that high anxiety subjects condition better than low anxiety subjects.

Summary

A review of the literature indicates that introverts and extroverts differ in terms of conditionability, functioning of the physiological systems and willingness to conform. Likewise, internals and externals appear to be

dissimilar regarding resistance to influence. Thus, it is plausible that different personality types, as identified by the dimensions of introversion-extraversion and internal-external control, might respond differently to counterconditioning procedures for reducing test anxiety.

The literature suggests that introverts participating in a treatment program to reduce test anxiety will experience a greater reduction in test anxiety than extraverts, while externals will experience a greater reduction in test anxiety than internals. In addition, it is suggested that the most anxious subjects will experience the greatest reduction in test anxiety.

Hypotheses

Following participation in a counterconditioning treatment program for the reduction of test anxiety:

1. Introverts will exhibit a significantly greater reduction in test anxiety than extraverts.
2. Externals will exhibit a significantly greater reduction in test anxiety than internals.
3. High anxious subjects will exhibit a significantly greater reduction in test anxiety than low anxious subjects.

CHAPTER III

METHOD

This study was designed to investigate the relationship between personality type and the effectiveness of treatment to reduce test anxiety. The relationship between level of anxiety and the effectiveness of treatment was also examined. The independent variables included the personality dimensions of introversion-extraversion and internal-external control, while the dependent variables were the measures of anxiety.

Subjects

The subjects were 25 female and 27 male undergraduates who were either volunteers that responded to notices in the campus newspaper for participants in a test anxiety reduction study of referrals from the university counseling center. The subjects had been enrolled in the university for an average of 2.5 years.

Instruments

Pre-Treatment Battery

The pre-treatment battery consisted of five instruments:

1. The Maudsley Personality Inventory (MPI) [Eysenck, 1962] is a 48-item scale which measure two

variables, Neuroticism (N) and Extraversion (E) (Appendix A).

2. The Rotter Internal-External Locus of Control Scale [Rotter, 1966] is a 29-item, forced choice test which includes six filler items intended to make the purpose of the test somewhat ambiguous (Appendix B).
3. The Test Anxiety Scale (TAS) [Sarason, 1957] is a 21-item instrument containing questions relating to reactions and thoughts occurring before, during and after an examination (Appendix C).
4. The S-R Inventory of Anxiousness - "Exam" Form (S-R) [Endler, Hunt and Rosenstein, 1962] is a 14-item scale which contains three factors. These factors are distress, exhilaration and autonomic responses (Appendix D).
5. The Taylor Manifest Anxiety Scale (TMAS) [Taylor, 1953] contains 50 items. These items were drawn from the Minnesota Multiphasic Personality Inventory and judged by clinicians to be indicative of manifest anxiety (Appendix E).

Post-Treatment Battery

At the completion of treatment, the TAS, the S-R and the TMAS were administered.

Procedure

The experimental design consisted of a repeated measures paradigm with assessments of anxiety occurring one week before and one week after the treatment program. All treatment subjects were seen in groups ranging in size from two to five subjects. A total of five one-hour treatment sessions were held over a six week period. Each subject had completed at least one final examination at the time of the post-treatment assessment.

Therapists

The four therapists for the investigation included three Ph.D. psychologists and one advanced graduate student. All the therapists had extensive experience with relaxation training, cue-controlled relaxation and systematic desensitization prior to participation in the study.

Treatments

Pre-treatment TAS scores were used to assign subjects by stratified blocks to one of five experimental conditions: systematic desensitization (SD), cue-controlled relaxation (CCR), combined SD and CCR, attention-placebo and no-treatment.

SD

This treatment program was modeled after the group SD procedures used by Paul and Shannon [1966]. The treatment consisted of three steps: training in progressive muscle relaxation [Bernstein and Borkovec, 1973], hierarchy

construction, and pairing of visualized hierarchy scenes with relaxation. Although a standard 12-item temporal-spatial hierarchy was used for all SD subjects, changes were made to meet the needs of the specific groups. The final hierarchies varied in length from 11 to 14 items. As part of the treatment, all SD subjects were instructed to practice the relaxation training procedures on a daily basis between sessions.

Cue-Controlled Relaxation

The goal of this treatment technique was to enable the subjects to achieve relaxation in response to a self-produced cue. The program involved two steps: training in progressive muscle relaxation, followed by pairing of the relaxed state with a self-produced cue word ("calm"). The association of the cue word with relaxation was developed by having the relaxed subjects concentrate on their breathing while silently repeating the cue word with each exhalation. The therapist repeated the cue word aloud in synchrony with the subjects' exhalation two or three times, then the subjects continued for 15 more pairings. A second series of 20 cue word pairings was carried out following a 60-second interval in which the subjects were instructed to attend to general feelings of relaxation. The subjects were instructed to practice both the relaxation and cue word association procedures on a daily basis between treatment sessions.

Combined Cue-Controlled Relaxation and SD

Subjects in this condition received a combination of the cue-controlled and SD procedures outlined above. After relaxation induction, subjects received one set of 20 cue word pairings, followed by visualized scenes from the hierarchy. At the end of the desensitization period, another set of 20 cue word pairings was given before the relaxation was ended. Subjects in this condition were instructed to practice both the relaxation and cue word association procedures on a daily basis between sessions.

Attention-Placebo

The treatment rationale for subjects in this condition noted that anxiety over tests was a function of subconscious fears. To overcome the anxiety, a procedure referred to as "subconscious reconditioning" was employed. By means of a tachistoscope, messages were flashed on a screen at speeds below the subjects' threshold of awareness. The subjects were told that the slides contained "anti-fear messages" designed to directly counter-condition their anxiety. In fact, the messages consisted of groups of nonsense syllables which appeared as indistinguishable blurs when projected on the viewing screen. The subjects did not receive relaxation training, nor did they discuss studying or test-taking behaviors during the group meetings.

No-Treatment

Subjects in this condition were told that they could not be offered treatment during the term due to scheduling conflicts. They were promised treatment during the following term.

Classification Criteria for Personality Type and Anxiety Level

The following criteria were used in classifying subjects according to personality type and level of anxiety:

1. Classification as an introvert or extravert was determined by the E score on the MPI. Extraverts were those subjects scoring above the sample mean of 25.0 on the E variable, while introverts were those scoring below the mean. Eysenck [Knapp, 1962] reported a mean E score of 28.73 (N = 1,064) for a group of male and female American college students.
2. Internals were those scoring below the sample mean of 10.7, and externals were those scoring above the mean. Rotter [1966] reported a mean internal-external control score of 8.29 (N = 1,180) for a group of male and female American college students.
3. High anxious subjects were those scoring above the sample mean of 23.2 on the pre-treatment administration of the TMAS, while low anxious subjects were those scoring below the mean.

Data from the treatment and control subjects were combined (N = 52) in computing mean internal-external, introversion-extraversion and TMAS scores. However, results of this investigation were based on data collected only from the 30 treatment subjects assigned to either the systematic desensitization, the cue-controlled relaxation or the combined desensitization and cue-controlled relaxation condition. Attention-placebo subjects were classified as no-treatment subjects.

The independent group's t-test and the Pearson product moment correlation were used to analyze the data. Mean pre-treatment scores, mean post-treatment scores and mean change scores and corresponding standard deviations were computed for extraverts and introverts, internals and externals and high and low anxious subjects on the three dependent variables (TAS, S-R and TMAS). The t-test was used to examine whether there was a significant difference between the mean pre-treatment scores of extraverts and introverts, internals and externals, and high and low anxious subjects on the three dependent variables. The t-test was also used to examine whether there was a significant difference between the mean change scores of extraverts and introverts, internals and externals, and high and low anxious subjects on the three dependent variables. Pearson correlations were computed for all combinations of pairs of four measures; pre-TAS scores, pre-TMAS scores, introversion-extraversion and internal-external control.

CHAPTER IV

RESULTS

Results for this investigation are based on data from the 30 treatment subjects. The treatment subjects were divided into independent variable classifications according to scores on the following instruments:

1. The MPI - 12 extraverts and 18 introverts
2. The Rotter Scale - 15 internals and 15 externals
3. The TMAS - 14 high anxious and 14 low anxious subjects (TMAS scores were not obtained for two of the treatment subjects).

Table 1 presents the means, standard deviations and t-values for the difference between means for extraverts and introverts on the three dependent variables. There was no significant difference in the mean change scores of extraverts and introverts on the TAS, S-R or TMAS; however, a trend toward significance occurred on the TMAS ($p < .10$). The findings do not support hypothesis 1, that introverts would exhibit a significantly greater reduction in test anxiety than extraverts, following treatment.

Table 1 also indicates that the mean pre-TMAS score of introverts was significantly higher than that of extraverts. This indicates that the anxiety level of introverts as measured by the TMAS, was higher than that of extraverts.

Table 1. Means, standard deviations and t-values for the difference between means for extraverts and introverts on the three dependent variables.

	TAS			S-R			TMAS		
	Pre[a]	Post	Change[b]	Pre[a]	Post	Change[b]	Pre[a]	Post	Change[b]
Extraverts (N=12)									
Mean	10.9	8.1	-2.8	40.9	34.7	-6.2	14.6	14.3	-0.3
S.D.	5.0	5.5	4.7	9.5	6.9	6.6	7.7	7.9	7.6
Introverts (N=18)									
Mean	13.2	9.3	-3.9	43.8	38.1	-5.7	28.5	23.7	-4.8
S.D.	3.6	4.2	4.5	9.2	9.0	8.7	6.1	7.3	7.1
t-value	1.44		-0.62	0.81		0.20	5.37***		-1.60

[a] two-tailed t-test used for pre-treatment mean scores
[b] one-tailed t-test used for mean change scores

* $p < .05$
** $p < .01$
*** $p < .001$

Table 2 shows the means, standard deviations and t-values for the difference between means for internals and externals on the three dependent variables. Table 2 indicates that the mean change scores of externals were significantly greater than those of internals on the TAS and TMAS; however, change scores for the two groups did not differ significantly on the S-R. There was no significant difference in the pre-treatment scores of internals and externals on the TAS, S-R and TMAS. Hypothesis 2, that externals would exhibit a significnatly greater reduction in test anxiety than internals following treatment, was supported by results on the TAS and TMAS.

Table 3 indicates the means, standard deviations and t-values for the difference between means for high anxious and low anxious subjects on the three dependent variables. As shown on Table 3, there was a significant difference in the mean pre-treatment scores of the high and low anxious subjects on the TAS and TMAS. While the mean change score of the high anxious group was significantly greater than that of the low anxious group on the TMAS, there was no significant difference in the mean change scores of the two groups on the TAS and S-R. Thus, hypothesis 3, that high anxious subjects would exhibit a significantly greater reduction in test anxiety than low anxious subjects following treatment, was not supported.

Table 2. Means, standard deviations and t-values for the difference between means for internals and externals on the three dependent variables.

	TAS			S-R			TMAS		
	Pre[a]	Post	Change[b]	Pre[a]	Post	Change[b]	Pre[a]	Post	Change[b]
Internals (N=15)									
Mean	11.9	9.8	-2.1	44.0	39.1	-4.9	19.5	19.7	+0.2
S.D.	4.3	2.7	4.0	8.9	6.5	7.5	10.3	9.2	7.5
Externals (N=15)									
Mean	12.7	7.8	-4.9	41.1	34.1	-6.9	25.2	19.6	-5.6
S.D.	4.3	4.3	4.8	9.7	9.4	8.3	8.6	8.8	6.6
t-value	0.53		-1.73*	-0.86		-0.68	1.61		-2.18*

[a]two-tailed t-test used for pre-treatment mean scores
[b]one-tailed t-test used for mean change scores

*p < .05
**p < .01
***p < .001

Table 3. Means, standard deviations and t-values for the difference between means for high anxious and low anxious subjects on the three dependent variables.

	TAS			S-R			TMAS		
	Pre[a]	Post	Change[b]	Pre[a]	Post	Change[b]	Pre[a]	Post	Change[b]
High anxious (N=14)									
Mean	13.7	9.4	-4.3	44.2	37.0	-7.2	30.4	24.3	-6.1
S.D.	2.7	4.7	4.9	7.8	9.3	8.0	4.2	7.5	6.2
Low anxious (N=14)									
Mean	10.4	7.3	-3.1	39.6	35.1	-4.5	14.6	14.9	+0.3
S.D.	4.9	4.2	4.5	9.3	7.0	7.8	6.5	7.6	7.6
t-value	2.20*		-0.69	1.40		-0.90	7.59***		-2.44*

[a]two-tailed t-test used for pre-treatment mean scores
[b]one-tailed t-test used for mean change scores

*p < .05
**p < .01
***p < .001

Table 4 shows all possible combinations of correlations between pairs of four measures; pre-TAS scores, pre-TMAS scores, introversion-extraversion and internal-external control. Table 4 indicates that significant correlations were obtained for three pairs of variables. A significant positive correlation was obtained for the rleationship between pre-TMAS and pre-TAS scores, indicating a direct relationship between test anxiety and manifest anxiety, as measured by the instruments. A significant negative correlation was obtained for the relationship between pre-TMAS scores and introversion-extraversion. This indicated that level of anxiety as measured by pre-TMAS scores increases as extraversion decreases or that introverts had a higher level of anxiety as measured by the TMAS than did extraverts. This result is in agreement with the previous finding (Table 1) that the mean pre-TMAS score of introverts was significantly higher than that of extraverts. A significant positive correlation was obtained for the relationship between pre-TMAS scores and internal-external control scores, indicating that anxiety level as measured by the TMAS increases as the internal-external control score increases or moves toward the external end of the continuum. In addition, the negative correlation obtained for the relationship between pre-TAS scores and introversion-extraversion indicated a trend toward significance ($p < .10$). This result is in

Table 4. Correlations of the pre-TAS, pre-TMAS, introversion-extraversion and internal-external control measures.

	pre-TAS	pre-TMAS	Introversion-Extroversion	Internal-External Control
pre-TAS	--			
pre-TMAS	0.43*	--		
Introversion-Extroversion	-0.32	-0.73**	--	
Internal-External Control	0.09	0.48*	-0.19	--

agreement with the previous finding (Table 1) that the pre-treatment anxiety level of introverts (as measured by the TMAS) was significantly higher than that of extraverts.

Regarding the differential effectiveness of the various treatment programs, significant pre- to post-treatment changes were observed on most of the self-report scales within each treatment condition. For subjects in the SD treatment condition, significant pre- to post-treatment changes occurred on the TAS ($p < .01$), S-R ($p < .01$) and TMAS ($p < .05$). In the CCR treatment condition, significant pre- to post-treatment changes were observed on the TAS ($p < .05$) and S-R ($p < .05$). No significant change occurred on the

TMAS. For subjects in the attention-placebo control condition, significant pre- to post-treatment changes were observed on the TAS ($p < .05$) and S-R ($p < .01$). No significant change occurred on the TMAS. In the no-treatment control condition, no significant changes occured on the TAS, S-R or TMAS. None of the behavioral programs was found to be more effective than the attention-placebo control condition. The results of this investigation were based on data obtained from a study conducted by Russell, Stratoudakis, Miller and June [1975]. Refer to this study for a more complete description of the results.

Summary

The findings of this investigation did not support the hypothesis that introverts would exhibit a significantly greater reduction in test anxiety than extraverts following treatment; however, a trend toward significance occurred on the TMAS ($p < .10$). The hypotehsis that externals would exhibit a significantly greater reduction in test anxiety than internals following treatment was supported by results on the TAS and the TMAS. The third hypothesis, that high anxious subjects would exhibit a significantly greater reduction in test anxiety than low anxious subjects following treatment, was not supported. In addition to these findings, the mean pre-TMAS score of introverts was found to be significantly greater than that of extraverts. In agreement with this result was the correlation indicating that introverts had a higher level of anxiety as measured by the TMAS.

CHAPTER V

DISCUSSION

The purpose of this study was to investigate the relationship between the personality dimensions of introversion-extraversion and internal-external control and the differential effectiveness of treatment for the reduction of test anxiety among these personality types. The relationship between level of anxiety and the effectiveness of treatment for the reduction of test anxiety was also examined.

In terms of the personality dimension introversion-extraversion, there was a trend on the TMAS toward introverts exhibiting a greater reduction in test anxiety than extraverts following treatment. Although this trend occurred on one instrument, the results did not support Eysenck's [1957] theory that introverts condition better than extraverts. Eysenck [1957] described introverts as having strong excitatory tendency and weak inhibition, while extraverts have weak excitation and strong inhibition. The physiological make-up of introverts favors conditioned responses which form easily and extinguish with difficulty, while the reverse is true for the make-up of extraverts. If both the previously learned test anxious response and the

counterconditioned response either form easily and extinguish with difficulty or form with difficulty and extinguish easily, introverts would not condition better than extraverts since the combined effect of the two responses would be equal in introverts and extraverts. In addition, failure to support the hypothesis with significant results may be due to differences in the types of conditioning experiments upon which Eysenck's results and the results of this investigation were based. Eysenck supported his theory with results from experiments involving the conditioning of the eye-blink reflex. In contrast, the results of this study were founded on conditioning procedures designed to reduce test anxiety. Also, results which supported Eysenck's theory were based on conditioning procedures, such as those used in the verbal conditioning experiments conducted by Costello [1967] and Holmes [1967], which were different from those of this investigation.

In their investigation of the study behavior of introverts and extraverts, Estabrook and Sommer [1966] found that extraverts, to a greater extent than introverts, wanted to spend study breaks with other people. It appeared that the extraverts needed some form of auditory and visual stimulation in order to maintain their interest, since they preferred to study in large study halls in the visual presence of others. On the other hand, introverts tended to study alone. If extraverts perform better in situations

where they are in the presence of others and receive auditory and visual stimulation, as suggested by Weinstein [1968], the group treatment procedures used in this investigation may have favored extraverts and distracted the introverts. Thus, the extraverts may have received the stimulation necessary to counteract the effect of the low arousal level reported by Cooper [1967], and were able to experience a reduction in test anxiety which was equal to that of introverts.

An unexpected finding of this investigation was that the pre-treatment anxiety level of the introverts, as measured by the TMAS, was significantly higher than that of the extraverts. An explanation of this finding might be in Eysenck's [Knapp, 1962] description of the introvert. He noted that the introvert strives to keep his feelings under close control, rarely exhibits aggressive behavior, and does not lose his temper easily. It would seem that a person who uses a great deal of energy in keeping his feelings under control, particularly angry feelings, would have a high level of anxiety. In contrast, the extravert expresses his feelings freely and would have a lower anxiety level.

The hypothesis that externals would exhibit a significantly greater reduction in test anxiety than internals following treatment was supported by results on the TAS and TMAS. This result is in agreement with Strickland's

[1970] finding that internals exhibited less conditioning than the externals. Likewise, Getter [1966] found that the subjects most successfully conditioned were the most external. Since the results of the Strickland and Getter studies indicate that internals behave in a manner which is oppositional to the direction of influence, this would account for the internals' smaller reduction in test anxiety in this study.

An additional finding regarding the internal-external control dimension was that a positive significant correlation was obtained for the relationship between internal-external control and pre-TMAS scores (anxiety increased as externality increased). This was in agreement with Watson's [1967] findings. Also, as reported by Rotter [1966], Ware found a significant correlation between internal-external control and the TMAS.

Regarding the relationship between level of anxiety and reduction of test anxiety, the hypothesis that high anxious subjects would exhibit a significantly greater reduction in test anxiety than low anxious subjects, was not supported. However, high anxious subjects exhibited a significantly greater reduction in anxiety, as measured by the TMAS, than low anxious subjects. Although this result is in agreement with Spence's [1964] conclusion that high anxious subjects condition better than low anxious subjects, there is the possibility that the result might be partially attributed to the regression to the

mean effect. The subjects were divided into high and low anxious groups according to their pre-treatment TMAS scores. Thus, the regression to the mean effect would be expected on an instrument used to pre-select subjects.

In examining the results of this investigation according to the instruments used to measure anxiety, it appears that the TMAS was the most effective in measuring the reduction in anxiety level. The effectiveness of the TMAS was indicated by the fact that either significant results or a trend toward significance occurred on the TMAS for the variables of introversion-extraversion, internal-external control and level of anxiety. On the other hand, no significant results or trends toward significance were obtained for these variables on the S-R Inventory. This may be explainable by the fact that the S-R is a self-report indicator of physiological arousal, while the TMAS and TAS measure cognitive arousal. The treatment program may have been effective in reducing reported cognitive arousal but ineffective in reducing reported physiological arousal. Also, the S-R has fewer items than the TMAS and TAS and may have been less reliable in measuring anxiety. Of the instruments used in this study to measure the personality dimensions, the Rotter Scale appears to be the best predictor of the outcome of treatment to reduce test anxiety.

This study raises a number of possibilities for future research. The fact that externals exhibited a greater

reduction in test anxiety than internals indicates that it would be beneficial to internals to design test anxiety reduction procedures which would be more effective for them. Lefcourt [1972] has noted that internals are more cautious than externals in accepting offerings from others. If this is true, internals might condition better in a situation where they could exercise more control over the procedures in terms of deconditioning themselves. Externals and internals could be identified before treatment is begun and placed in the appropriate treatment group according to personality type. In comparing the performance of internals and externals in live and taped deconditioning sessions, a feasible hypothesis would be that internals would condition better than externals with taped sessions, while externals would condition better than internals in live sessions. In addition, it would be interesting to find out whether subjects change in regard to classification on the dimensions of introversion-extraversion and internal-external control following treatment for reduction of test anxiety. Also, an exploratory study could be conducted to identify other personality dimensions which relate to success of treatment in order to place subjects in the most beneficial treatment group.

In terms of identiying test anxious subjects and assessing the reduction in test anxiety during and following treatment, it might be advantageous to measure

physiological indicators of test anxiety such as heart-rate, pulse-rate, blood pressure and galvanic skin response. The use of these measures, in conjunction with self-report inventories, would increase the reliability of the assessment procedures.

Other recommendations include improvements in the experimental and statistical design of the study. By increasing the sample size, it would be possible to choose subjects who have more extreme scores on the personality dimensions and levels of anxiety. The results would be more reliable and possibly more supportive of the hypotheses. The regression to the mean effect could be minimized by using an instrument other than the TMAS, TAS or S-R to categorize subjects as either high or low anxious. However, this instrument would have to be closely related to these three instruments in terms of what it measures. In addition, using the median instead of mean score to divide the subjects into independent variable groups, would eliminate unequal divisions such as that which occurred for the introversion-extraversion dimension.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

A great deal of research has been conducted to explore the hypothesis that certain personality types respond differently to learning situations. The hypothesis has been postulated that personality type affects the outcome of various conditioning procedures, and that conditionability is related to level of anxiety.

According to Eysenck's theory, introverts condition better than extraverts. Several researchers have obtained results from studies of verbal conditioning, work behavior and study habits which support Eysenck's theory. The personality dimension internal-external control has been found to be related to verbal conditioning and resistance to influence attempts; externals condition better and are less resistant to influence attempts than internals. Also, it was found that high anxious subjects condition better than low anxious subjects.

This study was conducted to investigate the relationship between the personality dimensions of introversion-extraversion and internal-external control and the differential effectiveness of treatment for the reduction of test anxiety among these personality types. The relationship between

level of anxiety and the effectiveness of this treatment was also examined. It was hypothesized that:

1. Introverts would exhibit a significantly greater reduction in test anxiety than extraverts, following treatment for reduction of test anxiety.
2. Externals would exhibit a significantly greater reduction in test anxiety than internals, following treatment for reduction of test anxiety.
3. High anxious subjects would exhibit a significantly greater reduction in test anxiety than low anxious subjects, following treatment for reduction of test anxiety.

The subjects were 52 male and female college students who were either volunteers that responded to notices in the campus newspaper for participants in a test anxiety reduction study or referrals from the university counseling center.

The subjects were classified according to their scores on two personality inventories, and three instruments were used to assess anxiety. The subjects were assigned to one of five experimental conditions: 1) systematic desensitization, 2) cue-controlled relaxation, 3) combined desensitization and cue-controlled relaxation, 4) attention-placebo, and 5) no-treatment. All treatment subjects were seen in groups for five weeks. Self-report anxiety data were collected before and after treatment, and personality

data were collected before treatment. Results for this study were based on data collected from the 30 treatment subjects.

The following statements indicate the findings of this study:

1. Introverts did not exhibit a significantly greater reduction in test anxiety than extraverts following treatment, except for a trend in this direction on the TMAS.
2. Externals exhibited a significantly greater reduction in test anxiety than internals on the TAS and TMAS following treatment.
3. High anxious subjects did not exhibit a significantly greater reduction in test anxiety than low anxious subjects following treatment.
4. Introverts, as compared to extraverts, were found to have a significantly higher pre-treatment level of anxiety as measured by the TMAS.

Conclusions

In a counterconditioning treatment program for the reduction of test anxiety:

1. The results failed to demonstrate a significant difference in the conditionability of introverts and extraverts.
2. The results indicated that externals conditioned better than internals.

3. The results suggested that the measure of internal-external control is more highly related to the assessment of conditionability than is the measure of introversion-extraversion.
4. The results failed to demonstrate a significant difference in the conditionability of high and low anxious subjects.

REFERENCES

REFERENCES

Bernstein, D. A. and Borkovec, T. D. Progressive relaxation training: A manual for the helping professions. Champaign, Ill.: Research Press, 1973.

Biondo, J. and MacDonald, A. P. Internal-external locus of control and response to influence attempts. Journal of Personality, 1971, 39, 407-419.

Cooper, R. Extraversion and some aspects of work behavior. Personnel Psychology, 1967, 20, 45-57.

Costello, C. Control of visual imagery in mental disorder. Journal of Mental Science, 1957, 103, 840-849.

Costello, C. Extraversion, neuroticism and the classical conditioning of word meaning. Psychonomic Science, 1967, 8, 307-308.

Endler, N. S., Hunt, J. McV., and Rosenstein, A. J. An S-R inventory of anxiousness. Psychological Monographs, 1962, 76(Whole No. 536).

Estabrook, M. and Sommer, R. Study habits and introversion-extraversion. Psychological Reports, 1966, 19, 750.

Eysenck, H. J. Dimensions of personality. London: Routledge and Kegan Paul Ltd., 1947.

Eysenck, H. J. The scientific study of personality. New York: The MacMillan Company, 1952.

Eysenck, H. J. The structure of human personality. London: Methuen and Company Ltd., 1953.

Eysenck, H. J. The dynamics of anxiety and hysteria. London: Routledge and Kegan Paul, 1957.

Eysenck, H. J. The Maudsley Personality Inventory. San Diego: Educational and Industrial Testing Service, 1962.

Eysenck, H. J. Conditioning, introversion-extraversion and the strength of the nervous system. Proceedings of the 18th International Congress of Psychology, 9th Symposium, 1966.

Eysenck, H. J. The biological basis of personality. Springfield, Ill.: Charles C. Thomas, 1967.

Franks, C. Conditioning and personality: A study of normal and neurotic subjects. Journal of Abnormal and Social Psychology, 1956, 52, 143-150.

Getter, H. A personality determinant of verbal conditioning. Journal of Personality, 1966, 34, 397-405.

Gray, J. Strength of the nervous system, introversion-extraversion, conditionability and arousal. Behavior Research and Therapy, 1967, 5, 151-170.

Hersch, P. D. and Scheibe, K. E. Reliability and validity of internal-external control as a personality dimension. Journal of Consulting Psychology, 1967, 31, 609-613.

Holmes, D. Pupillary responses, conditioning and personality. Journal of Personality and Social Psychology, 1967, 5, 98-103.

Knapp, R. R. The Maudsley Personality Inventory Manual. San Diego: Educational and Industrial Testing Service, 1962.

Lefcourt, H. M. Recent developments in the study of locus of control. In B. A. Maher (Ed.), Progress in experimental personality research. New York: Academic Press, 1972.

Paul, G. L. and Shannon, D. T. Treatment of anxiety through systematic desensitization in therapy groups. Journal of Abnormal Psychology, 1966, 71, 124-135.

Ritchie, E. and Phares, E. J. Attitude change as a function of internal-external control and communicator status. Journal of Personality, 1969, 37, 429-443.

Rotter, J. B. Social learning and clinical psychology. Englewood Cliffs, N. J.: Prentice-Hall, 1954.

Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80 (Whole No. 609).

Russell, R. K., Stratoudakis, J. P., Miller, D. E., and June, L. N. A comparison between systematic desensitization, cue-controlled relaxation, and nonspecific treatment factors in the treatment of test anxiety. Unpublished manuscript, Michigan State University, 1975.

Sarason, I. G. Effect of anxiety and two kinds of motivating instruction on verbal learning. Journal of Abnormal and Social Psychology, 1957, 54, 166-171.

Spence, K. W. Anxiety (drive) level and performance in eyelid conditioning. Psychological Bulletin, 1964, 61, 129-139.

Strickland, B. R. Individual differences in verbal conditioning, extinction and awareness. Journal of Personality, 1970, 38, 364-378.

Taylor, J. A. A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 1953, 48, 285-290.

Watson, D. Relationship between locus of control and anxiety. Journal of Personality and Social Psychology, 1967, 6, 91-92.

Weinstein, F. The effect of personality type on systematic desensitization and structured group interaction in reducing test anxiety. Unpublished doctoral dissertation, Michigan State University, 1968.

Wolpin, M. and Raines, J. Visual imagery, expected roles and extinction as possible factors in reducing fear and avoidance behavior. Behavior Research and Therapy, 1966, 4, 25-37.

APPENDICES

APPENDIX A

The Maudsley Personality Inventory

(Personality Inventory)*

Name_____

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

Try and decide whether "Yes" or "No" represents your usual way of acting or feeling. Then circle the letter "Y" or "N" next to the question. If you find it absolutely impossible to decide, circle the "?", but use this answer only occasionally.

Work quickly, and don't spend too much time over any question; I 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 to the next page 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.

*title used on the MPI's administered to subjects

Y ? N 1. Are you happiest when you get involved in some project that calls for rapid action?

Y ? N 2. Do you sometimes feel happy, sometimes depressed, without any apparent reason?

Y ? N 3. Does your mind often wander while you are trying to concentrate?

Y ? N 4. Do you usually take the initiative in making new friends?

Y ? N 5. Are you inclined to be quick and sure in your actions?

Y ? N 6. Are you frequently "lost in thought" even when supposed to be taking part in a conversation?

Y ? N 7. Are you sometimes bubbling over with energy and sometimes very sluggish?

Y ? N 8. Would you rate yourself as a lively individual?

Y ? N 9. Would you be very unhappy if you were prevented from making numerous social contacts?

Y ? N 10. Are you inclined to be moody?

Y ? N 11. Do you have frequent ups and downs in mood, either with or without apparent cause?

Y ? N 12. Do you prefer action to planning for action?

Y ? N 13. Are your daydreams frequently about things that can never come true?

Y ? N 14. Are you inclined to keep in the background on social occasions?

Y ? N 15. Are you inclined to ponder over your past?

Y ? N 16. Is it difficult to "lose yourself" even at a lively party?

Y ? N 17. Do you ever feel "just miserable" for no good reason at all?

Y ? N 18. Are you inclined to be overconscientious?

Y ? N 19. Do you often find that you have made up your mind too late?

Y ? N 20. Do you like to mix socially with people?

Y ? N 21. Have you often lost sleep over your worries?

Y ? N 22. Are you inclined to limit your acquaintances to a select few?

Y ? N 23. Are you often troubled about feelings of guilt?

Y ? N 24. Do you ever take your work as if it were a matter of life or death?

Y ? N 25. Are your feelings rather easily hurt?

Y ? N 26. Do you like to have many social engagements?

Y ? N 27. Would you rate yourself as a tense or "highly-strung" individual?

Y ? N 28. Do you generally prefer to take the lead in group activities?

Y ? N 29. Do you often experience periods of loneliness?

Y ? N 30. Are you inclined to be shy in the presence of the opposite sex?

Y ? N 31. Do you like to indulge in a reverie (daydreaming)?

Y ? N 32. Do you nearly always have a "ready answer" for remarks directed at you?

Y ? N 33. Do you spend much time in thinking over good times you have had in the past?

Y ? N 34. Would you rate yourself as a happy-go-lucky individual?

Y ? N 35. Have you often felt listless and tired for no good reason?

Y ? N 36. Are you inclined to keep quiet when out in a social group?

Y ? N 37. After a critical moment is over, do you usually think of something you should have done but failed to do?

Y ? N 38. Can you usually let yourself go and have a hilariously good time at a gay party?

Y ? N 39. Do ideas run through your head so that you cannot sleep?

Y ? N 40. Do you like work that requires considerable attention?

Y ? N 41. Have you ever been bothered by having a useless thought come into your mind repeatedly?

Y ? N 42. Are you inclined to take your work casually, that is as a matter of course?

Y ? N 43. Are you touchy on various subjects?

Y ? N 44. Do other people regard you as a lively individual?

Y ? N 45. Do you often feel disgruntled?

Y ? N 46. Would you rate yourself as a talkative individual?

Y ? N 47. Do you have periods of such great restlessness that you cannot sit long in a chair?

Y ? N 48. Do you like to play pranks upon others?

APPENDIX B

The Rotter Internal-External Locus of Control Scale

(Social Reaction Inventory)*

I am interested in the way different people look at things which happen in our society. I have listed below 29 pairs of statements. You will probably agree more with one of the two statements than you will with the other one. Sometimes neither of the two statements will really say what you would like for it to say. If this happens, just choose the one which is closest to what you believe.

There are no right or wrong answers. Just choose the one which is closest to what you really believe, and circle the appropriate letter.

Go ahead and start. Remember to choose the one which is closest to what you really believe

****

1. A. Children get into trouble because their parents punish them too much.

   B. The trouble with most children nowadays is that their parents are too easy with them.

2. A. Many of the unhappy things in people's lives are partly due to bad luck.

   B. People's misfortunes result from the mistakes they make.

3. A. One of the major reasons why we have wars is because people don't take enough interest in politics.

   B. There will always be wars, no matter how hard people try to prevent them.

---

*Title used on the Rotter Scales administered to subjects.

4. A. In the long run people get the respect they deserve in this world.

   B. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. A. The idea that teachers are unfair to students is nonsense.

   B. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. A. Without the right breaks one cannot be an effective leader.

   B. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. A. No matter how hard you try some people just don't like you.

   B. People who can't get others to like them don't understand how to get along with others.

8. A. Heredity plays the major role in determining one's personality.

   B. It is one's experiences in life which determine what they're like.

9. A. I have often found that what is going to happen will happen.

   B. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. A. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.

    B. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. A. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

    B. Getting a good job depends mainly on being in the right place at the right time.

12. A. The average citizen can have an influence in government decisions.

    B. This world is run by the few people in power, and there is not much the little guy can do about it.

13. A. When I make plans, I am almost certain that I can make them work.

    B. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. A. There are certain people who are just no good.

    B. There is some good in everybody.

15. A. In my case getting what I want has little or nothing to do with luck.

    B. Many times we might just as well decide what to do by flipping a coin.

16. A. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

    B. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. A. As far as world affairs are concerned, most of us are victims of forces we can neither understand, nor control.

    B. By taking an active part in political and social affairs the people can control world events.

18. A. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    B. There really is no such thing as "luck."

19. A. One should always be willing to admit mistakes.

    B. It is usually best to cover up one's mistakes.

20. A. It is hard to know whether or not a person really likes you.

    B. How many friends you have depends upon how nice a person you are.

21. A. In the long run the bad things that happen to us are balanced by the good ones.

    B. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. A. With enough effort we can wipe out political corruption.

    B. It is difficult for people to have much control over the things politicians do in office.

23. A. Sometimes I can't understand how teachers arrive at the grades they give.

    B. There is a direct connection between how hard I study and the grades I get.

24. A. A good leader expects people to decide for themselves what they should do.

    B. A good leader makes it clear to everybody what their jobs are.

25. A. Many times I feel that I have little influence over the things that happen to me.

    B. It is impossible for me to believe that chance or luck plays an important role in my life.

26. A. People are lonely because they don't try to be friendly.

    B. There's not much use in trying too hard to please people, if they like you, they like you.

27. A. There is too much emphasis on athletics in high school.

    B. Team sports are an excellent way to build character.

28. A. What happens to me is my own doing.

    B. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. A. Most of the time I can't understand why politicians behave the way they do.

    B. In the long run the people are responsible for bad government on a national as well as on a local level.

APPENDIX C

The Test Anxiety Scale

DIRECTIONS: Read each statement and decide whether it is true or false as applied to you. If a statement is TRUE or MOSTLY TRUE, as applied to you, mark a "T" on the line to the right of the question. If a statement is FALSE or MOSTLY FALSE, as applied to you, mark an "F" on the line to the right of the question. Give your own opinion and answer all questions.

____ 1. I would be willing to stake my continuance in school on the outcome of a group intelligence test which is known to be reliable.

____ 2. While taking an important examination, I perspire a great deal.

____ 3. I get to feel very panicky when I have to take a surprise exam.

____ 4. I study longer and harder than other students.

____ 5. During tests, I find myself thinking of the consequences of failing.

____ 6. After important tests, I am frequently so upset that my stomach gets upset.

____ 7. If I could possibly avoid it, I would never want to take an intelligence test.

____ 8. While taking an important exam, I find myself thinking of how much brighter the other students are than I am.

____ 9. I freeze up on things like intelligence tests and final exams.

____ 10. If I were to take an intelligence test I would worry a great deal before taking it.

____ 11. During course examinations, I find myself thinking of things unrelated to the actual course material.

____ 12. During course examinations, I frequently get so nervous that I forget facts I really know.

____ 13. If I knew I was going to take an intelligence test, I would feel confident and relaxed beforehand.

____ 14. I usually get depressed after taking a test.

____ 15. Even though it serves no useful purpose, I spend a lot of time thinking of ways to avoid taking tests.

____ 16. I have an uneasy, upset feeling before taking a final examination.

____ 17. When taking a test, my emotional feelings do not interfere with my performance.

____ 18. Getting a good grade on one test doesn't seem to increase my confidence on the second.

____ 19. While taking an important test, I have, on occasion, noticed that my heart is beating very fast.

____ 20. After taking a test, I always feel I could have done better than I actually did.

____ 21. I sometimes feel that my heart is beating very fast during important tests.

APPENDIX D

The S-R Inventory of Anxiousness - "Exam" Form

Please circle the number that most closely approximate your reactions to the following situation.

YOU ARE ABOUT TO TAKE A FINAL EXAM:

1. Heart beats faster	not at all	1	2	3	4	5 very much
2. Get an "uneasy feeling"	not at all	1	2	3	4	5 very much
3. Emotions disrupt action	not at all	1	2	3	4	5 very much
4. Feel exhilarated and thrilled	not at all	1	2	3	4	5 very much
5. Want to avoid situation	not at all	1	2	3	4	5 very much
6. Perspire	not at all	1	2	3	4	5 very much
7. Need to urinate frequently	not at all	1	2	3	4	5 very much
8. Enjoy the challenge	not at all	1	2	3	4	5 very much
9. Mouth gets dry	not at all	1	2	3	4	5 very much
10. Become immobilized	not at all	1	2	3	4	5 very much
11. Get full feeling in stomach	not at all	1	2	3	4	5 very much
12. Seek experiences like this	not at all	1	2	3	4	5 very much
13. Have loose bowels	not at all	1	2	3	4	5 very much
14. Experience nausea	not at all	1	2	3	4	5 very much

APPENDIX E

The Taylor Manifest Anxiety Scale

(Personality Scale)*

This scale consists of numbered statements. Read each statement and decide whether it is true as applied to you or false as applied to you. You are to mark your answers by circling the letter "T" or "F" next to the question. If a statement is TRUE OR MOSTLY TRUE, as applied to you, circle the "T." If a statement is FALSE OR NOT USUALLY TRUE, as applied to you, circle the "F".

T F 1. My hands and feet are usually warm enough.

T F 2. I work under a great deal of tension.

T F 3. I have diarrhea once a month or more.

T F 4. I am very seldom troubled by constipation.

T F 5. I am troubled by attacks of nausea and vomiting.

T F 6. I have nightmares every few nights.

T F 7. I find it hard to keep my mind on a task or job.

T F 8. My sleep is fitful and disturbed.

T F 9. I wish I could be as happy as others seem to be.

T F 10. I am certainly lacking in self-confidence.

T F 11. I am happy most of the time.

T F 12. I have a great deal of stomach trouble.

T F 13. I certainly feel useless at times.

T F 14. I cry easily.

T F 15. I do not tire quickly.

T F 16. I frequently notice my hand shakes when I try to do something.

*Title used on the Taylor Scales administered to subjects.

T F 17. I have very few headaches.

T F 18. Sometimes, when embarrassed, I break out in a sweat which annoys me greatly.

T F 19. I frequently find myself worrying about something.

T F 20. I hardly ever notice my heart pounding and am seldom short of breath.

T F 21. I have periods of such great restlessness that I cannot sit long in a chair.

T F 22. I dream frequently about things that are best kept to myself.

T F 23. I believe I am no more nervous than most others.

T F 24. I sweat very easily even on cool days.

T F 25. I am entirely self-confident.

T F 26. I have very few fears compared to my friends.

T F 27. Life is a strain for me much of the time.

T F 28. I am more sensitive than most other people.

T F 29. I am easily embarrassed.

T F 30. I worry over money and business.

T F 31. I cannot keep my mind on one thing.

T F 32. I feel anxiety about something or someone almost all the time.

T F 33. Sometimes I become so excited that I find it hard to get to sleep.

T F 34. I have been afraid of things or people that I knew could not hurt me.

T F 35. I am inclined to take things hard.

T F 36. I am not unusually self-conscious.

T F 37. I have sometimes felt that difficulties were piling up so high that I could not overcome them.

T F 38. I am usually calm and not easily upset.

T F 39. At times I think I am no good at all.

T F 40. I feel hungry almost all the time.

T F 41. I worry quite a bit over possible misfortunes.

T F 42. It makes me nervous to have to wait.

T F 43. I have had periods in which I lost sleep over worry.

T F 44. I must admit that I have at times been worried beyond reason over something that really did not matter.

T F 45. I am a high-strung person.

T F 46. I practically never blush.

T F 47. I blush no more often than others.

T F 48. I am often afraid that I am going to blush.

T F 49. I shrink from facing a crisis or difficulty.

T F 50. I sometimes feel that I am about to go to pieces.