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Behavioral rigidity and manifest anxiety

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BEHAVIORAL RIGIDITY AND MANIFEST ANXIETY

A Thesis

Presented to the
Faculty of the Department of Psychology
University of the Pacific

In Partial Fulfillment
of the Requirement for the Degree

Master of Arts

by

Lawrence Allyn Scadden

This thesis, written and submitted by

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CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS USED

The purpose of the present research was to study the relationship of anxiety and behavioral rigidity in a sample of college-age Ss. The ability of an individual to adjust to environmental changes and stresses has received wide attention within the psychology of personality. The degree of an individual's flexibility or rigidity may influence the degree of adjustment to his environmental situation. Behavioral rigidity should not be thought of as a unitary trait, rather it should be thought to be composed of multiple factors and displayed in various areas of human behavior.

Little agreement has been reached concerning the function of behavioral rigidity. The theory has been proposed that behavioral rigidity functions as a defense against anxiety. Eriksen and Eisenstein (1952-1953, P. 386) spoke of rigidity as a defense against anxiety or as a result of defenses. Freud (1953, P. 116) said that anxiety will bring regression to behavior which has previously been employed in order to cope with the anxiety. Sullivan (1953, P. 113) in defining psychiatry as the study of communication between people, considered anxiety to be the ~~major disruptive block in inter-personal communication.~~

Maintenance of the rigid self-system would reduce the anxiety and enhance self esteem. Similar to Sullivan's views, Fromm (1941, P. 186) proposed that "automatic conforming behavior" was used by the individual to reduce his anxiety about isolation and insecurity.

Barclay (1961, P. 237) also spoke of rigidity functioning as a defense against anxiety. He stated that the individual learns responses which will reduce anxiety when present. Barclay assumed that no anxiety will be present when the individual is making the learned response. Inherent in this assumption is the difficulty of measuring the relationship between rigidity and anxiety. This difficulty has led to the discussion of whether anxiety can be a generalized state or only the result of situational factors.

Phillips and Smith (1953, P. 116) stated that, "Even the mature individual, when anxious lacks the flexibility and adaptiveness which ordinarily characterize him." These writers stated a belief that anxiety and rigidity are both situational. In contrast to the statements of Phillips and Smith, Frenkel-Brunswick (1949) stated that intolerance of ambiguity stems from anxiety and leads to rigid behavior and chronic anxiety leads to a generalized rigidity. The present study was based on the assumption that the theory presented by Frenkel-Brunswick, that

anxiety may be chronic, is correct and that it can be manifested in a self-report inventory.

The previously cited theories have assumed that anxiety is a noxious stimulus against which one must defend himself. Mandler and Sarason (1952) added a second dimension to anxiety. These writers proposed that anxiety is a drive which, when in moderate amounts, may enhance improved performance for some individuals; but, high anxiety was thought to impair performance in a similar task.

The present research approached the study of anxiety and behavioral rigidity through the use of two measuring instruments--the Taylor Manifest Anxiety Scale the (T.M.A.S.) and the Test of Behavioral Rigidity (the T.B.R.).

Behavioral Rigidity. Goldstein (1943, p. 205) defined rigidity as "adherence to a performance that is inadequate to the present task." The individual does not shift from one performance method to another which is required by the new task. Rokeach (1943, p. 260) defined rigidity as "the inability to change one's set when the objective conditions demand it." Schaeie (1960, p. 3) defined behavioral rigidity as "a tendency to persevere and resist conceptual change and to resist the acquisition of new patterns of behavior and to refuse to relinquish old and established patterns." Behavioral rigidity was operationally defined in this

study as the composite rigidity score as measured by the T.B.R. Behavioral rigidity was subdivided into three special types: motor-cognitive rigidity, personality-perceptual rigidity, and psychomotor speed.

Motor cognitive rigidity was defined by Schaie (1960) as the individual's inability to shift without difficulty from one activity to another. It refers to the effective adjustment to shifts in familiar patterns and to continuously changing situational demands. Motor-cognitive rigidity was operationally defined in this study as the motor-cognitive rigidity factor score as measured by the T.B.R.

Personality-perceptual rigidity was defined by Schaie (1960) as the individual's inability "to adjust readily to new surroundings and change in cognitive and environmental patterns." It refers to the "ability to perceive and adjust to new and unfamiliar patterns and interpersonal situations." Personality-perceptual rigidity was operationally defined in this study as the personality-perceptual rigidity factor score as measured by the T.B.R.

Psychomotor speed was defined by Schaie (1960) as the "individual's rate of emission of familiar cognitive responses." It requires rapid response of familiar patterns and quick thinking. Psychomotor speed was

operationally defined in this study as the psychomotor speed factor score as measured by the T.B.R.

Manifest Anxiety. English and English (1958)

defined anxiety as, "A feeling of threat, especially of a fearsome threat, without the person's being able to say what he thinks threatens," (P.35). Freud (1953, P. 116) defined anxiety as "fear of danger to the ego." Sullivan (1953, P. 113) defined anxiety as "anticipated unfavorable appraisal of one's current activity by someone whose opinion is significant." For purposes of this study, manifest anxiety is a generalized or chronic anxiety state as operationally defined by responses on a self-report inventory of manifest anxiety i.e. by scores obtained on the Taylor Manifest Anxiety Scale (Taylor, 1953).

CHAPTER II

REVIEW OF THE LITERATURE

Cowen (1952) reported that high experimentally induced anxiety was associated with increased perseveration on the Luchins' waterjar test of rigidity. Three groups of 25 college juniors and seniors, including both male and female Ss, were randomly assigned to three experimental groups which differed on the experimental treatment. A control group, a mild-stress group, and a strong-stress group were asked to perform the Luchins' waterjar problems. Stress was induced by instructions concerning the importance of the task, by the introduction of an insolvable problem, and by calling in the strong-stress group for additional testing on a projective personality instrument which was administered in an emotionally cold manner. The strong-stress group differed significantly ($p < .05$) on the rigidity problems from the other two groups. The control group and the mild-stress group did not differ from each other at a statistically significant level though the difference was in the expected direction.

Pally (1955) presented results consistent with those of Cowen. Pally stated that rigid behavior, as measured by the Luchins' waterjar test of rigidity, occurs when dangers or demands are made with which the individual cannot cope.

Eighty college freshmen and sophomores were randomly assigned to four groups which received differing amounts of induced threat. Fear of failure was the emotional state sought through the false reporting of results of a 15 item questionnaire, the Raven's Progressive Matrices, and the Luchins' Nine Dot Problem. The four groups differed from each other at the 5 per cent level of significance with the high threat group being associated with the highest rigidity scores.

Himelstein (1958) reported that a sample of 120 college students of both sexes, divided into two groups determined by extreme scores on the T.M.A.S., differed significantly ($p < .05$) on a digit symbols test, a measure of rigidity. The high anxiety group performed in a more rigid manner.

Pilisuk (1963) stated that anxiety can operate as either a situational or as a continuing personality trait. Pilisuk believed that anxiety, whether measured by a paper and pencil test or by behavioral criteria, would be related to the inflexibility of the individual. Four instruments--the T.M.A.S., and scales for self-acceptance, defensive denial, and open-mindedness--were administered to a sample of 170 college students. The T.M.A.S. significantly correlated $-.624$ ($p < .001$) with the self-acceptance scale. The T.M.A.S. and the defensive-denial

scale significantly correlated .635 ($p < .001$). The T.M.A.S. and the open-mindedness scale correlated in the predicted direction but did not reach the 5 per cent level of significance.

Pervin (1960) compared 15 normal patients with 15 patients diagnosed as neurotic in a V.A. hospital. Both groups had a mean age in the mid 30's. Five rigidity tasks were administered to the Ss, each measuring a separate function. To measure problem-solving rigidity, the Luchins' waterjar test was used; for motor rigidity, the "cross-out letter test"; for learning rigidity, the "expectancy-predictive card task"; for perceptual rigidity, a tachistoscope recognition task; and concept formation rigidity was measured by the Wisconsin Card-Sorting task. Neurotics were more rigid than normals on all tasks. The difference between groups was significant ($p < .05$) on all tasks except the problem-solving rigidity test.

In addition to the foregoing studies demonstrating positive relationship between anxiety and rigidity, negative findings have also been reported. French (1955) reported that seven tests measuring either rigidity or anxiety which were administered to 100 airmen did not correlate significantly. The Ss were divided into two groups differing as to the instructions given. One group received instructions which were to induce strong ego

involvement. The second group received instructions which were to relax the Ss. The T.M.A.S., the Luchins' waterjar test of rigidity, two gestalt closure tests, a changing-figures test, the Design Preference Test, and the California Fascism Scale were administered. No relationship between the T.M.A.S. and the six rigidity instruments was demonstrated. The two groups did not differ significantly on any of the seven instruments.

Consistent with the findings of French were the results reported by Ainsworth (1958). Ainsworth was testing the hypothesis that anxiety, in a problem solving situation, would bring rigidity of performance. His assumption was based on the theory that anxiety is defended against by rigid behavior. Four groups were formed from 173 college freshmen and sophomores in London. The groups did not differ significantly in age or sex distribution. Four levels of stress treatment were administered to the four groups. Stress was induced by instructions concerning the importance of the tasks upon passing a course. The groups then received the Luchins' waterjar test of rigidity, four self-report scales for measuring personal security, and four test of defensiveness. No group differed significantly from the others on the rigidity task. No significant relationship between rigidity and defensiveness was demonstrated.

Moffitt and Stagner (1956) found that experimentally induced threat was associated with perceptual rigidity, but the T.M.A.S. was not correlated significantly with the rigidity-though no coefficients were reported. The sample consisted of two groups of general psychology students, 40 scoring high and 40 low on the T.M.A.S. The 80 Ss were randomly assigned to two groups which differed on the instructions received concerning the importance of a gestalt closure task. One group was also told that previous tests indicated neurosis and that the present task was for confirmation of the diagnosis. The other group received "relaxed" instructions. The two groups differed at the 5 per cent level of significance on the perceptual rigidity task, but the high and low manifest anxiety Ss did not differ significantly.

Mandler and Sarason (1952) reported that test anxiety, as measured by the Test Anxiety Questionnaire (T.A.Q.), operated in some individuals, when in moderate levels, to enhance performance. High test anxiety was seen to impair performance in others. The Kohs Block Design and the Digit Symbols subtests of the WAIS were administered to 154 college freshmen and sophomores who had previously taken the T.A.Q. The Ss were randomly passed or failed on these two subtests before taking the Wisconsin Card-Sorting Test for measuring rigidity of concept-formation. The high

anxious Ss were significantly more rigid on the Wisconsin Card-Sorting Test than were the moderate and low anxious Ss.

Taylor and Rechtschaffen (1959) reported that Ss scoring low on the T.M.A.S. were superior to Ss scoring high on the T.M.A.S. in single response learning and in performance tasks. A sample of 48 male and 48 female general psychology students were required to print English and Greek letters in inverted and reversed positions. The T.M.A.S. was administered to the 96 Ss. Low manifest anxiety Ss were significantly superior to high manifest anxiety Ss ($p < .05$).

Wright, Gescheider, Battig (1963) in a study similar to that of Taylor and Rechtschaffen, found that manifest anxiety correlated $-.28$ with the printing of the easier English letters and $.23$ with the more difficult Greek letters. The sample included 20 graduate men scoring high on the T.M.A.S. and 20 scoring low on the T.M.A.S. The high anxious Ss did better with the Greek letters than with the English letters. Though the reported correlations were not significant, they differed from each other at the 5 per cent level of confidence. Wright and his associates concluded that anxiety is related to rigidity in the performance of familiar tasks which are not shifted, but moderate levels of anxiety may enhance learning of new patterns for performance.

Sarason (1956) reported that anxiety interacts with motivation to affect performance. Twelve equal groups were formed by assigning 99 male and 81 female general psychology students to groups differing on three levels of anxiety determined by T.M.A.S. scores. Half of the groups received anxiety inducing instructions which stated that the following test was an intelligence test. Half of the groups also were randomly assigned passing or failing scores. The twelve groups were given a list of nonsense syllables to memorize. The high anxious Ss learned best under low motivational situations, and the low and middle anxious Ss learned best under high motivational situations. The high anxious Ss operating under high motivation differed significantly ($p < .05$) in the ability to learn nonsense syllables from three groups: high anxious Ss operating under low motivation, and the low and middle anxious Ss operating under high motivation.

Raphelson (1957) administered the T.A.Q. and the T.M.A.S. to 25 Ss ranging in age from 18 to 25. The Ss were asked to move a lever to control a moving light on a screen, though the lever was not connected to the light, and a random flashing of a red light was used to indicate errors. The T.M.A.S. and the T.A.Q. correlated at a level significant at the .05 level though the coefficient was not reported. Both these instruments were consistent with the anxiety measured by the polygraph and galvanometer used

during the experimental situation. Raphelson concluded that the two self-report inventories did select Ss who would demonstrate anxiety in a test situation.

Wassenaar (1964) administered seven psychomotor tests which he believed would be affected by a generalized anxiety state to 15 graduate psychology students in South Africa. The seven tests included the following: a mirror-drawing test, a multiple reaction-time test, a letter-block test, the Minnesota Placing Test, the Minnesota Turning Test, the Porteus Maze Test, and a perseveration test of inverted-letter printing. The T.M.A.S. was also administered. Factor analysis produced a factor of generalized anxiety with high loading on the T.M.A.S. This factor was described as having detrimental effects on the psychomotor tasks.

Schae (1955) administered the T.B.R. to a sample of 1100 Ss "covering a general population sample of occupation, education, and age." The educational mean for the sample was slightly higher than that of the general American population. Schae reported that rigidity increases with age and decreases with high intelligence. He also reported that a sample of college students indicated that the same weights be given the three rigidity factors of the T.B.R. when testing college students that are given the factors when testing a more heterogeneous sample.

Statement of Hypotheses

1. Ss obtaining a high rigidity composite score on the T.B.R. will obtain a significantly higher score on the T.M.A.S. than will Ss obtaining either a middle or a low rigidity composite score on the T.B.R.

Hypothesis One is based on the theory that chronic anxiety is correlated with rigid behavior. (Frenkel-Brunswick, 1949; Pillsuk, 1963; and Wassenaar, 1964). The T.M.A.S. is purportedly a measure of chronic or generalized anxiety. It was assumed, in accordance with the theory, that Ss displaying manifest anxiety on the T.M.A.S. would display rigid behavior on the T.B.R. The composite rigidity score of the T.B.R. was selected as the contrasting variable because it is composed of three separate rigidity factors. The behavioral rigidity of the Ss might be displayed on any or all of the three rigidity factors--motor-cognitive rigidity, personality-perceptual rigidity, or psychomotor speed.

2. Ss obtaining either a middle or a low anxiety score on the T.M.A.S. will obtain a significantly lower rigidity score on the motor-cognitive rigidity factor of the T.B.R. than will Ss obtaining a high anxiety score on the T.M.A.S.

Hypothesis Two was grounded in the theory that moderate anxiety operates as a motivating drive in

performance test situations. Mandler and Sarason (1952) reported that moderate anxiety was associated with enhancement on performance tests for some individuals and that high anxiety impaired performance. The motor-cognitive rigidity factor of the T.S.R. is the one factor of the instrument resembling a performance test. The S is required to copy a passage, which is written partially in capital letters and partially in small letters, using a capital letter wherever a small letter appears in the original and a small letter wherever a capital letter appears. The S, for this factor, is also required, in an opposites and similarities test, to write a similar word whenever the first word appears in capitals and an opposite when the first word is in small letters. Wright, Gescheider and Battig (1963) and Taylor and Rechtschaffen (1959) presented results consistent with those of Mandler and Sarason by using a task of printing English and Greek letters in inverted and reversed positions. The T.M.A.S. was first used in measuring drive level in research projects, (Taylor, 1953). It was assumed in this study that the low and middle anxiety groups would possess the moderate anxiety necessary for motivating and enhancing the performance on the motor-cognitive factor tasks. The high anxiety group was expected to be impaired in the performance by the existing anxiety.

CHAPTER III

METHOD

Subjects. The sample of 79 Ss, 25 male and 54 female, represents a population of general psychology students at the University of the Pacific. The Ss ranged in age from 19 to 21 and in academic year from sophomore to senior. The majority of Ss were sophomores. No information concerning academic ability or socioeconomic status was obtained regarding the Ss. It was assumed that the sample was a homogeneous sample representing the upper-middle and lower-upper socioeconomic classes characteristic of the University of the Pacific student-body.

Apparatus. The T.M.A.S. was used to obtain a generalized manifest anxiety score. The T.M.A.S. consists of 50 items selected from the MMPI. Sixty buffer items selected from the L, K, and F scales of the MMPI were used in the present form. The Ss were asked to express the amount of their agreement on each item on a five point scale described by Meyer (1964). Meyer reported the median of a sample of 210 students from a small liberal arts college to be 64.60 with the first quartile at 40.00 and the third quartile at 79.60.

The T.B.R. was used to obtain scores for behavioral rigidity. The T.B.R. consists of two performance subtests

and a self-report inventory: a (1) "capitals test", a (2) similarities and opposites test, and a (3) Questionnaire. Three rigidity factor scores are obtained. According to the test manual (Schale, 1960), the (1) motor-cognitive rigidity factor is thought to be a measure of efficiency in dealing with symbolic and semantic types of restraints. The score on this factor is obtained from the "capitals" and the "similarities and opposites" tests. The (2) personality-perceptual rigidity may measure efficiency in dealing with pragmatic or interpersonal restraints. The score on this factor is obtained from the questionnaire subtest. The (3) psychomotor speed factor is considered to be a measure of the individual's efficiency in coping with restraints imposed by physical objects. The score on this factor is obtained from the practice sets of the "capitals" and "similarities and opposites" subtests.

A composite rigidity score is obtained from the T.B.R. from the mean score of the three rigidity factor scores. The four rigidity scores are reported in standard scores with a mean of 50 and a standard deviation of 10. Rigidity quotient scores which are reported in standard scores with a mean of 100 and a standard deviation of 15. Low scores on the T.B.R. represent rigidity and high scores flexibility.

Procedure. The research instruments were administered during the eight required laboratory sessions of a general

psychology class at the University of the Pacific. The order of the tests to be administered was determined by random assignment with four of the sessions receiving the T.B.R. first and the remainder the T.M.A.S. first.

Research Design. The Ss were assigned to groups determined by the obtained behavioral rigidity and manifest anxiety scores. The high-rigidity (H-R), middle-rigidity (M-R), and the low-rigidity (L-R) groups were determined by the approximate lowest, middle, and highest terciles respectively of the composite and three rigidity factor scores. The high-anxiety (H-A), middle-anxiety, (M-A), and low-anxiety (L-A) groups were formed from the approximate highest, middle, and lowest terciles of the T.M.A.S. scores respectively.

Hypothesis One was tested by using Chi-square to determine the level of difference between the three composite-rigidity groups on the obtained manifest anxiety scores. A 5 per cent level of significance was required for the hypothesis to be supported.

Hypothesis Two was tested by using Chi-square to determine the level of difference between the three manifest anxiety groups on the obtained motor-cognitive rigidity factor scores. A 5 per cent level of significance was required for the hypothesis to be supported.

Pearson Product-Moment correlation coefficients for

the T.M.A.S. and the composite-rigidity and the three rigidity factors were also calculated. Chi-square tests were used to find whether relationships between the T.M.A.S. and the personality-perceptual rigidity factor and the psychomotor speed factor existed, though they were not hypothesised.

CHAPTER IV
RESULTS AND DISCUSSION

The manifest anxiety and behavioral rigidity scores were analyzed for sex differences. Taylor (1953) and Jahnke (1964) reported that female Ss tended to score higher on the T.M.A.S. than did male Ss. Table 1 (P. 21) presents the means and standard deviation for the male, female and total sample for the T.M.A.S. Table 2 (P. 22) presents the means and standard deviation for the male, female, and total sample for the four rigidity scores. Though the means for female Ss was higher than for male Ss for manifest anxiety, the difference did not reach the 5 per cent level of significance. No significant sex differences were demonstrated for the rigidity scores. The sexes were combined, and the total sample was used for the statistical analysis of the obtained data.

The sample was grouped into the approximate terciles for the manifest anxiety and behavioral rigidity scores. Chi-square was employed to determine the level of differences in manifest-anxiety for the three composite-rigidity groups. Table 3 (P. 23) presents the cell frequencies for three levels of composite-rigidity and three levels of manifest anxiety. The p value of less than the 2 per cent level of significance was within the limits necessary for supporting the hypothesis which stated that Ss obtaining a high

TABLE 1

Mean and S.D.'s for Manifest Anxiety
Males, Females and Total Sample

	N	Means	S.D.
M.	25	76.5	28.2
F.	54	83.2	28.5
Total	79	80.9	28.26

TABLE 2

Means and S.D.'s for Composite-Rigidity, Motor-Cognitive Rigidity, Personality-Perceptual Rigidity and Psychomotor Speed for Male, Female and Total Sample

	N	Means	S.D.
Comp. M	25	55.76	29.92
Comp. F	54	57.02	3.90
Total	79	56.68	3.00
M.-C. M	25	57.12	3.16
M.-C. F	54	56.67	5.58
Total	79	56.81	5.00
P.-P. M	25	54.92	9.24
P.-P. F	54	52.63	7.55
Total	79	53.18	8.54
P.S. M	25	57.32	5.40
P.S. F	54	59.63	5.33
Total	79	58.81	5.36

TABLE 3

Chi-square and p values and observed cell
frequencies for Manifest Anxiety
and Composite Rigidity

	H-A (45-54)	M-R (55-58)	L-R (59-64)	N
H-A (89-154)	13	10	3	26
H-A (65-88)	7	9	11	27
L-A (32-64)	4	12	10	26
N	24	31	24	79

$\chi^2 = 10.5, 4 \text{ d.f.}$
 $p < .02, \text{ one-tailed test}$

composite-rigidity on the T.B.R. will obtain a significantly higher T.M.A.S. score than will Ss obtaining either a middle or low composite-rigidity score on the T.B.R.

Hypothesis Two, which stated that Ss obtaining either a middle or a low manifest anxiety score on the T.M.A.S., will obtain a significantly lower rigidity score on the motor-cognitive rigidity factor of the T.B.R. than will Ss obtaining a high manifest anxiety score on the T.M.A.S., was not supported by the Chi-square for manifest anxiety and motor-cognitive rigidity. Table 4 (P.25) presents the cell frequencies for three levels of manifest anxiety and three levels of motor-cognitive rigidity. The high p value for the one-tailed Chi-square test did not suggest that manifest anxiety affected performance on the motor-cognitive rigidity factor tasks, but the correlation coefficient for manifest anxiety and motor-cognitive rigidity did reach the 5 per cent level of significance for a one-tailed test. Table 7 (P. 28). The increased statistical power of the parametric correlation test over the nonparametric Chi-square test may explain the difference in findings concerning motor-cognitive rigidity.

Table 5 (P. 26) presents the cell frequencies for three levels of manifest anxiety and three levels of personality-perceptual rigidity did reach the 1 per cent level of significance for a two-tailed test, (Table 7, P.28).

Table 6 (P. 27) presents the cell frequencies for three

TABLE 4

Chi-square and p values and observed cell frequencies for Manifest Anxiety and Motor-cognitive Rigidity

	H-R (36-55)	M-R (56-58)	L-R (59-68)	N
H-A (89-154)	9	8	9	26
M-A (65-88)	9	9	9	27
L-A (32-64)	7	10	9	26
N	25	27	27	79

$\chi^2 = 2.09, 4 \text{ d.f.}$
 $p < .38, \text{ one-tailed test}$

TABLE 5

Chi-square and p value and observed cell frequencies
for Manifest Anxiety and Personality-Perceptual
Rigidity

	H-R (38-50)	M-R (51-58)	L-R (59-68)	N
H-A (89-154)	10	12	4	26
M-A (65-88)	9	8	11	27
L-A (32-64)	6	6	14	26
N	24	26	29	79

$\chi^2 = 8.51, 4 \text{ d.f.}$
 $p < .10, \text{ two-tailed test}$

TABLE 6

Chi-square and p values and observed cell frequencies for Manifest Anxiety and Psychomotor Speed

	H-R (42-56)	M-R (57-61)	L-R (62-67)	N
H-A (89-154)	9	10	7	26
M-A (65-88)	7	9	11	27
L-A (32-64)	6	10	10	26
N	22	29	28	79

$\chi^2 = 1.8, 4 \text{ d.f.}$
 $p < .90, \text{ two-tailed test}$

TABLE 7

Correlation Coefficients Between Composite-Rigidity,
Motor-Cognitive Rigidity, Personality-Perceptual
Rigidity, Psychomotor Speed, and Manifest
Anxiety

	N	r with Mani- fest Anxiety	Significance Level
Comp. R.	79	-.23	$p < .025$ (one-tailed)
M.-C.	79	-.19	$p < .05$ (one-tailed)
P.-P.	79	-.31	$p < .01$ (two-tailed)
P. S.	79	-.05	N.S.

composite-rigidity on the T.B.R. will obtain a significantly higher T.M.A.S. score speed factor scores. The high p value did not suggest a relationship between manifest anxiety and psychomotor speed.

Table 7 (P. 28) presents the correlation coefficients and p values for one-tailed tests for the relationship between manifest anxiety and four measures of behavioral rigidity. A 5 per cent level of significance was found between manifest anxiety and the composite-rigidity, motor-cognitive factor, and personality-perceptual rigidity factor.

It was noted that the rigidity factor demonstrating the highest correlation with manifest anxiety was personality-perceptual rigidity. This factor, as was manifest anxiety, was obtained by the use of a self-report questionnaire. Those Ss admitting to anxious behavior tended to admit to rigid behavior, although the rigidity was not necessarily displayed on the other rigidity factors.

The correlation between motor-cognitive rigidity and manifest anxiety, which reached the 5 per cent level of significance, suggests that anxiety may affect the behavior in a performance-test situation even though the Chi-square, selected for the testing of the hypothesis, did not demonstrate the relationship. Further study would be necessary before conclusions could be drawn.

The results of the study did suggest that manifest anxiety was related to behavioral rigidity of two special types--personality-perceptual rigidity as measured by a self-report questionnaire and motor-cognitive rigidity as measured by a performance-test--as well as to composite-rigidity. The lowness of the correlation coefficients suggests that only a small amount of the variance in the behavioral-rigidity can be attributed to the presence of a generalized manifest anxiety state.

In respect to previous research, the present findings were consistent with the findings of Himelstein (1953). Manifest anxiety was significantly correlated with rigidity on a performance test. Piliuk (1963) found that self-report inventories concerning anxiety and rigidity were significantly correlated. The present study also found that the questionnaire in the T.B.R. and the T.M.A.S. were significantly correlated which supported the conclusions of Piliuk. These findings were in opposition to the negative findings of French (1955), Ainsworth (1958), and Moffitt and Stagner (1956) who did not find that manifest anxiety and behavioral rigidity were significantly correlated.

The findings of Mandler and Sarason (1952), Taylor and Rechtschaffen (1959), and Wright, Gescheider, and Battig (1963), which stated that moderate anxiety may

operate as a drive to enhance performance, was not supported by the present findings. The present study produced data suggesting that high anxiety levels are associated with impaired performance, but adequate data concerning the influence of moderate anxiety levels were not obtained. These data do support the conclusions of Wassenaar (1964) who stated that the T.M.A.S. measures a generalized anxiety factor which has detrimental effects on performance of psychomotor tasks.

CHAPTER V

SUMMARY

Research was conducted to study the relationship between anxiety and behavioral rigidity in a college sample. Theorists have proposed that behavioral rigidity functions as a defense against anxiety which suggests that the anxiety will be minimal during the period characterized by rigid behavior. This theory implies that difficulty will arise when attempting to measure both anxiety and rigidity in the same research setting. The present study approached the problem by employing a measure of generalized or chronic anxiety rather than situational anxiety. It was hypothesized that this instrument, the Taylor Manifest Anxiety Scale, would be negatively correlated with the composite-rigidity score of the Test of Behavioral Rigidity. The composite-rigidity score is the mean score of three rigidity factors--(1) motor-cognitive rigidity, (2) personality-perceptual rigidity, and (3) psychomotor speed--which have been identified by factor analysis. It was also hypothesized that the T.M.A.S. would be negatively correlated with the motor-cognitive rigidity factor of the T.B.R. Previous research suggested that moderate levels of anxiety may operate as a drive to enhance improved performance in a performance test situation. The T.M.A.S. was originally designed to measure drive level in test

situations, (Taylor, 1953). The motor-cognitive rigidity factor score is obtained by two performance subtests of the T.B.R.

A sample of 79 general psychology students, 54 females and 25 males, at the University of the Pacific, was divided into approximate terciles determined by scores from the two research instruments. Chi-square and Pearson Product Moment correlation tests were employed.

A Chi-square p value, significant at less than the 2 per cent level, was obtained between the three levels of composite-rigidity for manifest anxiety. Chi-square tests did not suggest significant differences in manifest anxiety for the groups formed from the scores obtained from the three rigidity factors, but significant correlation coefficients were obtained between manifest anxiety and the motor-cognitive and personality-perceptual rigidity factors as well as between manifest anxiety and the composite-rigidity scores.

It was concluded that manifest anxiety is correlated with behavioral rigidity demonstrated by performance tests and by self-report inventories.

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APPENDIX A

TABLE 8

Scores Obtained From the T.B.R. for Motor-cognitive,
 Personality-perceptual, Psychomotor Speed and
 Composite-ability and from the T.M.A.S.
 for Female Ss.
 N=54

H.L.-C.	P.-P	P.S.	Comp.	T.M.A.S.
56	41	58	52	149
56	44	63	54	95
58	51	59	56	108
55	62	63	60	88
60	59	62	60	45
59	53	67	60	65
60	38	59	52	76
58	45	60	54	123
61	66	61	63	42
50	57	57	57	82
64	59	60	61	85
63	58	52	58	62
51	57	57	55	54
61	58	67	62	61
57	45	53	52	60
56	50	51	52	69
57	65	52	58	82
56	46	61	54	59
57	47	60	55	66
58	60	58	59	63
54	46	56	52	82
64	54	42	53	91
68	53	58	60	91
64	66	62	64	53
59	55	53	56	122

TABLE 3 (continued)

N ₂ -C ₂	P ₂ -P	P.S.	Comp.	T.M.A.S.
60	56	58	59	70
41	44	49	45	68
59	57	53	56	102
57	46	55	53	134
58	48	67	58	53
55	44	55	52	80
44	51	63	53	103
53	63	67	61	135
60	64	64	63	67
50	59	64	60	76
52	60	59	57	68
58	51	55	55	80
55	59	58	57	51
36	56	67	53	103
56	66	64	62	62
54	47	67	56	136
53	56	62	57	78
52	56	57	55	75
62	51	63	59	74
61	55	60	59	92
56	50	60	55	64
59	60	51	57	140
55	59	63	59	84
58	59	60	59	83
43	54	65	54	145
58	59	64	60	35
61	68	64	64	84
63	63	62	63	69
54	66	66	62	51

TABLE 9

Scores Obtained From the T.B.R. for Motor-cognitive,
Personality-perceptual, Psychomotor Speed and
Composite-rigidity and from the T.M.A.S.
 for Male Ss
 N=25

M.-C.	P.-P.	P.S.	Comp.	T.M.A.S.
55	44	59	53	84
54	55	66	58	77
58	59	54	57	90
55	57	62	58	90
56	66	57	60	52
62	47	53	54	65
60	41	58	53	60
62	41	60	54	97
54	44	52	50	116
54	51	62	56	32
54	53	65	57	56
54	54	66	58	39
60	59	52	57	41
52	51	49	51	101
61	64	48	53	104
60	49	57	55	139
58	59	66	61	87
61	41	53	52	64
53	41	61	52	120
58	61	58	59	54
57	60	57	58	52
61	59	48	56	63
58	52	58	56	99
57	46	57	53	89
54	64	55	58	41

APPENDIX B

THE TAYLOR MANIFEST ANXIETY SCALE

Questions followed by an asterick * are anxiety items; questions followed by double asterick ** are revised anxiety items (Taylor revision); lower case t or f indicate anxious response (if t, than if S responds "true" indicative of anxiety); capital L, K, or F indicate buffer item from order as those from MMPI, or as close to order as is possible without other scales.

BIOGRAPHICAL INVENTORY

1. I do not tire quickly. * f
2. I am often sick to my stomach. ** f
3. I am about as nervous as other people. ** f
4. I have very few headaches. * f
5. I work under a great deal of strain. ** t
6. I cannot keep my mind on one thing. * t
7. Once in a while I think of things too bad to talk about. L
8. I worry over money and business. * t
9. My father was a good man. F
10. I frequently note my hand shakes when I try to do something. * t
11. My sex life is satisfactory. F
12. I blush as often as others. ** f
13. I have diarrhea once a month or more. ** t also F
14. I worry quite a bit over possible troubles. ** t
15. Evil spirits possess me at times. F
16. I practically never blush. * t
17. At times I feel like swearing. L & K
18. I have nightmares every few nights. * t F
19. I am often afraid I am going to blush. * t
20. I have a cough most of the time. F
21. If people had not had it in for me I would have been much more successful. F
22. My hands and feet are usually warm enough. * f
23. I sweat very easily even on cool days. * t
24. When embarassed I often break out in a sweat that is very annoying. ** t
25. At times I feel like smashing things. K
26. Most any time I would rather sit and daydream than do anything else. F
27. I do not often notice my heart pounding and I am seldom short of breath. ** f
28. My family does not like the work I have chosen (of the work I intend to choose for my life work.) F
29. I feel hungry almost all the time. * t
30. Often my bowels don't move for several days at a time. ** t

31. I do not always tell the truth. L
32. When I am with people I am bothered by hearing very queer things. F
33. I would be better if almost all laws were thrown away. F
34. I have a great deal of stomach trouble. * t
35. At time I lose sleep over worry. ** t
36. A minister can cure disease by praying and putting his hand on your head. F
37. I am liked by most people who know me. F
38. My sleep is restless and disturbed. ** t
39. As a youngster I was suspended from school one or more times for cutting up. F
40. I often dream about things I don't like tell other people. ** t
41. I do not read every editorial in the newspaper every day. L
42. I loved my father. F
43. I am easily embarassed. * t
44. I am more sensitive than most other people. * t
45. I see things or animals or people around me that others do not see. F
46. I think a great many people exaggerate their misfortunes in order to gain profit or an advantage rather than to lose it. K
47. I get angry sometimes. L & F
48. I frequently find myself worrying about something. * t
49. I wish I was as happy as others. ** t
50. I am usually calm and not easily upset. * f
51. Any man who is able and willing to work hard has a good chance of succeeding. F
52. Sometimes I am strongly attracted by the personal articles of others such as shoes, gloves, etc., so that I want to handle or steal them though I have no use for them. F
53. I cry easily. * t
54. I feel anxious about something or someone almost all of the time. ** t
55. I take a lot of argument to convince most people of the truth. K
56. Once in a while I put off until tomorrow what I ought to do today. L
57. I am happy most of the time. *f
58. I have very few quarrels with members of my family. K
59. It makes me nervous to have to wait. * t
60. At times I have been so restless that I cannot sit in a chair for very long. ** t
61. Sometimes when I am not feeling well I am cross. L
62. Sometimes I become so excited that I find it hard to get to sleep. * t

63. I have often felt that I faced so many difficulties I could not overcome them. ** t
64. I frequently find it necessary to stand up for what I think is right. F
65. At times I have been worried beyond reason about something that really did not matter. ** t
66. I believe in law enforcement. F
67. I do not have as many fears as my friends. ** f
68. I believe in a life hereafter. F
69. My table manners are not quite as good at home as when I am out in company. L
70. I believe I am being plotted against. F
71. I believe I am being followed. F
72. I have been afraid of things or people that I know could not hurt me. * t
73. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it. K
74. Often I can't understand why I have been so cross and grouchy. K
75. At times my thoughts have raced ahead faster than I could speak them. K
76. If I could get into a movie without paying and be sure I was not seen I would probably do it. L
77. I certainly feel useless at times. * t
78. I find it hard to keep my mind on a task or job. * t
79. Criticism or scolding hurts me terribly. K
80. Sometimes I feel as if I must injure either myself or someone else. F
81. I am more self-conscious than most people. ** t
82. I have the wanderlust and am never happy unless I am roaming or traveling about. F
83. It makes me impatient to have people ask me advice or otherwise interrupt me when I am working on something important. K
84. I would rather win than lose in a game. L
85. Someone has been trying to poison me. F
86. I am the kind of person who takes things hard. ** t
87. I am a very nervous person. ** t
88. I have had periods in which I carried on activities without knowing later what I had been doing. F
89. Life is often a strain for me. ** t
90. I like to know some important people because it makes me feel important. L
91. I like to study and read about things that I am working at. F
92. At times I think I am no good at all. * t
93. I have never felt better in my life than I do now. K
94. There is something wrong with my mind. F
95. I am not afraid to handle money. F
96. I am not at all confident of myself. ** t

97. What others think of me does not bother me. K
98. It makes me uncomfortable to put on a stunt at a party even when others are doing the same sort of thing. K
99. My mother was a good woman. F
100. I find it hard to make talk when I meet new people. K
101. I am against giving money to beggars. K
102. At times I feel that I am going to crack up. ** t
103. I commonly hear voices without knowing where they come from. F
104. My hearing is apparently as good as that of most people. F
105. I don't like to face a difficulty or make an important decision. ** t
106. I am very confident of myself. ** F
107. I do not like everyone I know. L
108. I like to visit places where I have never been before. F
109. Someone has been trying to rob me. F
110. I enjoy children. F