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**RELATIONSHIP BETWEEN INTELLIGENCE AND ANXIETY**

by

**Olegario de Godoy, S. J.**

**A Thesis Submitted to the Faculty of the Graduate**

**School of Loyola University in Partial**

**Fulfillment of the Require -**

**ments for the Degree of**

**Master of Arts**

**January 1965**

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## LIFE

Olegario de Godoy was born in Piracicaba, Sao Paulo, Brazil, November 24, 1926.

He was graduated from Faculdade de Filosofia Nossa Senhora Medianeira, Nova Friburgo, Estado do Rio, Brazil, December, 1954, and licensed in Sacred Theology from Loyola University, Chicago, June, 1961.

He began his graduate studies at Loyola University at Chicago in September, 1961.

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I also want to acknowledge my indebtedness to Rev. Vincent V. Herr, S. J., and Miss Marcella A. Twomey for the assistance and consideration they have given me on this project.

## Relationship Between Intelligence and Anxiety

Olegario de Godoy

Loyola University, Chicago

The twentieth Century has been called "the Age of Anxiety" (Coleman, 1956). In recent years few areas of research have received as much attention as that of anxiety (Sarason, 1960). Many studies have dealt with the relationship between anxiety and learning (Taylor, 1956). Because both anxiety and intelligence are regarded as important factors in the understanding of the human personality, an investigation of the relationship between these two factors seems to be desirable. Unfortunately the results obtained until now have not been quite satisfactory. The following review of the more representative work done in recent years shows that (a) there is some indication of interaction between intelligence and anxiety; (b) many of the studies made fail to show significant relationship; (c) in a few cases contradictory results have been reported. In most of these studies, the scale to measure anxiety was Taylor's Manifest Anxiety Scale, (MAS), also referred to as the A scale or Taylor's scale.

Due to the contradictory results obtained when using the MAS to measure anxiety, the validity of this scale has been questioned at times. It is worthwhile to attempt a new research using a more refined scale, hypothesizing that more satisfactory results depend on the refinement of the tool employed.

The present paper deals with a new improved measure of anxiety, which will be described later. At this point a review of the previous studies is in order.

#### Review of Previous Studies

There is no attempt here to cover all the studies done in this area. Only the more representative will be presented.

Schultz and Calvin (1955) were interested in substantiating suggestions indicating that anxiety is significantly correlated with total ACE scores. They reported that previous findings had been that the higher the anxiety level, the lower the score obtained in the ACE; but Schultz and Calvin found only a zero correlation.

A few other investigators mentioned by Calvin in a recent research (1955) found contradictory results in correlating the A scale with intellectual measures. Calvin and his associates, Koons, Bingham, and Fink, (Calvin, 1955), assuming that the factor to be changed was the quality of subjects, tried two different groups of Ss from two different sources. Group A was composed of 36 students in an undergraduate Psychology class. Group B was made up of 15 students with lower IQ scores and having academic difficulties. The Wechsler-Bellevue Intelligence Test was administered to each of the Ss in individual sessions. The A scale was presented with the Biographical Inventory items, as suggested by Taylor. The result was that, although the correlation between the total IQ and the A scale was not significant, significant correlation in several subtests

was found. Further, the combined groups A and B showed a significant negative correlation with the total IQ. The investigators concluded that "the contradictory findings reported by various investigators who used the A scale to select high and low anxious groups for learning experiments, conditioning experiments, etc. were due to variations in the intellectual make-up of the respective experimental populations" (Calvin, 1955).

If the conclusion was correct, by eliminating variations in the intellectual abilities of the Ss, the results should all point in the same direction, i.e., to a significant correlation between intelligence test scores and anxiety scores. This conclusion, however, was not borne out by subsequent research. Taylor (1956), assessing evidence for the drive theory, mentions a few experiments where intellectual performance was represented by verbal learning.

"... Montague formed three different lists of serial nonsense syllables which, because of varying degrees of formal intralist similarity and association value of the syllables, presumably differed in the amount of intralist interference. A significant interaction was found between anxiety and list, an anxious group being significantly superior in performance to nonanxious on the list for which similarity was low and association value high, and the position being reversed for groups given a list of high similarity and low association value. Similar findings have been reported..." (Taylor, 1956).



In the same paper Taylor refers to another experiment where competition of previous habits was minimized for the purpose of showing performance superiority of anxious Ss. The result confirmed the prediction that anxious Ss would be better performers. A second part of the investigation had competition factors maximized, and again the prediction came true: the performance of anxious groups was inferior. Therefore, at least according to these experiments, the correlation between scores of anxiety and intellectual performance may be found to be either positive or negative, depending on factors other than variations of intellectual abilities. Just how many variables should be controlled? Certainly there was plenty of room for further research.

Schultz and Calvin (1955), attributing the contradictions found in previous experiments to the small number of Ss, tried to verify the findings of a negative correlation between MAS and ACE scores, using a larger sample: 99 subjects. The following portion of their paper shows their findings:

" Following the procedure utilized by Matarazzo et al., we divided our Ss into four groups on the basis of their A-scale scores. Group I consisted of those Ss with A-scale scores from 1-8; Group II, 9-16; Group III, 17-23; and Group IV, those Ss with A-scale scores of 24 and higher. A Pearson  $r$  was computed, and a correlation of .02 was obtained. This practically zero relationship fails to confirm the findings of Matarazzo et al. The present authors felt

that a more precise estimate might be obtained if the actual A-scale scores for each S were utilized instead of grouping them into four categories as Matarazzo et al. did. We therefore computed an  $r$  using individual A-scale scores, but again we obtained a zero correlation."

"In order to test for rectilinearity an eta was computed, and a value of .10 was obtained which is also not significantly different from zero. An  $X^2$  test of goodness of fit was made, and the resulting  $X^2$  fell short of significance indicating a rectilinear relationship. This supports the findings of Matarazzo et al. who also report a rectilinear relationship." (Schultz and Calvin, 1955).

They believed that their finding of a low positive relationship not significantly different from zero could be explained either by the fact that their Ss had a distribution of Taylor scores different from the ones used by Matarazzo et al., or because the types of Ss were different (due to variations in selection procedures). Finally they concluded that "...until more evidence appears... it would seem that a valid relationship between intelligence and scores on the Taylor Manifest Anxiety Scale has yet to be established" (Schultz and Calvin, 1955). Once again the need for further investigation became evident.

It was Sarason (1958), who once more pursued the research, this time investigating the relationship among different measures

of anxiety and their relationship to intellectual performance. He used 309 freshman and sophomore students, giving them the following personality tests: (a) Sarason's (1957) true-false Test Anxiety (TA); (b) the Lack of Protection Scale (LP), Sarason's (1958); (c) Bending (1956) 20-item short form of the MAS; (d) Edward's (1957) 39-item Social Desirability Scale (SDS). All the students had taken a battery of intellectual performance tests, as a routine procedure upon entering the university. Results:

" Each of the four personality measures was correlated with the 13 intellectual measures. The results quite conclusively point to a greater degree of relationship between TA and these intellectual indices than between MAS, LP, or SDS and these estimates of intellect. For SDS and LP scales there were no significant correlations with any of the 13 intellectual measures for either men or women. The MAS scale correlated significantly with one of the 13 intellectual measures for men. No significant correlations were obtained for women." (Sarason, 1958).

This study suggests a further question: Since one of the tests, the TA, yielded a higher correlation with estimates of intelligence than did the MAS, would it be possible to develop another anxiety scale which would bring out the correlation still better than the TA? Would this new scale, applied to other experiments, provide us with more satisfactory results in the same cases where the other scales have failed? The value of the MAS was

questioned by many writers whose positions are expressed by Spielberg (1958): "These findings have raised the question of the validity of the A scale as an uncontaminated measure of motivation." As to the validity of the MAS, it is well to remember that Taylor herself has taken the position that the items of the scale are to be looked upon as an operational definition of anxiety (Taylor, 1956), as a pragmatic instrument of selection of anxious subjects, not to be used for diagnosis.

From this brief survey it is sound to conclude that the use of a more refined scale would be welcome. In the present research of relationship between scores of intelligence test and anxiety, a new scale was employed, which will be described later in this paper. Since the references to the MAS have been so abundant so far, it is desirable to give specific consideration to this scale before proceeding further.

#### The Taylor Scale

The MAS was originally constructed by Taylor (1951), as a tool for an investigation of the relationship between anxiety and eyelid conditioning, with the purpose of discriminating subjects on the manifest anxiety continuum. Approximately 200 items were selected from the Minnesota Multiphasic Personality Inventory (MMPI), and submitted to five clinical judges. They were also given a definition of manifest anxiety, which followed Cameron's description

of chronic anxiety reaction (Cameron, 1947). The judges were requested to select the items which conformed to the given definition. Eighty per cent agreed on 65 items. These were used as the significant items of the original anxiety scale. Additional items, uniformly categorized by the judges as non indicative of anxiety, were added to the anxiety items. The buffer items were 135 in number, so that the total of items in the original test was 200. The test was then administered to 35 students. The range of the measures varied from 1(low) to 36 (high). The median was approximately 14, and the curve slightly skewed to the right. This indicated a trend to high anxiety. The scale was subsequently revised (Taylor, 1953). The buffer items were lengthened and the anxiety items shortened. The total became 225 items, 50 being significant of anxiety. These 50 anxious items, part of the complete biographical inventory, are listed below. The numbers correspond to their site in the biographical inventory (Taylor, 1953):

- " 4. I do not tire quickly. (False)
- 5. I am troubled by attacks of nausea. (True)
- 7. I believe I am no more nervous than most others. (False)
- 11. I have very few headaches. (False)
- 13. I work under a great deal of tension. (True)
- 14. I cannot keep my mind on one thing. (True)
- 16. I worry over money and business. (True)
- 18. I frequently notice my hand shakes when I try to do something. (True) „

- "24. I blush no more often than others. (False)
25. I have diarrhea once a month or more. (True)
26. I worry quite a bit over possible misfortunes. (True)
27. I practically never blush. (False)
33. I am often afraid that I am going to blush. (True)
35. I have nightmares every few nights. (True)
36. My hands and feet are usually warm enough. (False)
37. I sweat very easily even on cool days. (True)
38. Sometimes when embarrassed, I break out in a sweat  
which annoys me greatly. (True)
41. I hardly ever notice my heart pounding and I am  
seldom short of breath. (False)
43. I feel hungry almost all the time. (True)
44. I am very seldom troubled by constipation. (False)
48. I have a great deal of stomach trouble. (True)
51. I have had periods in which I lost sleep over worry.  
(True)
54. My sleep is fitful and disturbed. (True)
56. I dream frequently about things that are best kept  
to myself. (True)
66. I am easily embarrassed. (True)
67. I am more sensitive than most other people. (True)
77. I frequently find myself worrying about something.  
(True)"

" 78. I wish I could be as happy as others seem to be.

(True)

83. I am usually calm and not easily upset. (False)

86. I cry easily. (True)

87. I feel anxiety about something or someone almost  
all the time. (True)

94. I am happy most of the time. (False)

99. It makes me nervous to have to wait. (True)

100. I have periods of such great restlessness that I  
cannot sit long in a chair. (True)

103. Sometimes I become so excited that I find it hard  
to get to sleep. (True)

107. I have sometimes felt that difficulties were piling  
up so high that I could not overcome them. (True)

112. I must admit that I have at times been worried be-  
yond reason over something that really did not  
matter. (True)

117. I have very few fears compared to my friends'. (False)

123. I have been afraid of things or people that I know  
could not hurt me. (True)

126. I certainly feel useless at times. (True)

138. I find it hard to keep my mind on a task or job. (True)

145. I am usually self-conscious. (True)

152. I am inclined to take things hard. (True) "

- " 153. I am a high-strung person. (True)
163. Life is a strain for me much of the time. (True)
164. At times I think I am no good at all. (True)
168. I am certainly lacking in self-confidence. (True)
183. I sometimes feel that I am about to go to pieces. (True)
187. I shrink from facing a crisis or difficulty. (True)
190. I am entirely self-confident. (False) "

These items will be of interest when we study the O'Brien's scale and the PRS.

The reliability of the A scale has been shown to oscillate between .81 and .96 (Hildgard, 1951, Spence, 1951, Kendall, 1954). The validity is still problematic. Kendall (1954), attempting to find formal validity for the MAS, concluded that this test is only valid as a coarse measure of anxiety. This again brings us to the question of a more refined scale. It is well to state here what is meant by refinement of an anxiety scale, as this will aid in understanding the need for the construction of the PRS, which was used in the present investigation.

#### A More Refined Scale: O'Brien's

One approach to a more refined scale would be a study in which the different types of anxiety would be specified, with balance among the items of the different kinds of anxiety, so that the number of items representing each type is relatively equal. A coarse scale would be one in which no attention is given to specification of the



different types of anxiety. According to this conception of a refined scale, the MAS would not conform to this criteria, in that the subtypes are not specified. This appears not only from a close inspection of the anxiety items listed above, but also from evaluation of the scale by various authors as follows:

Kendall concluded that the MAS is a coarse measure of anxiety (1954). Siegman pointed out that too many items refer to chronic anxiety (1956). Sarason (1960) indicated the widespread use of "general indices" in the MAS and suggested that more consideration should be given to the construction of scales that would measure more specific types of anxiety, such as the Test Anxiety Questionnaire (TAQ) of S. B. Sarason and his associates (Mandler & Sarason, 1952; Sarason & Gordon, 1953; Sarason, Mandler, & Craighill, 1952).

O'Brien (1957), attempted the construction of anxiety scales in which the different types of anxiety are classified according to three relatively pure groups: chronic anxiety, personal inadequacy, and motor tension anxiety. In order to devise the new items he used factors obtained from one analysis of the MAS (O'Connor Lorr, & Staddord, 1956), and the new items devised were meant to represent three of the factors. He was successful in building scales for two types of anxiety, chronic and motor tension. An excerpt from his work shows his further analysis of the concept of anxiety:

" (Whether T or F is underlined before each item indicates in which way the item would be answered as a measure of the presence

of anxiety. CA, PIA, and MTA show with which type of anxiety the item was associated: Chronic Anxiety, Personal Inadequacy Anxiety, or Motor Tension Anxiety, respectively. ...Those items which do not have a code for kind of anxiety did not meet the criterion of 70% agreement by the judges. The code is underlined for marker items from the Taylor Scale; when the code is not underlined the item is from the present study.)"

- " T F 1. I worry over money and business. CA
- T F 2. I do not tire quickly. MTA
- T F 3. I frequently feel self-conscious in the presence  
of important people. CA
- T F 4. I am troubled with shyness. CA
- T F 5. I believe I am no more nervous than most others. MTA
- T F 6. I often find myself hurrying to get places even  
when there is plenty of time. MTA
- T F 7. Almost every day something happens to frighten  
me. PIA
- T F 8. I am inclined to think about myself much of the  
time. CA
- .....
- T F 14. I tend to be affected quite a bit by the praise  
or blame of many people.
- .....
- T F 16. I usually feel self-conscious when reciting in  
class. CA. "

There is no indication that the O'Brien technique was used subsequently to measure anxiety. However it was used as the basis of work towards an improvement of anxiety scales. Nicolay-Walker (1964), of Loyola University, took it to themselves to devise a new test, the Personal Reaction Schedule, which will be described next.

#### The Personal Reaction Schedule

The PRS is a new scale. The authors retained two of the O'Brien's categories, Personal Inadequacy, and Motor Anxiety. A new category, Object Anxiety, replaces the vague Chronic Anxiety. It may be said that the PRS is an expansion of O'Brien's original work (Walker-Nicolay, 1964).

The PRS was designed as a clinical tool, contrary to the MAS. The authors of this new test constructed 40 items for each type of anxiety, making a total of 120 items.

" Of the total 120 items, 109 were devised by the investigators and 11 were MAS items. The 120 items typed on separate cards were then given to ten clinicians whose clinical experience ranged from 1 to 20 years. These clinicians were then asked to sort the items according to the following operational definitions:"

#### "Anxiety Type M (Motor Tension)"

"Type M anxiety is characterized by concern with external achievements coupled with physical tension which acts as a defense against feelings of inadequacy. When frustration occurs, energy is channeled somatically instead of psychically. Type M anxiety results

results in hyper-activity, physical and mental restlessness, or jumpiness."

"Anxiety Type O (Object)"

"Type O anxiety is characterized by concern that external demands and perceived expectancies may be overwhelming and one may suffer harm. It represents a projection or rationalization of one's possible personal inadequacy. It results in magnification of personal problems out of proportion to objective reality. The emphasis here is on the external as a source of uncertainty or unrest. "

"Anxiety Type P (Personal Inadequacy)"

"Type P anxiety is characterized by concern that one may not be capable of meeting the difficulties of life. The person himself feels inadequate and the inadequacy lies within himself. There is a certain helplessness and self-devaluation which may give rise to guilt feelings. The focus of the uncertainty is on one's own inadequacy." (Nicolay-Walker, 1964)

A statement which would belong to more than one class of anxiety, or to none, was to be discarded by the clinical judges. Therefore the criterion was that any given statement fit one and only one type of anxiety. Seventy per cent agreement was obtained for 87 items. These 87 items were then randomized and pooled with the Social Desirability scale (K scale) of the MMPI. At present the PRS consists of 87 anxiety items and 30 K scale items making up the

total of 117 items.

The PRS was administered to 948 subjects, 231 females and 717 males, all undergraduate students, Loyola University, Chicago. They were all enrolled in introductory Psychology and took the PRS as part of regular classroom exercises. The retest reliabilities were: Type M,  $r = .79$ ; Type O,  $r = .79$ ; Type P,  $r = .85$ ; Total PRS,  $r = .87$  (Nicolay-Walker, 1964).

Since the PRS seems to be the most precise anxiety test available it will be used for the present study. The hypothesis in this study is: Correlating scores on the PRS with the scores of intelligence, is likely to yield a significant result.

#### Method

A random sample of 70 male students was obtained out of the 948 undergraduate Loyola students who took the PRS, the MAS, and the Henmon-Nelson intelligence test (HN) at the same time. The correlations between the scores on the PRS and the scores on the HN were found by using the Pearson product moment formula for correlations. Since the raw scores were in number of ten, a 10 x 10 matrix was obtained.

#### Results

Two tables are sufficient to show the results. Table I contains the means and standard deviations of all the scores; Table II shows the 10 x 10 correlations matrix. The hypothesis that a significant correlation between the PRS and the HN scores would be obtained by using a more precise scale was not confirmed. No correlation was significantly different from zero.

Table I

## MEANS AND STANDARD DEVIATIONS FOR HENMON NELSON AND ANXIETY SCORES

<u>Variables</u>	<u>Sum X</u>	<u>Mean</u>	<u>S. D.</u>
M	1863	10.958	4.194
O	1640	9.647	4.061
P	1912	11.247	3.926
Tp	5405	31.794	10.200
K	2288	13.458	3.922
A	3010	17.705	8.025
Q	4047	23.805	6.696
V	6828	40.164	10.187
Th	10859	63.876	14.383
D	2841	16.711	8.773

## Key

M Motor Tension Anxiety scores on PRS

O Object Anxiety scores on PRS

P Personal Inadequacy scores on PRS

Tp Total Personal Inadequacy scores on PRS

K Social Desirability on PRS

A Taylor's MAS

Q Quantitative scores on HN

V Verbal scores on HN

Th Total HN scores

D Difference between Q and V

Table II

## CORRELATIONS MATRIX FOR HENMON NELSON AND ANXIETY SCORES

	M	O	P	Tp	K	A	Q	V	Th	D
M	***	.53	.56	.84	-.53	.56	.03	-.05	-.03	-.09
O		***	.56	.83	-.61	.52	-.04	-.09	-.08	-.08
P			***	.84	-.56	.62	-.01	-.10	-.08	-.10
Tp				***	-.67	.67	-.01	-.09	-.08	-.10
K					***	-.47	-.04	-.03	-.03	.02
A						***	.04	-.02	.01	-.04
Q							***	.45	.77	-.25
V								***	.91	.73
Th									***	.40
D										***

## Key

M Motor Tension Anxiety scores on PRS

O Object Anxiety scores on PRS

P Personal Inadequacy scores on PRS

Tp Total Personal Inadequacy scores on PRS

K Social Desirability on PRS

A Taylor's MAS

Q Quantitative scores on HN

V Verbal scores on HN

Th Total HN scores

D Difference between Q and V

Our hypothesis was that, by using a more accurate anxiety scale than the scales used so far in experiments on relationship between anxiety and intelligence, significant results would be obtained. The PRS was used. However the hypothesis was not confirmed. No correlation was significantly different from zero. In comparing specific items of the PRS with the HN findings, the results were:

Motor Tension Anxiety (PRS) correlated with quantitative scores on HN .03; with verbal scores, -.05, with total scores, -.03; with difference between quantitative and verbal scores, -.09.

Object Anxiety (PRS) correlated with quantitative scores on HN -.04; with verbal scores, -.09; with total scores, -.08; with difference between quantitative scores and verbal, -.08.

Personal Inadequacy Anxiety (PRS) correlated with quantitative scores -.01; with verbal scores, -.10, with total scores, -.08; with difference between quantitative and verbal scores, -.10.

Although none of the correlations is significant, it is interesting to note that almost all the correlations obtained are higher than the ones obtained with the MAS in the same experiment. This could mean that the refinement of the PRS has had some impact towards more significant results.



There is the possibility that other variables are interfering with the relationship between intelligence and anxiety in the experiments conducted so far. The following can be submitted for future research:

(a) relationship to kinds of groups; the group selected for the present experiment had a narrow range of IQ's, since most of the Ss were intellectually above average. The comparison between a variety of anxiety scores with scores of intelligence on a narrow range of IQ's is apt to produce confusing results; (b) a more accurate intelligence test than the HN would also be desirable, although the HN is frequently used, and therefore widely accepted for group testing.

#### Summary

A comparison between scores of anxiety and intelligence was instituted, with the purpose of checking previous experiments, where the same comparison has not produced significant results. The hypothesis was that failure in the past experiments might have been due to the inadequacy of the anxiety tests employed; therefore a more accurate factor-analyzed test, the Personal Reaction Schedule (Nicolay-Walker, 1964) was used.

The hypothesis was not confirmed, since no significant correlation was obtained, using the Pearson product moment formula for correlations. However the relationships found between PRS scores

and HN scores were generally and slightly greater than those between MAS AND HN scores. In future research probably other variables than intelligence and anxiety should be taken into consideration; a broader range of IQ's seems desirable; the use of more precise tests and techniques would also be in order.

## References

- Bending, A. W. The development of a short form of the Manifest Anxiety Scale. J. consult. Psychol., 1956, 20, 384.
- Calvin, Allen D., Koons, P. B. Jr., Bingham, J. L., & Fink, H. H. A further investigation of the relationship between manifest anxiety and intelligence. J. consult. Psychol., 1955, 19, 280-282.
- Cameron, N. The psychology of behavior disorders: a bio-social interpretation. Boston: Houghton Mifflin, 1947.
- Coleman, James C. Abnormal psychology and modern life. 2d edition. Scott Foresman: Chicago, Ill., 1956.
- Edwards, A. L. The social desirability variable in personality assessment and research. New York: Dryden, 1957
- Hilgard, E. R. Jones, L. V., & Kaplan, S. J. Conditioned discrimination as related to anxiety. J. exp. Psychol., 1951, 42, 94-99.
- Mandler, G. & Sarason, S. B. A study of anxiety and learning. J. abnorm. soc. Psychol., 1952, 54, 166-173.
- O'Brien, M. J. Differential effects of anxiety on problem solving. Unpublished doctoral dissertation. Catholic University of America, 1957.
- O'Connor, J. P., Lorr, M., & Stafford, J. W. Some patterns of manifest anxiety. J. clin. Psychol., 1956, 12, 160-163.
- Sarason, E. G. Empirical findings and theoretical problem in the use of anxiety scales. Psycho. Bull., 1960, 57, 403-405.

- Sarason, Irwin G. Intellectual and personality correlation of test anxiety. Unpublished paper, 1958.
- Sarason, Irwin G. Interrelationships among individual difference variables, behavior in psychotherapy, and verbal conditioning. J. abnorm. soc. Psychol., 1958, 56, 339-344.
- Sarason, Irwin G. Test anxiety, general anxiety, and intellectual performance. J. consult. Psychol., 1957, 21, 485-490.
- Sarason, Irwin G. The relationship of anxiety and "lack of defensiveness" to intellectual performance. J. consult. Psychol., 1956, 20, 220-222.
- Sarason, S. B., & Gordon, E. M. The test anxiety questionnaire: Scoring Norm. J. abnorm. soc. Psychol., 1953, 48, 447-448.
- Sarason, S. B., & Mandler, G. Some correlates of test anxiety. J. abnorm. soc. Psychol., 1952, 47, 810-817.
- Sarason, S. B., Mandler, G., & Craighill, P. C. The effect of differential instructions on anxiety and learning. J. abnorm. soc. Psychol., 1952, 47, 561-565.
- Spence, Kenneth W. A. A theory of emotionally based drive (D) and its relation to performance in simple learning situations. Amer. J. Psychol., 1958, 13, 131-141.
- Spence, K. W., & Taylor, Janet A. Anxiety and strength of the UCS as determiners of the amount of eyelid conditioning. J. exp. Psychol., 1951, 42, 183-188.
- Schulz, R. E. & Calvin, A. D. A failure to replicate the finding of a negative correlation between manifest anxiety and

ACE scores. J. consult. Psychol., 1955, 19, 223-224.

Spielberger, Charles D. On the relationship between manifest anxiety and intelligence. J. consult. Psychol., 1958, 22, 220-224.

Spielberger, Charles D. & Kazzmeier, W. Manifest anxiety and intelligence and college grades. J. consult. Psychol., 1959, 23 278.

Sullivan, Maurice & Calvin, A. D. Spoken and written vocabulary; their relation to a standard vocabulary test intelligence and anxiety. J. consult. Psychol., 1957, 21, 160.

Taylor, Janet A. Drive Theory and manifest anxiety. Psychol. Bull., 1956, 53, 303-320.

Taylor, Janet A. The relationship of anxiety to the conditioned eyelid response. J. Exp. Psychol., 1952, 42, 81-92.

Taylor, Janet A. & Spence, K. W. The relationship of anxiety level to performance in serial learning. J. Exp. Psychol., 1952, 44, 61-64.

Walker, Ronald E., & Nicolay, Robert C., A reexamination of anxiety: the Nicolay-Walker Personal Reaction Schedule. Unpublished, 1964.

### Approval Sheet

The thesis submitted by Rev. Olegario de Godoy, S.J. has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

May 10 1965  
Date

Marcella G. Twomey  
Signature of Adviser