An Investigation of the Relation of Sentence Completion Scales to Academic Aptitude and Achievement

Margaret J. La Plante
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AN INVESTIGATION OF THE RELATION OF SENTENCE COMPLETION
SCALES TO ACADEMIC APTITUDE AND ACHIEVEMENT

by

Margaret J. La Plante

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree of
Master of Arts

February

1969
Margaret J. La Plante was born in Chicago, Illinois, February 21, 1939.

She was graduated from Madonna High School, in June, 1956. She attended Loyola University, Chicago, where she was awarded the degree of Bachelor of Arts, with a major in Greek, in June, 1960. She was employed as a welfare worker by the Cook County Department of Public Aid for eighteen months. In 1962, she attended the Sorbonne, University of Paris, where she was awarded a certificate in French.

In September, 1963, she began graduate work at Loyola University, Chicago, in the Department of Psychology. She held assistantships both at Loyola and at the University of Illinois, Chicago Circle. After completing a year of clinical training at the Loyola University Guidance Center, she was employed by the University of Illinois, Chicago Circle, as a student counselor. She has held this position now for two and one-half years.
Acknowledgments

The author wishes to acknowledge her indebtedness to Dr. Patricia M. Barger for her invaluable aid in the capacity of adviser; to Dr. Floyd S. Irvin for his assistance in the planning of this study, and for serving as a judge of the materials collected, and to Dr. James W. Creaser for his generous help with the statistical aspects of the study.

Thanks are also due to Dr. Harold Klehr for making available to the author the time required for conducting the study, as well as the facilities of the Student Counseling Service, University of Illinois, Chicago Circle. Finally, without the co-operation of the Department of Psychology, University of Illinois, and of the research subjects, the students in introductory psychology, this study could not have been carried out.
# Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>II. Review of the Related Literature</td>
<td>5</td>
</tr>
<tr>
<td>III. Method</td>
<td>15</td>
</tr>
<tr>
<td>IV. Results</td>
<td>21</td>
</tr>
<tr>
<td>V. Discussion</td>
<td>35</td>
</tr>
<tr>
<td>VI. Summary</td>
<td>42</td>
</tr>
<tr>
<td>References</td>
<td>45</td>
</tr>
<tr>
<td>Appendix</td>
<td>53</td>
</tr>
</tbody>
</table>
Table of Tables

Table                                                                 Page
1. ACT Rank, Sex and College of Experimental Subjects 18
2. ACT Rank and Sex of Eligible Students Who Did Not
   Participate as Experimental Subjects. 19
3. Self-Concept Scale: Pearson Product-Moment Corre-
   lations Between Items and Between Item and Total
   Score. 22
4. Learning-Attitudes Scale: Pearson Product-Moment
   Correlations Between Items and Between Item and
   Total Score 23
5. Need-for-Achievement Scale: Pearson Product-Moment
   Correlations Between Items and Between Item and
   Total Score 24
6. Pearson Product-Moment Correlations Between Sen-
   tence Completion Scales and Grade-Point Averages. 26
7. Point-Biserial Correlations Between Sentence
   Completion Scales and Composite ACT Scores. 27
8. Self-Concept Scale: Summary of Analysis of
   Variance 28
9. Learning-Attitudes Scale: Summary of Analysis of
   Variance 29
Table of Tables (Continued)

Table                                                                 Page
10. Need-for-Achievement Scale: Summary of Analysis of Variance. . . . . . . . . . . . . . 30
11. Need-for Achievement Scale: Summary of Median Test for Male Subjects of High and Low College Aptitude 32
12. Need-for-Achievement Scale: Summary of Median Test for Female Subjects of High and Low College Aptitude 33
13. Cumulative Grade-Point Averages: Summary of Analysis of Variance. . . . . . . . . . . . . . 34

vi
Chapter I
Introduction

This study will investigate the relation of three sentence completion test scales to college aptitude and to achievement in the first year of college. Consisting of seven items each, the scales have been taken from the Zaccaria Sentence Completion Inventory (Zaccaria, in press), and are designed to measure the positive or negative affect associated with the expression of these personality variables: self-concept, school and learning attitudes, and need for achievement.

The sentence completion is a method of personality appraisal in which the subject is presented with a series of sentence stems, which he is asked to complete. The form of the instructions to the subject, the content and grammatical structure of the stems, as well as the method of evaluating the subject's responses, are all highly variable in various applications of the basic method.

Because the method is so easily adapted to meet specific clinical and research purposes, there exist more than a score of sentence completion tests, the origins of which are in many cases obscure. While the advantages of the "custom" test are obvious, one of the corresponding disadvantages is that "the development of a systematic and parametric body of information
relevant to any one sentence completion method has been retarded.

"Goldberg, 1965, p. 772."

The sentence completion method on which most research has been done with college students as subjects is the Rotter Incomplete Sentences Blank (Barry, 1950; Berger & Sutker, 1956; Chance, 1958; Churchill & Crandall, 1955; Morton, 1955; Rotter, 1946; Rotter & Rafferty, 1950; Rotter, Rafferty, & Schachtitz, 1949, etc.). This test employs a quantified scoring system, as does the Zaccaria. Unlike the Zaccaria, however, the Rotter measures but a single variable, namely psychological adjustment. Goldberg says of Rotter's Incomplete Sentences Blank:

"Used as such a measure with such groups college students, the reliability, validity, and usefulness of the instrument have received impressive support from a considerable research literature. That the ISB is unsuccessful when used with other groups, such as the blind, or when used for other purposes, such as to predict academic success, serves to determine the useful limits of the test."

"1965, p. 812."

There has been some indication in the literature that the sentence completion method can be useful for the prediction of academic achievement, provided that the items are so constructed as to elicit responses in personality areas considered on a theoretical basis to be relevant to such achievement, and provided that the test is scored for corresponding, specific
personality variables.

Kimball (1952) administered a custom test to 117 preschool students, and rated the responses for (1) attitude toward father and (2) aggression. Academic underachievers were discriminated from normal achievers by both sets of ratings ("father," $p < .05$; aggression, $p < .01$).

Irvin (1967) compared 171 first-year college students' sentence completion responses (Zaccaria Sentence Completion Inventory: self-concept, school-and-learning attitudes, and need-for-achievement scales) with first-semester grades. The most notable findings were positive correlations between positively expressed self-concept and academic achievement ($r = .48$; $p < .01$), and between positively expressed need for achievement and academic performance ($r = .38$; $p < .01$). A low positive correlation ($r = .14$) was found between positive learning attitudes and academic performance.

It is the purpose of this study (1) further to validate the self-concept and need-for-achievement scales of the Zaccaria Sentence Completion Inventory as predictors of academic achievement in college, and to attempt similarly to validate the school-and-learning-attitudes scale; (2) to discover whether the relationships found by Irvin to obtain between the test scales and college achievement obtain similarly between the scales and college aptitude measures; (3) to discover whether the variability of scores on any of the three scales, particularly the need-for-achievement scale, is related to sex differences and/or
differences in college aptitude, and (4) to investigate whether
the sex factor alone or the interaction between the college-
aptitude and sex factors has a significant influence on academic
achievement.

Accordingly, the following hypotheses are advanced:

(1) Performance on the three sentence completion scales
will be related significantly to academic achievement in the
first year of college.

(2) Performance of the three sentence completion scales
will be related significantly to college-aptitude-test scores.

(3) The variability of scores on the three scales will be
influenced significantly by either the sex factor or the college-
aptitude factor, or by the interaction of these two factors.

(4) The sex factor, and/or the interaction between the
college-aptitude and sex factors, will have a significant in-
fluence on the variability of subjects' academic achievement in
the first year of college. (It is assumed that the college-
aptitude factor alone will have a significant influence on the
variability of grade-point averages.)
Chapter II

Review of the Related Literature

The prediction of college achievement has been perennially a matter of both theoretical and practical interest for psychologists. Innumerable research efforts have had as their goal to identify and/or to measure various aspects of the personality factors (in addition to the obvious one of intelligence) that enter into a young person's achieving academic success. Three such factors, considered relevant on an intuitive basis and on the basis of some empirical investigation, are those with which the present study is concerned, namely self-concept, learning attitudes, and need for achievement.

There have been surprisingly few studies reported on the relation between self-concept and scholastic performance, although, from a theoretical point of view, this would seem to be a rich area for the generation of testable hypotheses. Researchers in the area of self-concept, largely followers of Carl Rogers, have typically employed the Q-Sort as their instrument, and have attempted to measure the change in self-concept that can be attributed to the counseling process.

One technique that has been used to investigate self-concept in relation to achievement is the "Who Am I?" Test (Kuhn & Mc Partland, 1954), in which the subject is asked to give
twenty answers to this one question, in the order in which the answers occur to him. Gustav (1962), however, did not find it possible to differentiate on the basis of this test among college students with superior, average, and failing grades.

Using measures of body-cathexis, self-cathexis, and anxiety, White and Wash (1965) attempted to predict academic achievement for seventy-four students in the last two years of college. Scores on the personality variables were highly intercorrelated, but correlations with grade-point averages were not significant.

Martire (1956) found, using fifty-three male college students as subjects, that those who obtained high need-for-achievement scores (thematic apperceptive measures of the strength of the achievement motive LMc Clelland, Clark, Roby, & Atkinson, 1949) had a significantly greater disparity than their peers between their self-ideal and self ratings on a combination of five achievement-related traits.

An instrument developed in an Office of Education project at Michigan State University, the Word Rating List, is reported to have a high degree of concurrent and predictive validity for high-school students as a measure of academic self-concept (Payne, 1962).

Two other studies using high-school students as subjects found a definite association between negative self-attitudes and academic underachievement, ability levels being held constant
(Shaw & Alves, 1963; Shaw, Edson, & Bell, 1960). The instrument employed in these studies was the Bills Index of Adjustment and Values (Bills, 1958).

Thus, especially with high-school students, we find some support for the proposition that a measure of self-concept can be a valid predictor of academic success.

The literature on the measurement of school and learning attitudes is even more sparse. It appears that no one questions the relation of positive learning attitudes to academic success. Rather, the few studies that have been reported are concerned with finding a suitable measure of these attitudes and/or with establishing their relative importance (e.g., in relation to study habits) for the prediction of academic success.

Holtzman, Brown, and Farquhar (1954) standardized a new instrument for the prediction of academic success, the Survey of Study Habits and Attitudes, by giving it to 1756 men and 1118 women in ten different colleges. One-semester grade-point averages were the achievement criterion. It was determined that attitudinal factors are more critical for academic success than are the actual mechanics of studying. Brown and Holtzman (1955) followed up this endeavor with a study-attitude questionnaire, also designed to predict college achievement. The correlation coefficients reported in both of these studies between measures of study methods and attitudes and grade-point averages varied between .40 and .50.
Another instrument for the prediction of college success, the Life Experience Inventory (Malloy, 1955), includes school experience and attitudes toward education as one of its scales (along with self-appraisal, family relationships, and choice and type of friends). Multiple correlations with grade-point averages were significantly increased for both sexes when this instrument was added to a battery consisting of the American Council Psychological Examination, linguistic section, and an English placement test.

Brown (1964) gathered further empirical evidence for what was already known (Tyler, 1956) about the relation between study habits and attitudes and college achievement, namely that there is a positive correlation between most measures of the former and the usual measure of the latter, but that the relative measurable influence of study habits and attitudes is less than that of tested abilities and past achievement.

Need for achievement (Murray's n-Achievement or n-Ach) has been by far the most extensively investigated of the three personality variables. The major part of the literature on need for achievement has been devoted to problems linked with Mc Clelland's formulations on the subject (Mc Clelland, 1951, 1955, 1965; Mc Clelland, Atkinson, Clark, & Lowell, 1953; Mc Clelland et al., 1949). According to Mc Clelland and his associates, TAT-type stories, told to stimulus pictures portraying situations related to achievement, are regarded as valid, sensitive
measures of the strength of the achievement motive in the sub-
ject, and are scored quantitatively for need for achievement.

Atkinson, in an extension of McClelland's work (Atkinson,
1958, 1965; Atkinson, Bastian, Earl, & Litwin, 1960; Atkinson &
Reitman, 1956), has developed a theory in terms of which per-
formance is seen as a function of motive strength (a relatively
stable disposition, as in the case of need for achievement) and
cognitive expectancy of goal-attainment (à la Tolman: a rela-
tively transient awareness, not necessarily conscious, regarding
the consequences of an act). Following Rotter (1955), Atkinson
underscores the importance of the situation in defining the
expectancies and reinforcement values, or incentives, which he
sees as the determiners of behavior.

Atkinson would not expect a simple measure of the strength
of need for achievement to go very far toward a prediction of
academic success. He states:

In the light of the present conception of the
relationship between particular motives and overt
behavior, it is not at all surprising that the
correlations that have been reported between themat-
ic apperceptive measures of particular motives
and complex performance criteria like academic
grade average are, at best, low to moderate ....
A high grade-point average in school or college is
an accomplishment requiring performances which
undoubtedly are overdetermined in the sense of involving more than one of the individual's motives. The strength of motivation to get good grades in school...is in part a function of the achievement motive, but few will quarrel with the idea that performance in school is also perceived by many students as instrumental to gaining the approval of parents (affiliation) or as the path to an influential vocation (power), to list but two other possible "meanings" that working hard in school may have for particular individuals (1965, p. 442).

McClelland and Atkinson, in maintaining that those who manifest stronger achievement motivation will express greater achievement fantasy, are representative of one side of a much debated issue. The other side accounts for achievement fantasy as compensatory for the subject's inability to express achievement motives in the situations he encounters in real life (Broverman, Jordan, & Phillips, 1960; Cole, Jacobs, & Zubok, 1962; Lazarus, Baker, Broverman, & Mayer, 1957). Both the Murstein (1963) and the Zubin, Eron, and Schumer (1965) reviews agree that the major elements of McClelland's findings have been upheld.

A few studies have employed the Edwards Personal Preference Schedule, need-for-achievement scale, for the purpose of predicting college achievement. Bendig (1959) found that a
vocabulary test was the best single predictor of course grades in introductory psychology, but that the multiple correlation of the vocabulary test and the Edwards scale with course grades was significantly larger than that with the vocabulary test alone. (The addition of Mc Clelland's test to the vocabulary test or to the combination of the vocabulary test and the Edwards scale did not significantly increase the predictability of the achievement criterion. Nor had Bendig found apperceptive need-for-achievement scores to correlate with the Edwards scale in a previous study.) Shaw (1961) found the Edwards scale to predict achievement for males, but not for females. (He too obtained negative results with Mc Clelland's test.) Melikian (1958) also attempted to relate Mc Clelland's test to the Edwards scale, but found no relationship.

Demos and Spolyar (1961) obtained negative results with the Edwards scale. They found no significant differences in need-for-achievement scores between achievers (School and College Ability Test SCAT score in the tenth decile, and freshman grade-point average above the mean) and underachievers (SCAT score in the tenth decile, but freshman grade-point average below the mean), or between overachievers (SCAT score below the mean, but grade-point average above the mean) and nonachievers (both measures below the mean).

Various other tests and scales have been reported occasionally in the literature on the prediction of academic
achievement. These include adjective check lists (Heilbrun, 1962; Mitchell, 1961), the Lernreuter Personality Inventory, the Bell Adjustment Inventory, and the MMPI (Dowd, 1952), and Chahbazi's Picture Stimuli Test and Sound Stimuli Test (Chahbazi, 1960). The results with these instruments have been as varied and inconsistent as have those with the McClelland test and the Edwards scale.

Although thematic apperceptive scoring procedures developed with college-age males are considered applicable to females for the measurement of the strength of need for achievement (Veroff, Wilcox, & Atkinson, 1953), it seems to be generally agreed that results obtained with the need-for-achievement variable in male populations do not hold up in female samples (Littig & Yeracaris, 1963; Shaw, 1961). This observation has been made for the most part on the basis of thematic apperceptive measures of the strength of need for achievement, inasmuch as the bulk of the work that has been done on this variable has been done with McClelland's test. There seems to be no reason to suspect, however, that the observed sex difference in the strength of need for achievement is a function of the psychometric instrument used. Moreover, we may look for a possible sex difference in the positive or negative affect associated with the expression of this need.

Several studies have suggested possible reasons for the observed sex difference. Lesser, Krawitz, and Packard (1963)
found that, under conditions of need-for-achievement arousal, the need-for-achievement scores of intellectually achieving, adolescent girls increased for pictures portraying females in achievement situations, and decreased for pictures portraying males in similar situations. The scores of underachieving girls varied in the opposite way. French and Lesser (1964) obtained similar results. It was suggested that underachieving girls may regard achievement as inappropriate to the feminine role.

Kagan and Moss, who have published a number of longitudinal studies based on work done at the Fels Research Institute, found (1) that concern about achievement on the part of the same-sex parent has a special influence on the child's achievement strivings (1959), and (2) that achievement behavior is relatively stable for both sexes from early childhood through adulthood (1962). Moss and Kagan found positive correlations between measures of the strength of the achievement motive and several kinds of achievement behavior (including behavioral attempts to attain "a self-imposed standard of excellence," "to obtain symbols of status and recognition," and a general concern with intellectual competence). These correlations tended to be higher for females than for males (1961).

Crandall, Katkovsky, and Preston (1962), studying children in the early years of grade school, found an interesting sex difference with regard to achievement motivation. Among boys, brighter children generally had high expectations of
success on a new task (the correlation coefficient between IQ and expectation of success being .62), and felt that they themselves were responsible for intellectual successes or failures. Among girls, however, brighter children commonly expected to fail on a new task ($r = -.41$). No relationship was found between the girl's IQ and her feeling of personal responsibility for success or failure in intellectual tasks. The authors speculate that this apparent breakdown of "normal" linkages between achievement motivation and performance, in the case of the girl, may have a serious influence on her intellectual behavior at later ages.

There seems to be enough evidence that achievement behavior has different meanings for females, on the whole, than it has for males, and that one must view with suspicion any broad generalizations on the subject that fail to take the sex factor into account.
Chapter III

Method

Subjects

Subjects were selected for this study from the total group of third-quarter freshmen enrolled in the introductory psychology course during the spring quarter, 1968, at the University of Illinois, Chicago. The students were ranked according to their composite ACT scores (combined verbal and quantitative measure of college aptitude, American College Testing Program). Those few for whom ACT scores were not available, such as foreign students, were automatically eliminated at this point. The remaining students numbered 197, with ACT scores ranging from 16 through 31. Those in the first quartile (scores 16-22, including sixty-five students), and those in the fourth quartile (scores 26-31, including seventy-two students), were asked to participate as subjects. (Although each quartile would be expected to consist of forty-nine students, making the divisions at these points would have resulted in the arbitrary inclusion of some students with ACT scores of 22 and 26, and the arbitrary exclusion of others with the same scores).

Instruments

As implied in the section on subjects, ACT composite scores were available from the university's Office of Records.
for all subjects.

The Zaccaria Sentence Completion Inventory was drawn primarily from the form used by Peck and McGuire (1959), and has been modified subsequently by Zaccaria (in press), Irvin (1967), and the present writer. The form employed appears in the Appendix. (Modifications by Irvin and the present writer have been confined to the scoring method.) In addition to the three scales employed in the present study (self-concept, school and learning attitudes, and need for achievement), there are scales for body image, attitudes toward parents, and attitudes toward peers. (See the Appendix for a list of the items by category.)

The latter three scales were not used in this study (although the subjects responded to all forty-two items) for two principal reasons: (1) both the attitudes-toward-parents scale and the attitudes-toward-peers scale contain items of questionable face validity (the only type of validity that can be ascribed confidently to the scales at this point), and (2) Irvin's study relating sentence-completion responses to scholastic achievement (1967), the results of which the present study seeks in part to corroborate, used only the self-concept, school-and-learning-attitudes, and need-for-achievement scales.

Cumulative grade-point averages were obtained from the Office of Records for all subjects when they had completed their third quarter of college work.
Procedure

Each of the 137 students selected by the stated criteria was mailed a sentence-completion form, along with a stamped, self-addressed envelope, and was asked to complete the form and return it to the investigator within five days. Those who did so would receive credit toward their psychology course requirement of participation in at least three psychology experiments. (See the Appendix for a copy of the covering letter.)

Eighty-five students responded. Of these, six had to be excluded as subjects because they had failed to comply with directions. Three returned the form after the deadline; two gave their forms to others in the class, who returned them for needed credit, but who did not meet the predetermined criteria for the selection of subjects, and one (a female student) refused to give her name. The research sample thus included seventy-nine students.

Table 1 shows the distribution of subjects by ACT rank (high or low), sex, and college. The subjects ranged in age from 17 to 21, with a mean age of 18.4. It was decided to disregard age and college in the treatment of data, since no systematic variations with respect to the variables under consideration could be expected to appear in these categories.

The fifty-two eligible students who did not respond were distributed as shown in Table 2.

Although the mean ACT score for the freshman class from which this sample was drawn is not known, there is no reason
Table 1
ACT Rank, Sex, and College of Experimental Subjects

<table>
<thead>
<tr>
<th>College</th>
<th>High ACT</th>
<th></th>
<th>Low ACT</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Liberal Arts &amp; Sciences</td>
<td>14</td>
<td>16</td>
<td>6</td>
<td>18</td>
<td>54</td>
</tr>
<tr>
<td>LAS: Div. of Education</td>
<td></td>
<td>2</td>
<td></td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Architecture and Art</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Business</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Engineering</td>
<td>4</td>
<td></td>
<td>2</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Subtotal</td>
<td>21</td>
<td>20</td>
<td>12</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td></td>
<td>38</td>
<td></td>
<td>79</td>
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</table>
Table 2
ACT Rank and Sex of Eligible Students Who Did Not Participate as Experimental Subjects

<table>
<thead>
<tr>
<th>Sex</th>
<th>High ACT</th>
<th>Low ACT</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>17</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td>Female</td>
<td>11/12*</td>
<td>14/15*</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>28/29*</td>
<td>23/24*</td>
<td>52</td>
</tr>
</tbody>
</table>

* The student who responded without giving her name was a female, of unknown ACT rank.
to believe that this sample is different in this respect from the general population of freshman students still in school during the third quarter.

Sentence-completion responses were scored independently by two judges, neither of whom was aware of the sex or the ACT rank of the subject (except insofar as these facts might be guessed from such clues as the content of some responses, handwriting, spelling, grammar, etc.). The scoring was done on a 3-point rating scale, with 1 for an accepting, or affectively positive expression, 2 for a neutral, ambivalent, or omitted response, and 3 for a rejecting, or affectively negative expression. In cases where the judges disagreed, the responses were discussed until agreement was reached (for the sake of assigning a single score for each item). A record was kept of the original scores, however, so that an index of interscorer reliability could be obtained.

It will be noted again that the measures obtained were not measures of the strength of the personality variable (e.g., the strength of the achievement motive), but were rather measures of the affect associated with the expression of the variable (e.g., the higher the need-for-achievement score, the more negative the affect associated with the expression of this need).
Chapter IV
Results

Pearson product-moment correlations were computed between the judges' original scale scores for each scale for all subjects. The following coefficients of interscorer reliability were obtained: for self-concept, $r = .86$; for learning attitudes, $r = .82$, and for need for achievement, $r = .98$.

A coefficient of internal consistency was obtained for each of the scales by the split-half method, with a correction for length (Spearman-Brown formula). For self-concept, $r = .42$; for learning attitudes, $r = .31$, and for need for achievement, $r = .37$.

The relatively low values of these correlations prompted an item analysis, the results of which are shown in Tables 3, 4, and 5. The relatively low values of the item intercorrelations indicate that the items composing each scale are not measuring a unitary trait. Further, the correlations of items with total score indicate that the items contribute variably to the total score. (The correlations cited between item and total score were computed with the item in question included in the total. Correlations were also computed between item and total score minus that item, and, as would be expected, these correlations were of a much lower magnitude.)
Table 3

Self-Concept Scale: Pearson Product-Moment Correlations
Between Items and Between Item and Total Score

<table>
<thead>
<tr>
<th>Item</th>
<th>4</th>
<th>8</th>
<th>16</th>
<th>21</th>
<th>29</th>
<th>31</th>
<th>39</th>
</tr>
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<tbody>
<tr>
<td>4. Sometimes I feel like...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. People think that I...</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. When I'm alone...</td>
<td></td>
<td>-.05</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Most people don't know that I...</td>
<td></td>
<td></td>
<td></td>
<td>.08</td>
<td>.05</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>29. Secretly I...</td>
<td></td>
<td>.15</td>
<td>.09</td>
<td>.12</td>
<td>-.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. If only I...</td>
<td></td>
<td>.02</td>
<td>-.04</td>
<td>.07</td>
<td>.15</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td>39. I often think of myself as...</td>
<td></td>
<td>.04</td>
<td>.08</td>
<td>.00</td>
<td>.16</td>
<td>.21</td>
<td>.21</td>
</tr>
<tr>
<td>Total Score</td>
<td>.38**</td>
<td>.42**</td>
<td>.32**</td>
<td>.43**</td>
<td>.57**</td>
<td>.50**</td>
<td>.58**</td>
</tr>
</tbody>
</table>

** P < .01.
Table 4
Learning-Attitudes Scale: Pearson Product-Moment Correlations
Between Items and Between Item and Total Score

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>12</th>
<th>17</th>
<th>19</th>
<th>26</th>
<th>36</th>
<th>41</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. School is...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Most teachers...</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I learn best...</td>
<td>-.07</td>
<td>-.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. What I like about school...</td>
<td>-.01</td>
<td>-.04</td>
<td>.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. What I hate about school...</td>
<td>.06</td>
<td>.14</td>
<td>.02</td>
<td>.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. As for reading...</td>
<td>.14</td>
<td>.21</td>
<td>.04</td>
<td>.13</td>
<td>-.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. The teacher I like best</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is a person who...</td>
<td>-.04</td>
<td>-.03</td>
<td>.19</td>
<td>-.05</td>
<td>-.10</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>.51**</td>
<td>.61**</td>
<td>.32**</td>
<td>.37**</td>
<td>.19</td>
<td>.61**</td>
<td>.26*</td>
</tr>
</tbody>
</table>

* P < .05.
** P < .01.
Table 5
Need-for-Achievement Scale: Pearson Product-Moment Correlations
Between Items and Between Item and Total Score

<table>
<thead>
<tr>
<th>Item</th>
<th>6</th>
<th>11</th>
<th>18</th>
<th>24</th>
<th>30</th>
<th>34</th>
<th>42</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. When others do better...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. My work has been...</td>
<td>.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. When I look ahead...</td>
<td>.30**</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Ten years from now I...</td>
<td>.03</td>
<td>-.10</td>
<td>.30**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. If I'm left behind...</td>
<td>.29**</td>
<td>.20</td>
<td>.22*</td>
<td>-.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Someday I want to be...</td>
<td>.16</td>
<td>.06</td>
<td>.17</td>
<td>.14</td>
<td>.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. When my work is poor...</td>
<td>.04</td>
<td>.01</td>
<td>.03</td>
<td>-.02</td>
<td>.32**</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>.63**</td>
<td>.43**</td>
<td>.58**</td>
<td>.24*</td>
<td>.68**</td>
<td>.33**</td>
<td>.47**</td>
</tr>
</tbody>
</table>

* $p < .05$.

** $p < .01$. 
To test the hypothesis (1) that performance on the three sentence completion scales would be related significantly to academic achievement in the first year of college, Pearson product-moment correlations were computed between the following pairs of values: self-concept scores and grade-point averages; learning-attitudes scores and grade-point averages, and need-for-achievement scores and grade-point averages. These correlation coefficients appear in Table 6. The correlations are low, with only that for need for achievement reaching significance.

As a test of the hypothesis (2) that performance on the three sentence completion scales would be related significantly to college-aptitude-test scores, point-biserial correlations were computed (Mc Nemar, 1949, p. 174) between the following pairs of scores: self-concept and ACT; learning attitudes and ACT, and need for achievement and ACT. These coefficients appear in Table 7. None of the scale scores correlates significantly with the ACT.

In order to test the hypothesis (3) that the variability of scores on the three scales would be influenced significantly by either the sex factor or the college-aptitude factor, or by the interaction of these two factors, three analyses of variance were performed (Winer, 1962, pp. 241-244). The results of these analyses appear in Tables 8, 9, and 10. Neither the self-concept nor the learning-attitudes scale has any significant effects or interactions. Regarding the need-for-achievement
Table 6

Pearson Product-Moment Correlations Between Sentence Completion Scales and Grade-Point Averages

<table>
<thead>
<tr>
<th>Scale</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept</td>
<td>.09</td>
</tr>
<tr>
<td>Learning Attitudes</td>
<td>.05</td>
</tr>
<tr>
<td>Need for Achievement</td>
<td>.23*</td>
</tr>
</tbody>
</table>

*p < .05.
Table 7

Point-Biserial Correlations Between Sentence Completion Scales and Composite ACT Scores

<table>
<thead>
<tr>
<th>Scale</th>
<th>ACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept</td>
<td>.15</td>
</tr>
<tr>
<td>Learning Attitudes</td>
<td>-.03</td>
</tr>
<tr>
<td>Need for Achievement</td>
<td>.15</td>
</tr>
</tbody>
</table>
Table 8
Self-Concept Scale: Summary of Analysis of Variance

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT (A)</td>
<td>17.35</td>
<td>1</td>
<td>17.35</td>
<td>3.00</td>
</tr>
<tr>
<td>Sex (B)</td>
<td>13.33</td>
<td>1</td>
<td>13.33</td>
<td>2.31</td>
</tr>
<tr>
<td>Interaction (AB)</td>
<td>4.02</td>
<td>1</td>
<td>4.02</td>
<td>.70</td>
</tr>
<tr>
<td>Within Cells</td>
<td>433.13</td>
<td>75</td>
<td>5.78</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Table 9

Learning-Attitudes Scale: Summary of Analysis of Variance

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT (A)</td>
<td>1.64</td>
<td>1</td>
<td>1.64</td>
<td>.39</td>
</tr>
<tr>
<td>Sex (B)</td>
<td>6.94</td>
<td>1</td>
<td>6.94</td>
<td>1.66</td>
</tr>
<tr>
<td>Interaction (AB)</td>
<td>.19</td>
<td>1</td>
<td>.19</td>
<td>.05</td>
</tr>
<tr>
<td>Within Cells</td>
<td>313.21</td>
<td>75</td>
<td>4.18</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Table 10

Need-for-Achievement Scale: Summary of Analysis of Variance

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT (A)</td>
<td>18.63</td>
<td>1</td>
<td>18.63</td>
<td>2.50</td>
</tr>
<tr>
<td>Sex (B)</td>
<td>.37</td>
<td>1</td>
<td>.37</td>
<td>.05</td>
</tr>
<tr>
<td>Interaction (AB)</td>
<td>35.42</td>
<td>1</td>
<td>35.42</td>
<td>4.75*</td>
</tr>
<tr>
<td>Within Cells</td>
<td>558.48</td>
<td>75</td>
<td>7.45</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* P < .05.
scale, while neither of the main effects is significant, there is a significant interaction between them.

In order to clarify the significant influence of the interaction of the sex and college-aptitude factors on the need-for-achievement scale, the median test was performed (Siegel, 1956, pp. 111-116) for the male and female samples independently. Summaries of these tests are presented in Tables 11 and 12. The median scale score is significantly higher (reflecting relatively greater negative affect associated with the expression of need for achievement) for high-college-aptitude males than for low-college-aptitude males. No corresponding difference is observed for females.

Finally, as a test of the hypothesis (4) that the sex factor, and/or the interaction between the college-aptitude and sex factors, would have a significant influence on the variability of subjects' academic achievement in the first year of college, a fourth analysis of variance was performed. (It was assumed that the college-aptitude factor alone would have a significant influence on the variability of grade-point averages.) The results of this analysis are seen in Table 13. While the assumption of the significant influence of the college aptitude factor is borne out, neither the other main effect nor the interaction is significant.
### Table 11
Need-for-Achievement Scale: Summary of Median Test for Male Subjects of High and Low College Aptitude

<table>
<thead>
<tr>
<th>Score</th>
<th>High-ACT Group</th>
<th>Low-ACT Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Above Median</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>. .</td>
<td>. .</td>
<td>. .</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>. .</td>
<td>. .</td>
</tr>
<tr>
<td>19</td>
<td>. .</td>
<td>. .</td>
<td>. .</td>
</tr>
<tr>
<td>18</td>
<td>. .</td>
<td>. .</td>
<td>. .</td>
</tr>
<tr>
<td>17</td>
<td>3</td>
<td>. .</td>
<td>. .</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>. .</td>
<td>. .</td>
</tr>
<tr>
<td>15</td>
<td>6</td>
<td>. .</td>
<td>. .</td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>15</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>At Median and Below</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>. .</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>. .</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>. .</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>. .</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>6</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>12</td>
<td>33</td>
</tr>
</tbody>
</table>

***χ² = 14.83 (df = 1); p < .001.
Table 12

Need-for-Achievement Scale: Summary of Median Test for Female Subjects of High and Low College Aptitude

<table>
<thead>
<tr>
<th>Score</th>
<th>High-ACT Group</th>
<th>Low-ACT Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Above Median</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>. .</td>
<td>. .</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>. .</td>
<td>. .</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>. .</td>
<td>. .</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>. .</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>. .</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>. .</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>6</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>At Median and Below</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>. .</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>. .</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>. .</td>
<td>. .</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>14</td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>26</td>
<td>46</td>
</tr>
</tbody>
</table>

Note. \( \chi^2 = .29 \text{ (df = 1)}; \text{ N.S.} \)
### Table 13
Cumulative Grade-Point Averages: Summary of Analysis of Variance

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT (A)</td>
<td>5.332</td>
<td>1</td>
<td>5.332</td>
<td>20.59***</td>
</tr>
<tr>
<td>Sex (B)</td>
<td>.584</td>
<td>1</td>
<td>.584</td>
<td>2.25</td>
</tr>
<tr>
<td>Interaction (AB)</td>
<td>0.000</td>
<td>1</td>
<td>0.000</td>
<td>0.00</td>
</tr>
<tr>
<td>Within Cells</td>
<td>19.436</td>
<td>75</td>
<td>.259</td>
<td>1.00</td>
</tr>
</tbody>
</table>

***p < .001.
Chapter V

Discussion

It must be said in relation to the sentence completion measures themselves, namely the self-concept, learning-attitudes, and need-for-achievement scales of the Zaccaria Sentence Completion Inventory, that in their present form they cannot be regarded as valid correlates of achievement in the first year of college. Nor have they been found to correlate with the ACT, a commonly used measure of college aptitude.

The self-concept scale has the highest coefficient of internal consistency among the three scales (although all of these coefficients are within a fairly close range, and are not impressive). The item analysis shows each of the items of this scale to correlate at the one-per-cent level with the total scale score. However, the self-concept scale was not found in this study to correlate significantly with either three-quarter cumulative grade-point averages or ACT scores; nor was the variability of scores on this scale significantly influenced either by the sex or college-aptitude factor, or by the interaction of these factors. In sum, all results obtained with this scale in the present study were negative. Irvin (1967), on the other hand, obtained a highly significant correlation between self-concept scores and first-semester college grades.
The learning-attitudes scale contains two items (numbers 26 and 41) that fail to correlate at the one-per-cent level with the total scale score. The elimination of these items is indicated for possible improvement of the internal consistency of the scale. Its validity as a predictor of college-aptitude and achievement criteria, however, is another matter. The scale yielded only negative results in the present study. The correlation reported by Irvin (1967) between learning-attitudes scores and first-semester grades was similarly unimpressive.

The need-for-achievement scale includes one item (number 24) that was found not to correlate at the one-per-cent level with the total scale score. The scale might be improved by the elimination of this item. In its present form, however, this scale afforded the only positive results obtained in the present study.

First, performance on the need-for-achievement scale correlated significantly with three-quarter, cumulative grade-point averages—although not in the expected direction. Those with high need-for-achievement scores (reflecting relatively greater negative affect associated with the expression of this need) tended to have high grade-point averages.

Second, analysis of variance showed the variability of scores on this scale to be influenced significantly by the interaction of the sex and college-aptitude factors, although not by either of these factors alone.
Median tests performed for the purpose of elucidating the latter result indicated that the median need-for-achievement score is significantly higher (more negative affect) for high-college-aptitude males than for low-college-aptitude males, while no corresponding difference was observed for females.

While the college-aptitude factor does indeed have the assumed significant influence on the variability of grade-point averages, it was found that neither the sex factor alone nor the interaction between the college-aptitude and sex factors has such an influence.

It seems pertinent to contrast in some detail the results reported by Irvin (1967) and those obtained in the present study. The same scales and essentially the same scoring method were used in both studies. (Whereas Irvin used a 5-point rating scale, ranging from 1 for an outright positive expression to 5 for an outright negative expression, the present study employed a 3-point scale in which an outright positive expression was not differentiated from a limited positive expression.) The effect of the change in scoring would be to restrict the variability of scores on all three scales; the amount of restriction and subsequent effects on the statistical analyses are unknown, but presumably would be in the direction of reducing results reaching acceptable levels of significance. Both studies report positive correlations of varying magnitudes between the scale scores and
college achievement (first-semester grades in Irvin's study, and three-quarter, cumulative averages in the present study).

In the present study, positive correlations are interpreted to mean that the more negative the affect associated with the expression of the personality variable tends to be, the higher the grades tend to be. Irvin's discussion makes the opposite point. The source of the confusion is this: Although Irvin actually obtained negative correlations (meaning that positive affect associated with the expression of the three personality variables was in varying degrees correlated with high grades), he attempted upon editorial advice to eliminate the confusion arising from the scoring method by changing the sign of the correlations.¹ Thus, both studies report positive correlations, but the direction of the relationships is not the same. It is recommended at this point that any future investigator making use of these scales reverse the scoring method, so that a high scale score will denote high positive affect; thus predicted positive relationships would be reflected by positive correlations.

Two of Irvin's correlations were highly significant, namely the positive relationship between grades and positive affect associated with self-concept, and the positive relationship between grades and positive affect associated with need for achievement.

¹F. S. Irvin, personal communication, September 18, 1968.
While self-concept scores were found in this study not to be related significantly to grades, need-for-achievement scores were found to be significantly related to the achievement criterion, but subjects with high grades tended to express negative affect associated with need for achievement, a reversal of the results obtained by Irvin.

Whereas Irvin's sample consisted of equal numbers of students in good standing at the end of the first semester, students on academic probation, and students dropped for poor scholarship, the present sample consisted solely of students who were finishing their third quarter in college. The entire sample is thus comparable to Irvin's first two groups, inasmuch as all of the subjects were either in good academic standing at the end of their first term or were on probation. Thus, the variability of grade-point averages involved was markedly different for the two studies. There is some research support for the proposition that a projective test's predictive value in relation to first-term averages may not hold up for cumulative averages (Chahbazi, 1960).

Another difference between Irvin's experimental conditions and the present conditions was the time when the test was taken. Those in Irvin's sample took it prior to college entrance, while those in the present sample took it at the end of a full year of college experience. It may be that something happens in that year to facilitate the expression of negative
affect (perhaps particularly in relation to need for achievement) by students who a year earlier would have tended to suppress such affect. In 1968, much more than in previous years, college students in general seem to be given to the open expression of negative feelings.

On the other hand, it may be not specifically the year of college experience that makes the difference, but simply the year of age. It is not known whether a control group of eighteen-year-olds in general (employees, servicemen, housewives, etc.) would express themselves more negatively on the sentence completion test than seventeen-year-olds in general.

Achievement behavior is known to be relatively stable. Kagan and Moss found it so in their noteworthy longitudinal study (1962). Dulin (1968) attests to the same thing when he observes, on the basis of a comprehensive survey of the literature of the last fifteen years, that the best single predictor of college achievement is high-school achievement. Dowd (1952) reported that the factors which tended to impede college achievement were the same ones that had been operative in lowering efficiency in the earlier school environment.

The expression of the strength of or the affect associated with need for achievement, however, appears to be not nearly so stable as achievement behavior itself. From a psychometric point of view, at least, both the strength of the achievement motive and the affect associated with its expression are
elusive. Whereas the strength of the motive has been measured with some degree of reliability in situations in which its arousal is experimentally induced, its measurement in real-life situations has not been nearly so reliable (Birney, 1959; Parrish & Rethlingshafer, 1954). The contradictory results obtained by Irvin and the present writer may be a function of the instability of affective expression of need for achievement.

With respect to the other positive finding, namely that the median need-for-achievement score of high-college-aptitude males reflects significantly greater negative affect associated with this need than in the case of low-college-aptitude males, a qualitative approach to the responses is indicated to elaborate some understanding of the negative affect toward achievement which would not have been predicted by any previous results reported in the literature.

While such an undertaking is beyond the scope of the present study, it seems that in no other way can it be known what the one group is expressing that the other group is not expressing. Such an analysis would seem therefore to be a worthwhile follow-up to the present findings.
Chapter VI

Summary

The literature on the relation of self-concept, learning attitudes, and need for achievement to academic performance was reviewed.

Seventy-nine third-quarter freshmen at the University of Illinois volunteered as subjects, from among 137 chosen from the introductory psychology class on the basis of their having college-aptitude scores in the first and fourth quartiles of the class. Subjects responded to the six-scale Zaccaria Sentence Completion Inventory, of which three scales (self-concept school and learning attitudes, and need for achievement) were scored independently by two judges on a 3-point rating scale for positive, neutral/ambivalent, or negative affective expression. In cases where the judges disagreed, the response was discussed until a single score could be assigned. The original scores were recorded, however, and indices of interscorer reliability were obtained for the three scales. Coefficients of internal consistency and item analyses were also presented for the three scales. Finally, subjects' cumulative grade-point averages were obtained after their third quarter in college.

Four hypotheses were advanced:

(1) Performance on the three sentence completion scales
would be related significantly to academic achievement in the first year of college.

(2) Performance on the three scales would be related significantly to college-aptitude-test scores.

(3) The variability of scores on the three scales would be influenced significantly by either the sex factor or the college-aptitude factor, or by the interaction of these factors.

(4) The sex factor, and/or the interaction between the college-aptitude and sex factors, would have a significant influence on the variability of academic achievement in the first year of college. (It was assumed that the college-aptitude factor alone would have a significant influence on the variability of grade-point averages.)

All results with the self-concept and learning-attitudes scales were negative.

The need-for-achievement scale yielded these positive results:

First, performance on this scale correlated significantly with grade-point averages, although not in the expected direction. Those with high need-for-achievement scores (reflecting relatively greater negative affect associated with the expression of this need) tended to have high grade-point averages.

Second, analysis of variance showed that the variability of scores on this scale was influenced significantly by the interaction of the sex and college-aptitude factors, although
not by either of these factors alone. Median tests performed for the purpose of clarifying this result indicated that the median need-for-achievement score is significantly higher for high-college-aptitude males than for low-college-aptitude males, while no corresponding difference was observed for females.

The variability of cumulative grade-point averages was not influenced significantly either by the sex factor or by the interaction of the college-aptitude and sex factors.

The results obtained in the present study were contrasted in detail with those obtained by Irvin (1967), who used the same scales and essentially the same scoring method. The scales were judged not to have validity in their present form for the prediction either of college aptitude or of achievement in the first year of college. Certain refinements of the scales were recommended for future users.

It was recommended as a follow-up of the present findings that the need-for-achievement responses of male subjects be evaluated qualitatively in an effort to determine what negative affects the high-college-aptitude subjects are expressing that the low-college-aptitude subjects are not expressing.
References


Bendig, A. W. Comparative validity of objective and projective measures of need achievement in predicting students' achievement in introductory psychology. *Journal of General Psychology*, 1959, 60, 237-243.


Gustav, A. Comparison of college grades and self-concept. 

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Mc Clelland, D. C., Clark, R. A., Roby, T. B., & Atkinson, J. W. The projective expression of needs IV: The effect of


Appendix

Zaccaria Sentence Completion Inventory

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
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<tr>
<th>Age at last birthday</th>
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**Instructions**

Following are 42 partially completed sentences. Complete each sentence to express your *real* feelings. Please try to complete every item.

1. School is.................................................................
2. People about my own age............................................
3. If only my mother and father would............................
4. Sometimes I feel like................................................
5. My mouth........................................................................
6. When others do better...................................................
7. When I look at myself in the mirror...............................
8. People think that I.....................................................
9. When I was younger.....................................................
10. I think that my friends................................................
11. My work has been.....................................................
12. Most teachers
13. My father and I
14. With other people
15. Walking barefoot in the mud
16. When I'm alone
17. I learn best
18. When I look ahead
19. What I like about school
20. My legs
21. Most people don't know that I
22. My mother and I
23. Boys are
24. Ten years from now I
25. At home I
26. What I hate about school
27. Girls are
28. My body is
29. Secretly I
30. If I'm left behind
31. If only I
32. Most mothers
33. The best thing about my body
34. Someday I want to be
35. When company comes
36. As for reading
37. The people I like best

38. Most fathers

39. I often think of myself as

40. The worst thing about my body

41. The teacher I like best is a person who

42. When my work is poor

Zaccaria Sentence Completion Inventory: Items by Category

**Body Image**

My mouth...

When I look at myself in the mirror...

Walking barefoot in the mud...

My legs...

My body is...

The best thing about my body...

The worst thing about my body...

**Self-Concept**

Sometimes I feel like...

People think that I...

When I'm alone...

Most people don't know that I...

Secretly I...

If only I...

I often think of myself as...
Attitudes Toward Parents

If only my mother and father would...

When I was younger....

My father and I...

My mother and I...

At home I...

Most mothers...

Most fathers...

Attitudes Toward Peers

People about my own age...

I think that my friends...

With other people...

Boys are...

Girls are...

When company comes...

The people I like best...

Attitudes Toward School and Learning

School is...

Most teachers...

I learn best...

What I like about school...

What I hate about school...

As for reading...

The teacher I like best is a person who...
Need for Achievement

When others do better...
My work has been...
When I look ahead...
Ten years from now...
If I'm left behind...
Someday I want to be...
When my work is poor...

Letter to Subjects

University of Illinois at Chicago Circle
Student Counseling Service
(Box 4348) Chicago, Illinois 60680
Telephone: 663-3490

May 17, 1968

Dear Student:

You have been selected for participation in an important research project. As a student enrolled in Psychology 100, you are eligible to receive credit for participating in a psychology experiment. However, in order for you to receive this credit, the enclosed form must be returned to me no later than Wednesday, May 22.

The task of completing the form generally takes about twenty (20) minutes. Although you are asked to give us your name (we
cannot see that you get credit otherwise!), please be assured that the material will be used anonymously.

Many thanks for your cooperation.

Sincerely yours,

Margaret La Plante
Margaret La Plante
Counselor

ML:ap

Enclosure
Approval Sheet

The thesis submitted by Margaret J. La Flante has been read and approved by the director of the thesis. Moreover, 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.

10 November 1969

Date

Signature of Adviser

Patricia M. Bayley Ph.D.