

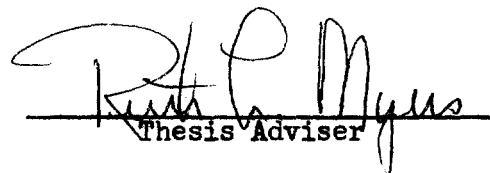
The Relationship of the OPI to the  
Academic Achievement of Freshmen in  
General Psychology

A Thesis  
Presented to  
The Honors Program of  
Ball State University

In Fulfillment  
of the Requirements for  
Graduation with Honors

by  
Nancy Jean McClain  
May 18, 1970

I recommend this thesis for acceptance by  
Honors Program of Ball State University  
for graduation with honors.

  
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## ABSTRACT

This study investigated the relationship of certain personality factors, as measured by the OPI, to academic achievement in general psychology. It was predicted that Thinking Introversion and Theoretical Orientation would correlate significantly and positively and that Practical Outlook would correlate significantly and negatively with total grade points. Intercorrelations among factors provided substantial support for Hypothesis 1 but indicated only a trend in the direction predicted in Hypotheses 2 and 3.

## INTRODUCTION

Early attempts at the prediction of academic success by means of personality characteristics were not at all encouraging. A summary of these early studies found in Donahue, et al. (1949, pp. 171-172) revealed a near-zero correlation between scholarship and the existing adjustment inventories at all educational levels. The only relationship found to be at all consistent was a small positive correlation between introversion and grades. The major conclusion was that "any degree of adjustment or maladjustment as measured in personality inventories may occur with any degree of success or lack of success in school work." (Tyler, 1965)

In spite of these discouraging early findings, psychologists have continued to search for relationships between personality and academic achievement. Many of the studies in this area have used the Minnesota Multiphasic Personality Inventory (MMPI). Clark (1953) studied the relationship between the academic achievement of female college students and non-intellective factors of the MMPI and found no significant profile differences to identify achievers from non-achievers. In a study of the relationship between personality adjustment and scholastic achievement of male college students, however, Yeomans and Lundin (1957) discovered several significant relationships. Men in the upper scholastic quarters of both the freshman and senior classes scored significantly higher on the Mf scale, indicating greater feminine interests than that found among men in the general population. Over all, the poorer students showed a greater degree of maladjustment i.e., higher scores on the Psychopathic Deviate and Hypomania scales. They were found to be more poorly motivated, irresponsible, and too active in other affairs to spend the necessary time and effort in their scholastic endeavors. Similar findings were



reported by Jensen (1958). In a comparison of the personality traits of nonachieving students of low scholastic ability with those of achieving students of low scholastic ability, nonachieving students of high scholastic ability and achieving students of high scholastic ability, he found a definite tendency for the nonachievers of low scholastic ability to deviate further from the average than any of the other groups as far as the MMPI mean scores are concerned.

In a more recent study employing the Guilford-Zimmerman Temperament Survey, Suinn (1966) found that college students described as serious or as showing restraint tended to achieve grades higher than had been predicted from their high school record and college aptitude scores.

The instrument employed in the present study was the Omnibus Personality Inventory (OPI). However, in searching through the literature the writer was unable to locate reports of many related studies using this particular measuring instrument.

One study of interest making use of the OPI and four other personality tests was conducted by Goldschmidt in 1967. He hypothesized that certain personality traits would covary with a choice of major pertaining either to science or humanities. He isolated five clusters of personality characteristics which best identified each group, but in locating majors in either the area of science or humanities, psychology was found to be one of two fields (the other being anthropology) judged high on both scales.

In an unpublished research report from Princeton University, Madison and Studdiford (1963) studied the relationship of the OPI to the academic achievement of freshmen. A correlation of OPI scales with first term grades revealed the correlation with the following five scales to be statistically significant:

TI (thinking introversion), TO (theoretical orientation), Au (autonomy), SM (social maturity), and NA (nonauthoritarianism). The writers felt the items of the OPI showed definite promise as a basis from which grade prediction based on personality characteristics might be developed.

It was the purpose of the present study to investigate the relationship of the OPI to the academic achievement of college freshmen in general psychology. The hypotheses investigated were these:

1. There will be a significant positive correlation between scores on the TI scale of the OPI and achievement in general psychology as measured by total points obtained on course examinations.
2. There will be a significant positive correlation between scores on the TO scale of the OPI and achievement in general psychology as measured by total points obtained on course examinations.
3. There will be a significant negative correlation between scores on the PO scale of the OPI and achievement in general psychology as measured by total points obtained on course examinations.

## METHOD

### Subjects

A total of 60 freshman students enrolled in general psychology at Ball State University served as subjects in the experiment. There were 24 males and 36 females ranging between the ages of 17 and 33 years. Because six were unable to complete the personality inventory, the data for 54 subjects were used.

### Psychological Instrument

A standardized personality inventory, the Omnibus Personality Inventory, was selected for the study. The instrument contains 385 statements belonging to one or more of 14 scales constructed to measure differences among college

students in regard to attitudes, values, and interests, chiefly in the areas of normal ego-functioning and intellectual activity. The inventory focuses on three broad areas of assessment:

1. intellectual vs. non-intellectual values
2. liberal vs. conservative attitudes
3. social-emotional adjustments

A definition of the 11 scales and a more detailed description of the instrument may be found in Heist, P. and Williams, P.A. (1968).

Personality appraisal by means of inventories began during World War I with the use of Woodworth's Personal Data Sheet. Although inventories have undergone many changes since the time of Woodworth, their use still presents many of the same problems. Downie (1967) has pointed out that whenever we use inventories we work under certain assumptions:

1. that personalities have a certain amount of stability.
2. that over a range of similar situations the same reactions will be elicited.
3. that the more responses of a certain nature an individual makes, the more certain we can be that he possesses the trait being measured.

Finding suitable criteria against which to validate personality inventories has always been a major problem. Criteria used are usually ratings of psychologists, psychiatrists, and teachers. These ratings have low reliability, and consequently the validity ratings are low. (Downie, 1967) General findings indicate that personality inventories should be used discriminately, critically, and only by professional persons. (Freeman, 1962).

In spite of its limitations the OPI was believed to be the most adequate and promising instrument for the present study.

### Grades

The measure of academic performance used in this study was determined by summing the total number of points obtained on four course examinations in general psychology with 320 being the maximum number of points possible.

### Procedure

The OPI was administered to 60 subjects enrolled in three small sections of general psychology. A uniform procedure was followed in administering the test to all three sections. The testing situation was introduced to the students by their course instructor, Dr. Ruth L. Myers, in the following manner:

Each quarter we try to give students an opportunity to participate in an experiment. You have been selected to involve yourself in an experiment this quarter in the area of personality which you are now studying. This will give you a first hand acquaintance with a personality inventory. Please remember there are no right or wrong answers and that you should work as rapidly as possible. Do not stop and ponder your answers.

OPI test booklets, NCS answer sheets, and soft lead (No. 2) pencils were distributed to the subjects. The subjects were asked to place the following information at the top of their answer sheets: name, year of school, age, sex, section of psychology, and date of examination. While the subjects read the instructions on the cover of the booklet, the experimenter read them aloud. The instructions may be found in the OPI manual (Heist and Yonge, 1968). Questions were then answered in a manner consistent with the printed instructions on the booklet. Subjects were given as much time as was

required to complete the 385 items. Due to other obligations 6 subjects were unable to complete the inventory.

The 54 completed answer sheets were inspected for double-answered items and were hand-scored using the 14 keys, one for each scale, accompanying the NCS form of answer sheets. A profile for each subject was then filled out on the reverse side of each answer sheet following the directions printed on the profile form.

### RESULTS

The raw data showing the performance of each subject on each of the 15 variables was amassed into table form, which may be found in Appendix A.

The means and standard deviations for the total population on the 14 OPI scales and total grade points were determined. A summary of these findings is shown in Table 1.

TABLE 1  
 Summary of the Means and Standard Deviations  
 on OPI Scales and Grade Point Average

| OPI Scale * and G.P.A.       | Mean     | Standard Deviation |
|------------------------------|----------|--------------------|
| Thinking Introversion (TI)   | 22.6111  | 8.7293             |
| Theoretical Orientation (TO) | 16.6296  | 5.7841             |
| Estheticism (Es)             | 12.1481  | 5.1295             |
| Complexity (Co)              | 15.4815  | 5.6625             |
| Autonomy (Au)                | 25.7592  | 5.1566             |
| Religious Orientation (RO)   | 12.3148  | 4.4548             |
| Social Extroversion (SE)     | 23.2963  | 6.9592             |
| Impulse Expression (IE)      | 29.0000  | 10.0793            |
| Personal Integration (PI)    | 30.1111  | 10.5333            |
| Anxiety Level (AL)           | 11.3519  | 4.7303             |
| Altruism (Am)                | 22.9630  | 5.5476             |
| Practical Outlook (PO)       | 14.7778  | 6.6935             |
| Masculinity-Femininity (MF)  | 25.2778  | 6.5896             |
| Response Bias (RB)           | 11.9815  | 4.9385             |
| Grade Point Average (G.P.A.) | 201.4630 | 36.7296            |

\*See Appendix B for Detailed Description of Scales of OPI.

The intercorrelations among the 14 factors of the OPI and between each of the 14 factors and total grade points were calculated. The r's are reported in Table 2. The correlation between Thinking Introversion and total grade points reached the .05 level of significance, thus providing substantial confirmation of Hypothesis 1. A positive correlation between Theoretical Orientation and total grade points and a negative correlation between Practical Outlook and total grade points, neither approaching the .05 level of significance, indicate only a trend in the direction predicted in Hypotheses 2 and 3.

It can be noted in Table 2 that certain other factors of the OPI correlated significantly with grade point summation. A correlation with Personal Integration significant at the .05 level and a correlation with Response Bias significant at the .01 level were found.

F ratios were computed to measure the difference in performance on the 15 factors between the male and female subjects. It can be noted in Table 3 that, as would be expected, the performance of the males and females differed significantly on the Masculinity-Femininity Scale. From these findings it may also be said that the male and female subjects differed significantly in their performance on the Altruism scale, the F-ratio being 7.9639.

TABLE 2  
INTERCORRELATIONS AMONG FACTORS

| Code | TI | TO                    | Es                    | Co                    | Au                    | RO                   | SE                    | IE                    | PI                     | AL                    | Am                    | PO                     | MF                     | RB                    | GPA                   |
|------|----|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|------------------------|-----------------------|-----------------------|
| TI   | -- | 0.7985 <sup>***</sup> | 0.7354 <sup>***</sup> | 0.5781 <sup>***</sup> | 0.5624 <sup>***</sup> | 0.0403               | 0.3973 <sup>***</sup> | 0.2303                | 0.0897                 | 0.2316                | 0.5075 <sup>***</sup> | -0.4518 <sup>***</sup> | -0.2528 <sup>**</sup>  | 0.5488 <sup>***</sup> | 0.2813 <sup>*</sup>   |
| TO   |    | --                    | 0.5836 <sup>***</sup> | 0.6432 <sup>***</sup> | 0.4602 <sup>***</sup> | 0.1950               | 0.3404 <sup>**</sup>  | 0.4552 <sup>***</sup> | 0.0274                 | 0.1510                | 0.2997 <sup>**</sup>  | -0.3470 <sup>**</sup>  | 0.0037                 | 0.5683 <sup>***</sup> | 0.2084 <sup>*</sup>   |
| Es   |    |                       | --                    | 0.4764 <sup>***</sup> | 0.3619 <sup>***</sup> | 0.0466               | 0.4060 <sup>***</sup> | 0.2346 <sup>*</sup>   | -0.0918                | 0.0116                | 0.4714 <sup>***</sup> | -0.2574 <sup>*</sup>   | -0.5902 <sup>***</sup> | 0.2231                | 0.2447 <sup>*</sup>   |
| Co   |    |                       |                       | --                    | 0.4390 <sup>***</sup> | 0.1981               | 0.2548 <sup>*</sup>   | 0.6674 <sup>***</sup> | -0.3086 <sup>**</sup>  | -0.0202               | 0.1845                | -0.5937 <sup>***</sup> | -0.2775 <sup>**</sup>  | 0.0109                | -0.0920               |
| Au   |    |                       |                       |                       | --                    | 0.3072 <sup>**</sup> | 0.1728                | 0.1881                | 0.2173                 | 0.3299 <sup>**</sup>  | 0.2522 <sup>*</sup>   | -0.4538 <sup>***</sup> | -0.1266                | 0.3322 <sup>**</sup>  | 0.2546 <sup>*</sup>   |
| RO   |    |                       |                       |                       |                       | --                   | -0.1326               | 0.2211 <sup>**</sup>  | -0.2071 <sup>*</sup>   | -0.0017               | -0.2745 <sup>**</sup> | -0.2076                | 0.2052                 | -0.0704               | -0.1661               |
| SE   |    |                       |                       |                       |                       |                      | --                    | 0.2923 <sup>**</sup>  | 0.2451 <sup>*</sup>    | 0.2410 <sup>*</sup>   | 0.4459 <sup>***</sup> | -0.0523                | -0.3220 <sup>**</sup>  | 0.3375 <sup>**</sup>  | 0.0905                |
| IE   |    |                       |                       |                       |                       |                      |                       | --                    | -0.5111 <sup>***</sup> | -0.1911 <sup>*</sup>  | -0.1669               | -0.1718                | -0.0769                | -0.1637               | -0.1291               |
| PI   |    |                       |                       |                       |                       |                      |                       |                       | --                     | 0.6548 <sup>***</sup> | 0.4967 <sup>***</sup> | 0.0847                 | 0.1706                 | 0.6565 <sup>***</sup> | 0.2976 <sup>**</sup>  |
| AL   |    |                       |                       |                       |                       |                      |                       |                       |                        | --                    | 0.3166 <sup>**</sup>  | -0.0320                | 0.2220                 | 0.4276 <sup>***</sup> | 0.2223                |
| Am   |    |                       |                       |                       |                       |                      |                       |                       |                        |                       | --                    | -0.1738                | -0.4014 <sup>***</sup> | 0.4860 <sup>***</sup> | 0.2607 <sup>*</sup>   |
| PO   |    |                       |                       |                       |                       |                      |                       |                       |                        |                       |                       | --                     | 0.1903                 | -0.0321               | -0.0063               |
| MF   |    |                       |                       |                       |                       |                      |                       |                       |                        |                       |                       |                        | --                     | 0.2062                | -0.1096               |
| RB   |    |                       |                       |                       |                       |                      |                       |                       |                        |                       |                       |                        |                        | --                    | 0.3786 <sup>***</sup> |
| GPA  |    |                       |                       |                       |                       |                      |                       |                       |                        |                       |                       |                        |                        |                       | --                    |

\* Significant at the .10 level  
 \*\* Significant at the .05 level  
 \*\*\* Significant at the .01 level



TABLE 3

| VARIABLE | SOURCE         | SUM OF SQUARES | DF | MEAN SQUARE | F-RATIO  |
|----------|----------------|----------------|----|-------------|----------|
| TI       | Between Groups | 20.3663        | 1  | 20.3663     | 0.2587   |
|          | Within Groups  | 4094.4609      | 52 | 78.7396     |          |
|          | Total          | 4114.8242      | 53 |             |          |
| TO       | Between Groups | 83.7187        | 1  | 83.7187     | 2.5268   |
|          | Within Groups  | 1722.8704      | 52 | 33.1321     |          |
|          | Total          | 1806.5889      | 53 |             |          |
| Es       | Between Groups | 61.5767        | 1  | 61.5767     | 2.3557   |
|          | Within Groups  | 1359.2373      | 52 | 26.1392     |          |
|          | Total          | 1420.8140      | 53 |             |          |
| Co       | Between Groups | 3.6979         | 1  | 3.6979      | 0.1113   |
|          | Within Groups  | 1727.7791      | 52 | 33.2265     |          |
|          | Total          | 1731.4768      | 53 |             |          |
| Au       | Between Groups | 2.8574         | 1  | 2.8574      | 0.1037   |
|          | Within Groups  | 1433.0090      | 52 | 27.5579     |          |
|          | Total          | 1435.8662      | 53 |             |          |
| RO       | Between Groups | 39.0594        | 1  | 39.0594     | 1.9670   |
|          | Within Groups  | 1032.5852      | 52 | 19.8574     |          |
|          | Total          | 1071.6445      | 53 |             |          |
| SE       | Between Groups | 49.5715        | 1  | 49.5715     | 1.0047   |
|          | Within Groups  | 2565.6833      | 52 | 49.3401     |          |
|          | Total          | 2615.2546      | 53 |             |          |
| IE       | Between Groups | 150.8560       | 1  | 150.8560    | 1.4703   |
|          | Within Groups  | 5335.1367      | 52 | 102.5988    |          |
|          | Total          | 5485.9922      | 53 |             |          |
| PI       | Between Groups | 146.3203       | 1  | 146.3203    | 1.3017   |
|          | Within Groups  | 5845.0039      | 52 | 112.4039    |          |
|          | Total          | 5991.3242      | 53 |             |          |
| AL       | Between Groups | 5.4837         | 1  | 5.4837      | 0.2371   |
|          | Within Groups  | 1202.8269      | 52 | 23.1313     |          |
|          | Total          | 1208.3105      | 53 |             |          |
| Am       | Between Groups | 220.7224       | 1  | 220.7224    | 7.9639*  |
|          | Within Groups  | 1441.1997      | 52 | 27.7154     |          |
|          | Total          | 1661.9221      | 53 |             |          |
| PO       | Between Groups | 0.1385         | 1  | 0.1385      | 0.0030   |
|          | Within Groups  | 2419.1895      | 52 | 46.5229     |          |
|          | Total          | 2419.3279      | 53 |             |          |
| MF       | Between Groups | 962.9648       | 1  | 962.9648    | 36.2366* |
|          | Within Groups  | 1381.8660      | 52 | 26.5743     |          |
|          | Total          | 2344.8308      | 53 |             |          |
| RB       | Between Groups | 50.2283        | 1  | 50.2283     | 2.0619   |
|          | Within Groups  | 1266.7500      | 52 | 24.3606     |          |
|          | Total          | 1316.9780      | 53 |             |          |

\* Significant at the .01 level

## DISCUSSION

The present findings provide substantial support for the first hypothesis, predicting a significant relationship between responses on the TI scale and performance in general psychology. From the nature of the psychology class from which the subjects were obtained this finding was anticipated. The OPI Manual describes high scorers on the TI scale as persons who:

... enjoy thought-provoking lectures, mull over ideas presented in class, examine and analyze their own motives and reactions, question teachers' statements and ideas, are interested in learning about history of human thought, and enjoy test questions in which information is in a different form than originally learned. (Heist and Yonge, 1968)

Due to the nature of material presentation and examination procedures, which were very similar to those mentioned in the cited description, the author is of the opinion that students performing well in this class could very likely be characterized by the above descriptive.

An important question which is raised by this finding is how much of the existing correlation is due to the nature of psychology as a subject matter and how much is a result of the particular course under investigation.

Support is not found for the predictions expressed in Hypotheses 2 and 3. However, a correlation of .2084 between the TO scale and total grade points indicates a definite trend in the predicted direction. It was somewhat to the writer's surprise that this relationship was not statistically significant, because high scoring in this scale indicates an interest in science and scientific activities. The heterogeneity of the students enrolled in general psychology and the broad, general, non-laboratory approach to the subject may account somewhat for this finding. It may be that in more

advanced courses implementing actual research and scientific activities and composed of students of more restricted interests, a significant relationship between this scale and performance in psychology would exist.

A correlation of  $-.0063$  offers essentially no support for the predicted relationship between the PO scale and total grade points. The writer has noted that the beginning psychology students seek very much to make the subject matter relevant and applicable. This desire for pragmatic implications may offset the appeal of ideas and philosophical problems, and thus account for the present finding.

The results reveal that two factors of the OPI, not tested by the hypotheses, also correlate significantly with performance in psychology. The author is unable to account for the significant relationship between the PI scale and total grade points and feels it may be due to a chance factor.

A correlation significant at the .01 level was shown between the RB scale and total grade points. Although not tested in a hypothesis, this finding is not surprising to the author. The OPI Manual describes the high scorers on this scale as persons who:

... enjoy thinking about problems which challenge experts, find the idea of doing research appealing, and enjoy solving problems of the type found in geometry, philosophy, or logic; they feel close to people, and do not forget immediately what people say to them. (Heist and Yonge, 1968)

This description is very compatible with the characteristics usually ascribed to persons who excel in academic performance and enjoy intellectual pursuits.

An analysis of variance revealed significant differences between sexes on two factors of the OPI, the MF scale and the Am scale. The significant difference on the MF scale is not surprising and is consistent with the results one would expect to find on such a scale.

Likewise, the difference on the Am scale, with the females scoring significantly higher than the males, is not too surprising and is compatible with other psychological and sociological studies on college populations.

The finding with regard to the TI scale and total grade points in general psychology agrees with the findings of Madison and Studdiford. In a study investigating the relationship of the OPI to grades, their findings revealed a correlation significant at the .01 level between the TI scale and first term freshmen grades. However, the above cited study also found a significant relationship between the TO scale and first term grades, which is not compatible with the findings of the present study.

The current study suggests a need for further study with the OPI in regard to its use in the prediction of academic success, in which one would investigate other major subject matter areas and students at various levels of academic progression from the freshman through the senior year.

## APPENDIX A

| Column I<br>(I.D. No.) | Column II<br>(Sex) | Column III<br>(TI) | Column IV<br>(TO) | Column V<br>(Es) | Column VI<br>(Co) | Column VII<br>(Au) | Column VIII<br>(RO) | Column IX<br>(SE) | Column X<br>(IE) | Column XI<br>(PI) | Column XII<br>(AL) | Column XIII<br>(Am) | Column XIV<br>(PO) | Column XV<br>(MF) | Column XVI<br>(RB) | Column XVII<br>(Grade) |
|------------------------|--------------------|--------------------|-------------------|------------------|-------------------|--------------------|---------------------|-------------------|------------------|-------------------|--------------------|---------------------|--------------------|-------------------|--------------------|------------------------|
| 1                      | 1                  | 27                 | 20                | 11               | 15                | 23                 | 18                  | 9                 | 22               | 17                | 3                  | 24                  | 13                 | 27                | 10                 | 209                    |
| 2                      | 1                  | 22                 | 13                | 15               | 10                | 21                 | 13                  | 25                | 19               | 32                | 17                 | 24                  | 21                 | 29                | 8                  | 225                    |
| 3                      | 2                  | 21                 | 13                | 8                | 20                | 28                 | 10                  | 22                | 37               | 22                | 3                  | 28                  | 6                  | 26                | 9                  | 205                    |
| 4                      | 1                  | 36                 | 22                | 19               | 25                | 37                 | 11                  | 21                | 32               | 32                | 9                  | 27                  | 5                  | 15                | 10                 | 204                    |
| 5                      | 1                  | 18                 | 14                | 14               | 9                 | 23                 | 8                   | 18                | 27               | 32                | 12                 | 25                  | 20                 | 26                | 12                 | 222                    |
| 6                      | 1                  | 14                 | 15                | 11               | 15                | 18                 | 11                  | 34                | 37               | 27                | 3                  | 24                  | 22                 | 21                | 8                  | 169                    |
| 7                      | 1                  | 35                 | 26                | 21               | 23                | 32                 | 20                  | 18                | 40               | 23                | 10                 | 25                  | 6                  | 17                | 15                 | 257                    |
| 8                      | 1                  | 20                 | 6                 | 6                | 11                | 29                 | 15                  | 29                | 23               | 34                | 13                 | 29                  | 14                 | 22                | 8                  | 198                    |
| 9                      | 1                  | 19                 | 10                | 13               | 13                | 26                 | 8                   | 13                | 21               | 22                | 7                  | 20                  | 12                 | 16                | 5                  | 170                    |
| 10                     | 1                  | 35                 | 23                | 17               | 24                | 30                 | 13                  | 34                | 36               | 24                | 11                 | 25                  | 4                  | 17                | 11                 | 229                    |
| 11                     | 1                  | 14                 | 10                | 8                | 14                | 19                 | 15                  | 20                | 26               | 30                | 8                  | 24                  | 16                 | 27                | 13                 | 142                    |
| 12                     | 2                  | 23                 | 14                | 9                | 20                | 26                 | 12                  | 19                | 20               | 29                | 15                 | 19                  | 9                  | 26                | 8                  | 161                    |
| 13                     | 1                  | 16                 | 10                | 13               | 14                | 26                 | 17                  | 25                | 27               | 26                | 16                 | 14                  | 14                 | 23                | 6                  | 175                    |
| 14                     | 1                  | 18                 | 10                | 10               | 11                | 27                 | 8                   | 26                | 31               | 40                | 11                 | 29                  | 13                 | 17                | 10                 | 205                    |
| 15                     | 2                  | 17                 | 13                | 5                | 16                | 26                 | 14                  | 11                | 25               | 45                | 18                 | 20                  | 19                 | 36                | 16                 | 143                    |
| 16                     | 2                  | 34                 | 28                | 13               | 15                | 28                 | 11                  | 24                | 20               | 45                | 11                 | 25                  | 11                 | 36                | 23                 | 245                    |
| 17                     | 1                  | 30                 | 28                | 14               | 21                | 28                 | 14                  | 33                | 48               | 31                | 16                 | 26                  | 17                 | 23                | 17                 | 210                    |
| 18                     | 1                  | 17                 | 10                | 9                | 9                 | 22                 | 6                   | 31                | 23               | 33                | 16                 | 24                  | 19                 | 18                | 9                  | 220                    |
| 19                     | 1                  | 21                 | 12                | 4                | 9                 | 20                 | 4                   | 14                | 11               | 45                | 17                 | 28                  | 14                 | 32                | 16                 | 254                    |
| 20                     | 1                  | 35                 | 16                | 22               | 13                | 25                 | 17                  | 24                | 24               | 24                | 12                 | 22                  | 13                 | 15                | 12                 | 217                    |
| 21                     | 2                  | 9                  | 9                 | 8                | 8                 | 23                 | 15                  | 11                | 14               | 28                | 13                 | 20                  | 18                 | 34                | 6                  | 119                    |
| 22                     | 1                  | 23                 | 19                | 13               | 18                | 23                 | 9                   | 28                | 42               | 24                | 14                 | 27                  | 15                 | 24                | 8                  | 206                    |
| 23                     | 1                  | 5                  | 7                 | 1                | 9                 | 21                 | 10                  | 19                | 17               | 48                | 16                 | 18                  | 20                 | 33                | 15                 | 264                    |
| 24                     | 2                  | 14                 | 16                | 8                | 21                | 26                 | 17                  | 27                | 49               | 9                 | 6                  | 11                  | 19                 | 27                | 6                  | 178                    |
| 25                     | 1                  | 26                 | 19                | 18               | 23                | 30                 | 11                  | 29                | 37               | 21                | 10                 | 23                  | 9                  | 17                | 10                 | 228                    |
| 26                     | 2                  | 34                 | 19                | 19               | 25                | 27                 | 9                   | 31                | 47               | 18                | 11                 | 26                  | 12                 | 22                | 10                 | 158                    |
| 27                     | 2                  | 13                 | 10                | 10               | 6                 | 24                 | 18                  | 10                | 33               | 18                | 4                  | 10                  | 22                 | 34                | 5                  | 205                    |
| 28                     | 1                  | 10                 | 13                | 6                | 14                | 20                 | 9                   | 26                | 32               | 30                | 13                 | 23                  | 22                 | 27                | 9                  | 154                    |
| 29                     | 1                  | 36                 | 22                | 21               | 18                | 32                 | 12                  | 32                | 19               | 50                | 19                 | 32                  | 9                  | 15                | 19                 | 225                    |
| 30                     | 1                  | 33                 | 20                | 16               | 25                | 27                 | 9                   | 29                | 27               | 35                | 14                 | 30                  | 6                  | 23                | 12                 | 162                    |

## APPENDIX A (cont.)

| Column I<br>(I.D. No.) | Column II<br>(Sex) | Column III<br>(TI) | Column IV<br>(TO) | Column V<br>(Es) | Column VI<br>(Co) | Column VII<br>(Au) | Column VIII<br>(RO) | Column IX<br>(SE) | Column X<br>(IE) | Column XI<br>(PI) | Column XII<br>(AL) | Column XIII<br>(Am) | Column XIV<br>(PO) | Column XV<br>(MF) | Column XVI<br>(RB) | Column XVII<br>(Grade) |
|------------------------|--------------------|--------------------|-------------------|------------------|-------------------|--------------------|---------------------|-------------------|------------------|-------------------|--------------------|---------------------|--------------------|-------------------|--------------------|------------------------|
| 31                     | 2                  | 12                 | 16                | 14               | 13                | 27                 | 21                  | 20                | 28               | 28                | 13                 | 23                  | 19                 | 31                | 9                  | 203                    |
| 32                     | 2                  | 35                 | 25                | 22               | 19                | 22                 | 11                  | 38                | 33               | 32                | 10                 | 31                  | 13                 | 21                | 21                 | 223                    |
| 33                     | 1                  | 20                 | 21                | 12               | 20                | 29                 | 12                  | 31                | 35               | 37                | 15                 | 29                  | 15                 | 22                | 13                 | 173                    |
| 34                     | 1                  | 16                 | 11                | 14               | 11                | 20                 | 6                   | 22                | 17               | 32                | 5                  | 24                  | 11                 | 18                | 9                  | 224                    |
| 35                     | 1                  | 31                 | 22                | 18               | 14                | 37                 | 17                  | 35                | 24               | 49                | 19                 | 29                  | 9                  | 27                | 20                 | 246                    |
| 36                     | 2                  | 24                 | 17                | 9                | 19                | 32                 | 19                  | 22                | 46               | 12                | 9                  | 11                  | 19                 | 31                | 8                  | 156                    |
| 37                     | 2                  | 33                 | 21                | 9                | 13                | 35                 | 10                  | 30                | 25               | 49                | 18                 | 22                  | 8                  | 37                | 23                 | 227                    |
| 38                     | 2                  | 30                 | 25                | 14               | 13                | 33                 | 9                   | 26                | 30               | 36                | 14                 | 22                  | 15                 | 32                | 22                 | 232                    |
| 39                     | 2                  | 29                 | 23                | 12               | 23                | 26                 | 15                  | 13                | 27               | 23                | 13                 | 24                  | 8                  | 31                | 15                 | 238                    |
| 40                     | 1                  | 33                 | 25                | 20               | 26                | 27                 | 12                  | 34                | 50               | 29                | 9                  | 27                  | 9                  | 19                | 13                 | 155                    |
| 41                     | 2                  | 24                 | 22                | 12               | 14                | 18                 | 8                   | 19                | 39               | 13                | 8                  | 17                  | 19                 | 30                | 11                 | 167                    |
| 42                     | 1                  | 9                  | 8                 | 8                | 5                 | 20                 | 8                   | 21                | 24               | 34                | 11                 | 20                  | 23                 | 27                | 8                  | 275                    |
| 43                     | 2                  | 22                 | 19                | 5                | 18                | 37                 | 14                  | 20                | 41               | 40                | 17                 | 19                  | 13                 | 34                | 15                 | 244                    |
| 44                     | 2                  | 27                 | 20                | 10               | 11                | 23                 | 20                  | 33                | 24               | 49                | 19                 | 27                  | 14                 | 31                | 21                 | 190                    |
| 45                     | 2                  | 30                 | 24                | 12               | 20                | 32                 | 25                  | 21                | 32               | 20                | 8                  | 22                  | 5                  | 32                | 14                 | 176                    |
| 46                     | 1                  | 30                 | 19                | 21               | 27                | 31                 | 11                  | 18                | 37               | 23                | 14                 | 29                  | 5                  | 19                | 8                  | 238                    |
| 47                     | 2                  | 27                 | 13                | 14               | 8                 | 22                 | 2                   | 22                | 15               | 20                | 3                  | 23                  | 22                 | 19                | 16                 | 213                    |
| 48                     | 1                  | 9                  | 9                 | 8                | 9                 | 23                 | 11                  | 20                | 12               | 36                | 4                  | 26                  | 18                 | 18                | 13                 | 150                    |
| 49                     | 1                  | 33                 | 20                | 19               | 10                | 29                 | 7                   | 30                | 16               | 50                | 17                 | 35                  | 14                 | 22                | 21                 | 260                    |
| 50                     | 1                  | 14                 | 16                | 13               | 19                | 23                 | 15                  | 20                | 38               | 15                | 2                  | 13                  | 19                 | 16                | 6                  | 242                    |
| 51                     | 2                  | 18                 | 17                | 9                | 16                | 13                 | 10                  | 28                | 44               | 21                | 7                  | 17                  | 23                 | 36                | 12                 | 174                    |
| 52                     | 2                  | 15                 | 18                | 5                | 14                | 19                 | 11                  | 17                | 24               | 32                | 10                 | 12                  | 15                 | 36                | 7                  | 159                    |
| 53                     | 1                  | 15                 | 10                | 5                | 12                | 22                 | 12                  | 19                | 23               | 18                | 13                 | 17                  | 13                 | 25                | 6                  | 182                    |
| 54                     | 1                  | 10                 | 10                | 9                | 8                 | 25                 | 15                  | 17                | 16               | 35                | 7                  | 19                  | 19                 | 26                | 10                 | 173                    |

## APPENDIX B\*

## Definitions of the Fourteen Scales

1. Thinking Introversion (TI) - Persons scoring high on this measure are characterized by a liking for reflective thought and academic activities. They express interests in a broad range of ideas found in a variety of areas, such as literature, art, and philosophy. Their thinking is less dominated by immediate conditions and situations, or by commonly accepted ideas, than that of thinking extroverts (low scorers). Most extroverts show a preference for overt action and tend to evaluate ideas on the basis of their practical, immediate application, or to entirely reject or avoid dealing with ideas and abstractions.
2. Theoretical Orientation (TO) - The scale measures an interest in, or orientation to, a more restricted range of ideas than is true of TI. High scorers indicate a preference for dealing with theoretical concerns and problems and for using the scientific method in thinking; many are also exhibiting an interest in science and in scientific activities. High scorers are generally logical, analytical, and critical in their approach to problems and situations.
3. Estheticism (Es) - High scorers endorse statements indicating diverse interests in artistic matters and activities and a high level of sensitivity and response to esthetic stimulation. The content of the statements in this scale extends beyond painting, sculpture, and music, and includes interests in literature and dramatics.
4. Complexity (Co) - This measure reflects an experimental and flexible orientation rather than a fixed way of viewing and organizing phenomena. High scorers are tolerant of ambiguities and uncertainties; they are fond of novel situations and ideas. Most persons high on this dimension prefer to deal with complexity, as opposed to simplicity, and very high scorers are disposed to seek out and to enjoy diversity and ambiguity.
5. Autonomy (Au) - The characteristic measured by this scale is composed of liberal, non-authoritarian thinking and a need for independence. High scorers show a tendency to be independent of authority as traditionally imposed through social institutions. They oppose infringements on the rights of individuals and are tolerant of viewpoints other than their own, they tend to be realistic, intellectually and politically liberal, and much less judgmental than low scorers.

6. Religious Orientation (RO) - High scorers are skeptical of conventional religious beliefs and practices and tend to reject most of them, especially those that are orthodox or fundamentalistic in nature. Persons scoring around the mean are manifesting a moderate view of religious beliefs and practices; low scorers are manifesting a strong commitment to Judaic-Christian beliefs and tend to be conservative in general and frequently rejecting of other viewpoints.
7. Social Extroversion (SE) - This measure reflects a preferred style of relating to people in a social context. High scorers display a strong interest in being with people, and they seek social activities and gain satisfaction from them. The social introvert (low scorer) tends to withdraw from social contacts and responsibilities.
8. Impulse Expression (IE) - This scale assesses a general readiness to express impulses and to seek gratification either in conscious thought or in overt action. High scorers have an active imagination, value sensual reactions and feelings; very high scorers have frequent feelings of rebellion and aggression.
9. Personal Integration (PI) - The high scorer admits to few attitudes and behaviors that characterize socially alienated or emotionally disturbed persons. Low scorers often intentionally avoid others and experience feelings of hostility and aggression along with feelings of isolation, loneliness, and rejection.
10. Anxiety Level (AL) - High scorers deny that they have feelings or symptoms of anxiety, and do not admit to being nervous or worried. Low scorers describe themselves as tense and high strung. They may experience some difficulty in adjusting to their social environment, and they tend to have a poor opinion of themselves.
11. Altruism (Am) - The high scorer is an affiliative person and trusting and ethical in his relations with others. He has a strong concern for the feelings and welfare of people he meets. Low scorers tend not to consider the feelings and welfare of others and often view people from an impersonal, distant perspective.
12. Practical Outlook (PO) - The high scorer on this measure is interested in practical, applied activities and tends to value material possessions and concrete accomplishments. The criterion most often used to evaluate ideas and things is one of immediate utility. Authoritarianism, conservatism, and non-intellectual interests are very frequent personality components of persons scoring above the average.



13. Masculinity-Femininity (MF) - This scale assesses some of the differences in attitudes and interests between college men and women. High scorers (masculine) deny interests in esthetic matters, and they admit to few adjustment problems, feelings of anxiety or personal inadequacies. They also tend to be somewhat less socially inclined than low scorers and more interested in scientific matters. Low scorers (feminine), besides having stronger esthetic and social inclinations, also admit to greater sensitivity and emotionality.
14. Response Bias (RB) - This measure, composed chiefly of items seemingly unrelated to the concept, represents an approach to assessing the students' test-taking attitude. High scorers are responding in a manner similar to a group of students who were explicitly asked to make a good impression by their responses to these items. Low scorers, on the contrary, may be trying to make a bad impression or are indicating a low state of well-being or feelings of depression.

\* Taken from OPI Manual, pp. 4-5.

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