CREATIVITY AND THE GUILFORD-ZIMMERMAN
TEMPERAMENT SURVEY

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CREATIVITY AND THE GUILFORD-ZIMMERMAN
TEMPERAMENT SURVEY

THESIS

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

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August, 1963
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CHAPTER I

INTRODUCTION TO THE STUDY

Statement of the Problem

Interest in the subject of creativity is not a new development. Many writers, all the way back to Plato and Aristotle, have touched on the subject.\(^1\) It was not until 1950 that scholars began to study creativity intensely. Guilford, in his presidential address to the American Psychological Association, stated that he had found a great shortage of research on creativity. In the years that have followed, many books and journal articles have been written on the subject.\(^2\)

One of the earliest approaches to creativity was through the use of the concept of the intelligence quotient. In fact, many early writers felt that perhaps creativity and intelligence were synonymous. Since that time, other research has shown that, although there is a positive relationship between the intelligence quotient and creativity, they are by no means synonymous. This relationship is explained by the fact that a certain amount of intelligence must be present

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in order for an individual to be considered creative, but additional intelligence would not necessarily mean that there would be additional creativity.³

Thurstone reports that in many universities, students who have been judged highly intelligent were not necessarily the ones who produced the most original ideas. Drevdahl and Cattell claim that the commonly accepted measures of intelligence are of little value in measuring creativity. They report that creativity depends more on other intellectual or personality factors, or some combination of both.⁵ Guilford attributes the lack of progress in the study of creativity to the idea that creativity can be accounted for in terms of intelligence, so he recommends that research should go well beyond the boundaries of intelligence in order to understand creativity.⁶

The Need for the Study

The need for further research on creativity and on the means of selecting potentially creative individuals is widely


recognized. The economic value of new ideas is limitless. During periods of strife or war, these new ideas become even more important in order that individuals, companies, and countries can adjust themselves to a rapidly changing environment. In a progressive and competitive society, inability to create new ideas may spell disaster to a company or corporation. Since creativity is considered one of the most valued of human qualities, and since it is one of the most difficult to measure systematically, researchers should continue probing into ways and means of identifying it within individuals.

Purposes of the Study

The purposes of this study are as follows:

1. To investigate the similarities and differences in the temperaments of a higher creative group and a lower creative group.

2. To investigate the effectiveness of the Guilford-Zimmerman Temperament Survey in identifying higher creative individuals and lower creative individuals, as measured by the AC Test of Creative Ability (Form A). Copies of these tests are to be found in the Appendix.

7Dreidahl and Cattell, op. cit., pp. 107-111.
8R. P. Crawford, How to Get Ideas (Nebraska, 1948), p. 43.
10Gelzels and Jackson, op. cit., p. 125.
Related Studies

A study was made by Dreudahl and Cattell in which they studied the personality characteristics of eminent artists and writers. Their results showed that the creative person was introverted, dominant, emotionally sensitive, insusceptible to threat, eccentric and nonconforming; had high ego strength, and was rejecting of group super-ego standards.\textsuperscript{11}

A similar study was conducted by Barron in which he studied the test results of 100 captains in the United States Air Force. They were measured as to originality and personality characteristics. The results showed that the more original individuals had more: energy, involvement, personal dominance and self-assertion, responsiveness to impulse and emotion, expressed femininity of interests, and general effectiveness of performance.\textsuperscript{12}

A study made by Taylor, in which he summarizes various research findings taken from the Air Force and the University of Utah research conferences on the identification of creative scientific talent, reported that the creative personality is more: self sufficient, independent in judgment, stable, feminine in interests and characteristics, dominant and

\textsuperscript{11}Dreudahl and Cattell, \textit{op. cit.}, pp. 107-111.

\textsuperscript{12}Frank Barron, "Originality in Relation to Personality and Intellect," \textit{Journal of Personality}, XXV (December, 1957), 730-741.
self-assertive, self-accepting, resourceful, radical, emotionally sensitive, and introverted than the "non creative" personality.\textsuperscript{13}

Nash made a study of creative scientists. A summary of his findings are as follows: Creative scientists are characterized by an openness to unfamiliar ideas; are flexible and persistent; have surplus energy and drive; have ability to concentrate deeply; are independent and introverted; they express femininity of interests; are self-controlled; they seek the complex, and are concerned with relationships, structures, and wholes.\textsuperscript{14}

The temperament of gifted children was studied by Bonsall and Stefflre. They found that when gifted boys were compared with all other boys, keeping occupational levels of the home from entering into the study, the gifted boys showed, at the 1 per cent level of significance, more thoughtfulness, and at the 5 per cent level of significance more general activity, restraint, ascendance (dominance), emotional stability, objectivity, and masculinity.\textsuperscript{15}

\textsuperscript{13} C. W. Taylor, "Research Findings on Creative Characteristics," \textit{Studies in Art Education}, III (Fall, 1961), 9-17.


The Foundation for Research on Human Behavior summarized its research findings as follows: "Original people tend to prefer the complex, to hold off coming to conclusions until most of the pieces can be fitted together, have more energy and effectiveness, respond to emotions more than the unoriginal, and they are personally dominant and self-assertive."\(^{16}\)

Drews, in studying 1,000 adolescents of superior ability to determine which of the patterns could be fitted to the characteristics of the creative adult, found the creative adolescent to be independent, unwilling to accept authority without critical examination, open and willing to explore the unknown, and flexible.\(^{17}\)

Johnson reports a study in which physical scientists, biologists, psychologists, and anthropologists were compared with the population. He concluded that no particular personality trait could clearly distinguish them from the population. However, he did find that they were characterized by unusual energy output and perseverance.\(^{18}\)

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Theory and Hypotheses

The definition of creativity, as used in the present study, will be similar to the definition given by Guilford. He labels creativity as "the abilities that are most characteristic of creative people, and creative people being those who exhibit creative behavior, such as inventing, designing, contriving, composing, planning, etc."\(^1\)

From the related studies stated, the present study draws the theory that creativity must be treated in much the same way as intelligence is treated; that it is present in everyone in different degrees. When a certain amount of creativity is present, the individual may be considered as being creative. These creative individuals seem to have some characteristics in common; namely introversion, dominance, high energy output, thoughtfulness, restraint, emotional stability, objectivity, and masculinity. The available research shows an inconsistency as to whether creative males are more masculine of interests and attitudes than feminine of interests and attitudes, and the majority of research seems to favor the more feminine characteristics.

Using the available related studies as a base, the following hypotheses will be made:

1. The higher creative group will reveal more general activity than the lower creative group; therefore, they will

\(^{19}\)Guilford, *op. cit.*, pp. 444-454.
score significantly higher on subscale G than the lower group.

2. The higher creative group will reveal more dominance than the lower group; therefore, the higher creative group will score significantly higher on subscale A than will the lower group.

3. The higher creative group will reveal more thoughtfulness than will the lower group; therefore, the higher creative group will score significantly higher on subscale T than will the lower group.

4. The higher creative males will reveal more femininity than the lower group; therefore, the higher creative group will score significantly lower on subscale M than will the lower group.

Definitions of Terms and Abbreviations

Throughout this study, the AC Test of Creative Ability, (Form A), will be referred to as the ACTC, and the Guilford-Zimmerman Temperament Survey will be referred to as the GZTS.

Description of the Group Studied

The students included in the groups were originally fifty-nine in number. Their ages ranged from eighteen to forty-six, with an average age of twenty, and the standard deviation of 4.25 years. All were college freshmen or above. They were all enrolled in one of two classes of Applied Psychology during the Spring Semester of 1963.
Source of the Data

In the present study the data for the problem were secured through the administration of the *AC Test of Creative Ability* (Form A), and the *Guilford-Zimmerman Temperament Survey* to two classes of Applied Psychology at North Texas State University. All parts of the GZTS were scored, and since the correlation between the Quantitative and Qualitative scores on the ACTC is plus .8 and higher, only the Quantitative scores were used. The ages of the subjects were gathered from the ACTC. All other data used in the present study are from selected references.

The GZTS yields scores for ten areas of temperament. These are as follows:

- O—General Activity
- R—Restraint
- A—Ascendance (Dominance)
- S—Sociability
- E—Emotional Stability
- O—Objectivity
- F—Friendliness
- T—Thoughtfulness
- P—Personal Relations
- M—Masculinity

The inventory is so constructed that the scores are relatively independent of each other. Thus, when plotted on a profile, they form a basis for evaluating the temperament
strengths and weaknesses of the individual. Raw scores were obtained by machine scoring, and later by a hand scoring to insure reliability. The C scores, usually used to interpret the raw scores to subjects, were not utilized in this study.

The ACTC was designed by the AC Spark Plug Division of General Motors. It grew out of a need to test employees in such areas as idea fluency, uniqueness of ideas, imagination, open-mindedness, and constructive discontent.\textsuperscript{20} The raw scores of this particular test are inappropriate; so a standard score had to be utilized. The tests were all scored by hand.

The subjects were told that they were going to get a chance to take some personality tests since they had been studying personality in their classes. The ACTC was administered first. The subjects were told it was for research purposes. Two weeks later, the GZTS was administered. The subjects were told that they would get the results of the inventory and that the class would discuss them if they wished. No relationship between the two scales was mentioned. After the scores were compiled, each individual was given his scores on a slip of paper and the scores in general were discussed.

Limitations of the Data

The treatment of the data in the present study is limited to the study of temperament and creativity of fifty-nine

\textsuperscript{20}\textit{Whiting, op. cit.}, p. 145.
students enrolled at North Texas State University for the Spring semester, 1963. Because of the nature of the sample, some restrictions upon the generalization of the results must be recognized.
CHAPTER II

ORGANIZATION AND TREATMENT OF DATA

Since the GZTS is a widely used instrument, it will be necessary only to give a brief explanation of it. The inventory, as stated earlier in this study, yields ten scores for ten areas of temperament. The raw scores of each area for all subjects were computed both by machine and by hand to assure reliability. Some of the machine scores were found to be incorrect because of light pencil markings on the answer sheets. These, when checked by hand, were corrected.

The ACTC, as stated earlier in this study, yields a score of creative ability, which includes such areas as idea fluency, uniqueness of ideas, imagination, open-mindedness, and constructive discontent. The scores for this scale were computed by hand.

The original fifty-nine subjects were divided into three groups; the higher creative group, the middle creative group, and the lower creative group. Each group was called "creative" because each individual is considered to be creative in some degree, no matter how small. This division was accomplished by arranging the scores made on the ACTC in progressive order. The top twenty scores, signifying the students who demonstrated the highest form of creative ability or potential, were
used to make up the higher creative group. The lowest twenty scores, signifying the students who demonstrated the lowest form of creative ability or potential, were used to make up the lower creative group.

The mean and standard deviations were computed for all ten areas of temperament for both the higher creative group and the lower creative group, from the formulas found in Lindquist.\(^1\) The mean and standard deviation for the ACTC were not included in this study because of the particular use to which the scale was put. The sole purpose of the scale was to establish the higher creative and lower creative groups. The middle group of nineteen, containing the middle range of score, were omitted from the study. The mean and standard deviation of these scores would serve no purpose in the present study.

Table I (see Appendix) shows the raw scores of all ten areas of temperament on the GZTS and the weighted scores of the ACTC for both male and female in the higher creative group.

Table II (see Appendix) shows the raw scores of all ten areas of temperament on the GZTS and the weighted scores of the ACTC for both male and female in the lower creative group.

\(^{1}\)E. F. Lindquist, A First Course in Statistics (Cambridge, 1942), pp. 52, 75.
Using the data presented in Table I and Table II, a statistical method, called the $t$ technique, of determining the significance of the differences between two means was utilized. From the raw data, the means and the standard deviations of all ten areas of the GZTS for both the higher creative group and the lower creative group were computed. These means and standard deviations can be seen in Table III and IV. Using

### Table III

<table>
<thead>
<tr>
<th>Area</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>20.55</td>
<td>5.17</td>
</tr>
<tr>
<td>R</td>
<td>15.55</td>
<td>4.92</td>
</tr>
<tr>
<td>A</td>
<td>19.30</td>
<td>5.17</td>
</tr>
<tr>
<td>S</td>
<td>22.95</td>
<td>5.71</td>
</tr>
<tr>
<td>E</td>
<td>18.35</td>
<td>5.90</td>
</tr>
<tr>
<td>O</td>
<td>16.35</td>
<td>5.28</td>
</tr>
<tr>
<td>F</td>
<td>12.40</td>
<td>4.98</td>
</tr>
<tr>
<td>T</td>
<td>20.00</td>
<td>3.58</td>
</tr>
<tr>
<td>P</td>
<td>14.80</td>
<td>3.80</td>
</tr>
<tr>
<td>M</td>
<td>18.00</td>
<td>3.27</td>
</tr>
</tbody>
</table>

the means and the standard deviations, the significance of the difference between the means were computed by the formula from McNemar.² These computations were checked by a programmed computer for accuracy.

TABLE IV
MEAN RAW SCORES AND STANDARD DEVIATION OF
THE LOWER CREATIVE GROUP ON AREAS
OF THE GUILFORD-ZIMMERMAN
TEMPERAMENT SURVEY

<table>
<thead>
<tr>
<th>Area</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>14.70</td>
<td>5.70</td>
</tr>
<tr>
<td>R</td>
<td>16.80</td>
<td>3.96</td>
</tr>
<tr>
<td>A</td>
<td>15.00</td>
<td>5.70</td>
</tr>
<tr>
<td>S</td>
<td>18.05</td>
<td>7.22</td>
</tr>
<tr>
<td>E</td>
<td>14.70</td>
<td>4.58</td>
</tr>
<tr>
<td>C</td>
<td>15.65</td>
<td>4.57</td>
</tr>
<tr>
<td>F</td>
<td>13.05</td>
<td>4.30</td>
</tr>
<tr>
<td>T</td>
<td>19.90</td>
<td>4.27</td>
</tr>
<tr>
<td>P</td>
<td>16.10</td>
<td>3.96</td>
</tr>
<tr>
<td>M</td>
<td>20.83</td>
<td>5.42</td>
</tr>
</tbody>
</table>

Results

The first hypothesis offered was that the higher creative group will score significantly higher on subscale G than the lower creative group. The results of the t test are summarized in Table V. Table V reveals that the hypothesis was confirmed; the higher creative group scored significantly higher than the lower creative group. The difference between the means was significant beyond the .005 per cent level of significance.

TABLE V
RESULTS OF t SCORES FOR SUBSCALE G

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Creative Group</td>
<td>20</td>
<td>20.55</td>
<td>5.17</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Lower Creative Group</td>
<td>20</td>
<td>14.70</td>
<td>5.70</td>
<td>3.31</td>
<td>Beyond .005</td>
</tr>
</tbody>
</table>
The null hypothesis, that there is no difference in means of the two groups on subscale G, can be rejected at the better than .005 level of confidence. The direction of the difference was as expected, in the direction of the higher creative group.

The second hypothesis offered was that the higher creative group will score significantly higher on subscale A than the lower creative group. The results reveal that the hypothesis was confirmed. The higher creative group scored significantly higher on subscale A than did the lower creative group. The results are summarized in Table VI.

**TABLE VI**

RESULTS OF t SCORES FOR SUBSCALE A

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Creative Group</td>
<td>20</td>
<td>19.30</td>
<td>5.18</td>
<td>2.43</td>
<td>Beyond .01</td>
</tr>
<tr>
<td>Lower Creative Group</td>
<td>20</td>
<td>15.00</td>
<td>5.70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The third hypothesis offered was that the higher creative group will score significantly higher on subscale T than will the lower creative group. The results of the t test reveal that this hypothesis was rejected. The higher creative group did not score significantly higher on subscale T than the lower creative group. The results of the t test are summarized in Table VII.
TABLE VII

RESULTS OF t SCORES FOR SUBSCALE T

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Creative Group</td>
<td>20</td>
<td>20.00</td>
<td>3.58</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Lower Creative Group</td>
<td>20</td>
<td>19.90</td>
<td>4.27</td>
<td>.078</td>
<td>NS</td>
</tr>
</tbody>
</table>

The null hypothesis, that there is no difference in means of the two groups on subscale T, can be accepted. The direction of the small difference, although not significant, was as expected.

The fourth hypothesis offered was that the higher creative males will score significantly lower on subscale M than will the lower creative males. The results of the t test indicate that this hypothesis was rejected. The higher creative males did not score significantly lower on subscale M than the lower creative males. The results are summarized in Table VIII.

TABLE VIII

RESULTS OF t SCORES FOR SUBSCALE M

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Creative Group</td>
<td>12</td>
<td>18.00</td>
<td>3.27</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Lower Creative Group</td>
<td>12</td>
<td>19.54</td>
<td>5.43</td>
<td>.815</td>
<td>NS</td>
</tr>
</tbody>
</table>
The null hypothesis, that there is no difference in means of the two groups on subscale M, can be accepted. The direction of the difference, although not significant, was as expected.

Discussion of Data

In regard to the first hypothesis, the results of this study showed that the higher creative group showed significantly higher general activity than the lower creative group. This supports a majority of research findings regarding creative individuals. Many studies have reported finding high energy levels in creative individuals, as reported earlier in the present study. Subscale G on the GZTS, which measures general activity, seems to be the best single index of creativity in this study.

In regard to the second hypothesis, the results of this study indicate that the higher creative group showed significantly more dominance, or ascendance, than the lower creative group. This also supports the majority of research as stated earlier in this study. Subscale A, which measures ascendance, or dominance, seems to be the next best single index of creativity in this study.

The third hypothesis, that the higher creative group will show more thoughtfulness than the lower creative group, was rejected. No significant difference between the means of the two groups was found. On the GZTS, the opposite of
thoughtfulness is often thought of as dislike for detail. This factor might explain the fact that there was no significant difference found.

The fourth hypothesis, that the higher creative males will score significantly lower on subscale M than the lower creative group, was also rejected. No significant difference between the means was found. Each group was composed of twelve males and eight females. Therefore, only the twelve males in the higher creative group and the twelve males in the lower creative group were used in this part of the study. The difference between the means might have been greater if a greater number and a wider sample of males had been used; but it should be noted that in some studies, such as those made by Bonsall and Stefflre, creative males have been found to be more masculine. This could account for the fact that no significant difference was found.

Also revealed in this study, although not hypothesized, were significant differences between means on subscale S and subscale E. Subscale S gives a score on the sociability of the groups. It was found that the higher creative group showed significantly more sociability than did the lower creative group. The results of the t test are summarized in Table II.

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3 Bonsall and Stefflre, op. cit., pp. 162-165.
TABLE IX
RESULTS OF t SCORES FOR SUBSCALE S

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Creative Group</td>
<td>20</td>
<td>22.95</td>
<td>5.71</td>
<td>. .</td>
<td>. . .</td>
</tr>
<tr>
<td>Lower Creative Group</td>
<td>20</td>
<td>18.05</td>
<td>7.22</td>
<td>2.32</td>
<td>Beyond .05</td>
</tr>
</tbody>
</table>

This finding regarding sociability might be accounted for by the nature of the group, namely a college population, which may be prone to be more socially minded than the average population.

It was also found that the higher creative group scored significantly higher on subscale E than did the lower creative group. Subscale E is a measure of emotional stability. The results of the t test are summarized in Table X.

TABLE X
RESULTS OF t SCORES FOR SUBSCALE E

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Creative Group</td>
<td>20</td>
<td>18.35</td>
<td>5.90</td>
<td>. .</td>
<td>. . .</td>
</tr>
<tr>
<td>Lower Creative Group</td>
<td>20</td>
<td>14.70</td>
<td>4.58</td>
<td>2.12</td>
<td>Beyond .05</td>
</tr>
</tbody>
</table>

As can be seen in Table X, the higher creative group shows significantly higher emotional stability than does the lower creative group. This supports the findings of Bonsall and Stefflre, who reported that creative individuals showed, at
the 5 per cent level, more emotional stability than did the rest of their population.\(^4\)

It should be noted that the \(t\) technique was applied to all ten subscales of the GZTS, and only those which proved to be of significance were included in this study.

\(^4\text{Ibid.}\)
CHAPTER III

SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS

Summary

The purposes of the present study were to investigate the similarities and differences in the temperament of a higher creative group and a lower creative group, and to investigate the effectiveness of the Guilford-Zimmerman Temperament Survey in identifying higher creative individuals and lower creative individuals, as measured by the AC Test of Creative Ability (Form A).

The groups used in this study were composed of fifty-nine students enrolled in one of two classes of Applied Psychology during the Spring Semester of 1963. Their ages ranged from eighteen to forty-six, with an average age of twenty and a standard deviation of 4.25 years. All were classified as college freshmen or above.

This large group was broken down into three smaller groups. The criteria for the groups were scores on the AC Test of Creative Ability (Form A). The top twenty scores, made by those students who showed the most creative ability, were the criteria for the higher creative group. The bottom twenty scores, made by those students who showed the least creative ability, were the criteria for the lower creative group. The middle nineteen scores were omitted. Both the
higher creative group and the lower creative group were composed of twelve males and eight females. The Guilford-Zimmerman Temperament Survey was administered to all fifty-nine students. This scale yields scores for ten areas of temperament. They are as follows: General Activity, Restraint, Ascendance, Sociability, Emotional Stability, Objectivity, Friendliness, Thoughtfulness, Personal Relations, and Masculinity.

The statistical design for this study is the t technique, used to establish the significance of the differences between two means. Utilizing these means and standard deviations, the t scores were computed. The results of this study tend to uphold two of the hypotheses. It was found that the higher creative group scored significantly higher on subscale G than the lower creative group. This would indicate that higher creative individuals in this study tend to exhibit more general activity than lower creative individuals do. This confirms the first hypothesis. Secondly, it was found that the higher creative group scored significantly higher on subscale A than the lower creative group. This would suggest that the higher creative individuals in this study express more dominance than the lower creative individuals do. This confirms the second hypothesis.

The last two hypotheses were rejected. No significant difference was found between the two means for subscale T. This would indicate that there is no significant difference
between the higher creative group and the lower creative group in thoughtfulness in this study. Also, no significant difference was found between the two means for subscale M. This would suggest that there is no significant difference between the higher creative group and the lower creative group in the area of masculinity.

Also found in this study were significant differences between the two groups on subscales S and E. The higher creative group scored significantly higher than the lower creative group in the area of sociability and emotional stability.

Conclusions

The hypotheses of this study proved to be only partially supported. Although the data for this study are somewhat limited because of the nature and size of the groups used, certain conclusions concerning the results of this study may be made.

1. The Guilford-Zimmerman Temperament Survey might be of some value in the assessment of creative potential of college students if special emphasis were put on scores made on subscales G, A, S, and E.

2. The best single index contained in the Guilford-Zimmerman Temperament Survey is subscale G, which represents General Activity. The others which proved to be of some significance in this study, in decreasing order of significance,
are: subscale A, which represents Ascendance; subscale S, which represents Sociability; and subscale E, which represents Emotional Stability.

3. From the data obtained in this study, a creative individual, as measured by the AC Test of Creative Ability (Form A), would be characterized by a high score on subscale G, representing general activity. This would include physical as well as mental activity, or in other terms, getting things accomplished. Also, the creative individual would reveal a high score on subscale A, representing Ascendance. This would include a certain amount of dominance and leadership ability. The creative individual would also score high on subscale S, representing Sociability. This would include a liking and an ability for meeting people, being around people, and acquiring new ideas. Finally, the creative individual would score high on subscale E, representing Emotional Stability. This would include a certain amount of emotional control and poise.

4. From the standpoint of democracy, the creative individual would seem to be the type of person to whom a democratic society can turn in time of need, for he is characterized by his attitude of getting things done, leadership potential, ability to meet people and share ideas, and emotional control and stability.
Recommendations

It is recommended that consideration be given to using the results of this study as an aid in interpreting the scores made on the ten subscales on the Guilford-Zimmerman Temperament Survey. The scores should not be considered separately, but in combinations, putting particular emphasis on subscales representing General Activity, Dominance, Sociability, and Emotional Stability in evaluating the creative potentials or abilities of individuals.

It is also recommended that the findings of this investigation be considered indicative of the population used, namely a college population.
APPENDIX

TABLE I

RAW SCORES ON G2TS AND WEIGHTED SCORES ON ACTC
FOR THE HIGHER CREATIVE GROUP

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<th>Sex</th>
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Raw scores on GZTS and weighted scores on ACTC for the Lower Creative Group

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The Guilford-Zimmerman Temperament Survey

DO NOT WRITE IN THIS BOOKLET

INSTRUCTIONS: In this booklet you will find a number of statements. Read each statement carefully. If the statement seems to be true, or if you agree with it, mark answer "Yes" on your answer sheet. If the statement is more false than true, or if you disagree with it, mark "No." If you cannot decide between "Yes" and "No," you may mark answer "?" BUT AVOID DOING THIS IF POSSIBLE.

Be sure to answer every item.

There are no "right" or "wrong" answers in the usual sense of a high score being necessarily the best. The purpose of this Survey will be served best if you describe yourself and state your opinions as accurately as possible.

You may notice that many items are similar. Actually, no two items are exactly alike.

Notice that the numbering of items on the answer sheet follows across the rows rather than down the columns.

You may turn the page and begin with the items now unless the examiner tells you to wait.
1. You start to work on a new project with a great deal of enthusiasm. ........................................... 1
2. You would rather plan an activity than take part in it. ................................................................. 2
3. You have more than once taken the lead in organizing a project or a group of some kind. .......... 3
4. You like to entertain guests. ............................................................................................................... 4
5. Your interests change quickly from one thing to another. ......................................................... 5
6. When you eat a meal with others, you are usually one of the last to finish. .............................. 6
7. You believe in the idea that we should “eat, drink, and be merry, for tomorrow we die” .......... 7
8. When you find that something you have bought is defective, you hesitate to demand an exchange or a refund ................................................................. 8
9. You find it easy to make new acquaintances. .......................................................... 9
10. You are sometimes bubbling over with energy and sometimes very sluggish. ......................... 10
11. You are happiest when you get involved in some project that calls for rapid action. .......... 11
12. Other people think of you as being very serious minded. ..................................................... 12
13. In being thrown by chance with a stranger, you wait for him to introduce himself. ............. 13
14. You like to take part in many social activities ....................................................................... 14
15. You sometimes feel “just miserable” for no good reason at all. ............................................. 15
16. You are often so much “on the go” that sooner or later you may wear yourself out. ........... 16
17. You like parties you attend to be lively. ....................................................................................... 17
18. If you hold an opinion that is radically different from that expressed by a lecturer, you are likely to tell him about it either during or after the lecture. ........................................ 18
19. It is difficult for you to chat about things in general with people. ........................................... 19
20. You give little thought to your failures after they are past. ..................................................... 20
21. You often wonder where others get all the excess energy they seem to have. .................. 21
22. You are inclined to stop to think things over before you act. ............................................ 22
23. You avoid arguing over a price with a clerk or salesman. .................................................... 23
24. You would dislike very much to work alone in some isolated place. ..................................... 24
25. You often find it difficult to go to sleep at night because you keep thinking of what happened during the day ................................................................. 25
26. You find yourself hurrying to get places even when there is plenty of time. ....................... 26
27. You like work that requires considerable attention to details. ............................................. 27
28. You are satisfied to let someone else take the lead in group activities. .............................. 28
29. You enjoy getting acquainted with people. .............................................................................. 29
30. It takes a lot to get you emotionally stirred up or excited. ................................................... 30
31. You work more slowly and deliberately than most people of your sex and age. ................. 31
32. You are a carefree individual. ................................................................................................. 32
33. When a person does not play fair you hesitate to say anything about it to him. ................. 33
34. It bothers you to have people watch you at your work. ....................................................... 34
35. You have usually been optimistic about your future. .......................................................... 35
36. You like to have plenty of time to stop and rest. ................................................................. 36
37. You take life very seriously. ...................................................................................................... 37
38. You enjoy applying for a job in person. .................................................................................... 38
39. You would like to be a host or hostess for parties at a club. ................................................ 39
40. You often feel grouchy. ........................................................................................................... 40
41. You are the kind of person who is “on the go” all the time. ................................................... 41
42. You often crave excitement ......................................................................................................... 42
43. The thought of making a speech frightens you. ..................................................................... 43
44. You find it easy to start conversation with strangers. ............................................................. 44
45. You often feel guilty without a very good reason for it. .......................................................... 45
46. People think you are a very energetic person. ......................................................................... 46
47. You sometimes make quick decisions that you later wish you hadn’t made.
48. You find it difficult to ask people for money or other donations, even for a cause in which you are interested.
49. You are so naturally friendly that people immediately feel at ease with you.
50. You daydream a great deal.
51. You are quick in your actions.
52. You have a habit of starting things and then losing interest in them.
53. When you were a child, many of your playmates naturally expected you to be the leader.
54. You sometimes avoid social contacts for fear of doing or saying the wrong thing.
55. You have frequent ups and downs in mood, sometimes with and sometimes without apparent cause.
56. You always seem to have plenty of vigor and vitality.
57. It is difficult for you to understand people who get very concerned about things.
58. When a clerk in a store waits on others who should come after you, you call his attention to the fact.
59. You would be very unhappy if you were prevented from making numerous social contacts.
60. There are times when your future looks very dark.
61. You sometimes wish that people would slow down a bit and give you a chance to catch up.
62. Many of your friends think you take your work too seriously.
63. You hesitate to walk into a meeting when you know that everyone’s eyes will be upon you.
64. You limit your friendships mostly to members of your own sex.
65. You almost always feel well and strong.
66. You seem to lack the drive necessary to get as much done as other people do.
67. You make decisions on the spur of the moment.
68. You are rather good at bluffing when you find yourself in difficulty.
69. After being introduced to someone, you just cannot think of things to say to make good conversation.
70. You feel lonesome even when with other people.
71. You are able to work for unusually long hours without feeling tired.
72. You often act on the first thought that comes into your head.
73. At the scene of an accident, you take an active part in helping out.
74. You have difficulty in making new friends.
75. Your mood often changes from happiness to sadness, or vice versa, without your knowing why.
76. You talk more slowly than most people.
77. You like to play practical jokes upon others.
78. You take the lead in putting life into a dull party.
79. You would like to belong to as many clubs and social organizations as possible.
80. There are times when your mind seems to work very slowly and other times when it works very rapidly.
81. You like to do things slowly and deliberately.
82. You are a happy-go-lucky individual.
83. When you are served stale or inferior food in a restaurant, you say nothing about it.
84. You would rather apply for a job by writing a letter than by going through with a personal interview.
85. You are often in low spirits.
86. You are inclined to rush from one activity to another without pausing enough for rest.
87. You are so concerned about the future that you do not get as much fun out of the present as you might.
88. When you are attracted to a person whom you have not met, you make an active attempt to get acquainted even though it may be quite difficult.
89. You are inclined to limit your acquaintances to a select few.
90. You seldom give your past mistakes a second thought.
91. You are less energetic than many people you know. ........................................... 91
92. You often stop to analyze your thoughts and feelings. ........................................ 92
93. You speak out in meetings to oppose those who you feel sure are wrong. ............... 93
94. You are so shy it bothers you. ............................................................................. 94
95. You are sometimes bothered by a useless thought come into your mind over and over. 95
96. You get things done in a hurry. ............................................................................ 96
97. It is difficult for you to understand how some people can be so unconcerned about the future. 97
98. You like to sell things (that is, to act as a salesman). .......................................... 98
99. You are often the "life of the party". ..................................................................... 99
100. You find daydreaming very enjoyable. .............................................................. 100
101. At work or at play other people find it hard to keep up with the pace you set. .... 101
102. You can listen to a lecture without feeling restless. .......................................... 102
103. You would rather work for a good boss than for yourself. ................................. 103
104. You can express yourself more easily in speech than in writing. ......................... 104
105. You keep in fairly uniform spirits. ..................................................................... 105
106. You dislike to be hurried in your work. ............................................................ 106
107. You sometimes find yourself "crossing bridges before you come to them." .......... 107
108. You find it somewhat difficult to say "no" to a salesman who tries to sell you something you do not really want. ................................................................. 108
109. There are only a few friends with whom you can relax and have a good time. .... 109
110. You usually keep cheerful in spite of trouble. .................................................. 110
111. People sometimes tell you to "slow down" or "take it easy". .............................. 111
112. You are one of those who drink or smoke more than they know they should. .... 112
113. When you think you recognize someone you see in a public place, you ask him whether you have met him before. ......................................................... 113
114. You prefer to work alone. .................................................................................. 114
115. Disappointments affect you so little that you seldom think about them twice. ... 115
116. You are slow and deliberate in movement. ....................................................... 116
117. You like wild enthusiasm, sometimes to a point bordering on rowdyism, at a football or baseball game. ................................................................. 117
118. You feel self-conscious in the presence of important people. ......................... 118
119. People think of you as being a very social type of person. ................................. 119
120. You have often lost sleep over your worries. .................................................... 120
121. You can turn out a large amount of work in a short time. ................................. 121
122. You keep at a task until it is done, even after nearly everyone else has given up. ... 122
123. You can think of a good excuse when you need one. ........................................ 123
124. Other people say that it is difficult to get to know you well. ............................. 124
125. Your daydreams are often about things that can never come true. .................... 125
126. You often run upstairs taking two steps at a time. ........................................... 126
127. You seldom let your responsibilities interfere with your having a good time. .... 127
128. You would like to take on important responsibilities such as organizing a new business. ................................................................. 128
129. You have hesitated to make or to accept "dates" because of shyness. ............... 129
130. Your mood is very easily influenced by people around you. ......................... 130
131. Others are often amazed by the amount of work you turn out. ..................... 131
132. You generally feel as though you haven't a care in the world. ..................... 132
133. You find it difficult to get rid of a salesman to whom you do not care to listen or give your time. ................................................................. 133
134. You are a listener rather than a talker in social conversations. ...................... 134
135. You almost always feel that life is very much worth living. ............................. 135
136. It irritates you to have to wait at a crossing for a long freight train to pass.
137. You usually say what you feel like saying at the moment.
138. You like to speak in public.
139. You like to be with people.
140. You generally keep cool and think clearly in exciting situations.
141. Other people regard you as a lively individual.
142. When you get angry, if you let yourself go you feel better.
143. You seek to avoid all trouble with other people.
144. People seem to enjoy being with you.
145. You sometimes feel listless and tired for no good reason.
146. It is hard to understand why many people are so slow and get so little done.
147. You are fond of betting on horse races and games, whether you can afford it or not.
148. If someone you know has been spreading untrue and bad stories about you, you see him as soon as possible and have a talk about it.
149. Shyness keeps you from being as popular as you should be.
150. You are generally free from worry about possible misfortunes.
151. You nearly always receive all the credit that is coming to you for things you do.
152. You would like to tell certain people a thing or two.
153. You would rather spend an evening reading at home than to attend a large party.
154. You would change a lot of things about human nature if you could have your way about it.
155. You would like to go hunting with a rifle for wild game.
156. In group activities you get your full share of everything.
157. In most cases it is important to get what you want even if you have to fight to get it.
158. You often try to analyze the motives of others.
159. Most public office holders generally put public interests ahead of their own.
160. The sight of blood frightens you.
161. People talk about you behind your back.
162. Money is important mostly because it gives its owner power.
163. It is easy for you to act naturally wherever you are.
164. Most people are stupid.
165. You feel deeply sorry for a bird with a broken wing.
166. Other people often blame you for things you didn’t do.
167. You hate to lose in a contest.
168. You like a job that requires attention to many details.
169. Most people fulfill their duties even when not being watched.
170. You can look at snakes without shuddering.
171. You often become bored when the subject of conversation shifts away from your own experience, hobbies, or interests.
172. You hate to lose an argument even when the issue is not very important.
173. You are usually too busy to spend time in reflective thought.
174. Most people know what to do without being told.
175. When a parent, teacher, or boss scolds you, you feel like weeping.
176. You are touchy about some things.
177. You know someone whom you would particularly like to see “put in his (or her) place”.
178. You are more interested in athletics than in intellectual things.
179. Most people are paid as well as they should be for what they contribute to society.
180. The idea of finding a bug or a worm crawling on you makes you shudder.
181. You often feel that one of the main characters in a movie or a play is like you.
182. You hesitate to tell people to mind their own business.
183. You make it a policy to evaluate your past actions carefully. 
184. In most places the traffic laws are in great need of improvement. 
185. You would rather study mathematics and science than literature and music. 
186. You get into scrapes which you did not seek to stir up. 
187. You resent having friends or members of your family give you orders. 
188. You are philosophically inclined, that is, inclined to philosophize about things. 
189. Most people keep to the "straight and narrow path" only because of the fear of being caught. 
190. You especially dislike to get your hands dirty or greasy. 
191. You are inclined to think about yourself much of the time. 
192. You have frequently felt like telling "nosey" people to mind their own business. 
193. You are frequently "lost in thought". 
194. Far too many people try to take as much as they can and give as little as possible back to society. 
195. You like to read true stories about love and romance. 
196. You get over a humiliating experience very quickly. 
197. In group undertakings you almost always feel that your own plans are best. 
198. You like to discuss the more serious questions of life with your friends. 
199. Most people today try to do an honest day's work for a day's pay. 
200. You pay little attention to styles in clothing. 
201. Almost everything that happens seems to have some relationship to you. 
202. When people become bossy or domineering, you want to do the opposite of everything they tell you to do. 
203. You often would like to know the underlying reasons behind the actions of other people. 
204. There are far too many useless laws which hamper an individual's personal freedom. 
205. You would rather be a forest ranger than a dress designer. 
206. Certain people deliberately say or do things to annoy you. 
207. Some people become so rude that you feel the urge to "sit on them" or to "tell them off". 
208. You sometimes have a peculiar feeling that you are not your old self. 
209. Most people who get ahead today do so because they have "pull". 
210. The sound of foul language disgusts you. 
211. There are many kinds of work that you would not think of doing because they are not good enough for you. 
212. You get into fights or arguments in defense of your friends or members of your family. 
213. You enjoy thinking out complicated problems. 
214. Most people learn quickly to avoid making the same mistake twice. 
215. You are only mildly disturbed when you see or hear of animals being treated cruelly. 
216. People offend you without knowing it because you hide your feelings from them. 
217. You get a lot of satisfaction from making other people do as you want them to. 
218. You often take time out just to meditate about things. 
219. You have received about all the rewards in life that you deserve. 
220. You would rather be an interior decorator than an architectural engineer. 
221. You have felt that certain persons are secretly trying to get the better of you. 
222. You are likely to talk back to a policeman or other person in authority over you if you feel like it. 
223. You find it very interesting to watch people to see what they will do. 
224. The number of "two-faced" individuals you have known is actually very small. 
225. You feel very badly if someone does not approve of what you are wearing. 
226. You very often seek the advice of other people. 
227. When someone is not playing fair, you like to see him beaten at his own game. 
228. You are constantly alert to ways of improving yourself. 
229. Most groups of people behave like a bunch of sheep, that is, they blindly follow a leader.
230. You would rather go to an athletic event than to a dance. .................. 230
231. It is difficult to hurt your feelings. ......................................... 231
232. Anyone trying to take away any of your lawful rights will have a real fight on his hands
with you personally.......................................................... 232
233. You are inclined to steer clear of complicated problems that call for thinking. ...... 233
234. In general, people higher up tend to assume their share of the dirty work, not leaving it for
others to do........................................................................ 234
235. The sight of ragged or soiled fingernails is repulsive to you..................... 235
236. There have been times when you have been bothered by the idea that someone is reading
your thoughts ....................................................................... 236
237. It pays to “turn the other cheek” rather than to start a fight...................... 237
238. You try to sense what people are thinking about as they talk to you........... 238
239. You have had your share of good luck.............................................. 239
240. You feel deeply sorry for a mistreated horse...................................... 240
241. You have been seriously slighted more than once................................. 241
242. When you resent the actions of anyone, you promptly tell him so.............. 242
243. After a critical moment is over, you usually think of something you should have done
but didn’t do.......................................................................... 243
244. If you want a thing done right, you must do it yourself.......................... 244
245. You can handle a loaded gun without feeling at all jittery....................... 245
246. Other people too often take the credit for things you yourself have done.. 246
247. You know or have known someone personally whom you would like to see behind prison bars ...... 247
248. You are much concerned over the morals of your generation................ 248
249. Large business corporations are a good thing.................................... 249
250. You cry rather easily.................................................................... 250
251. When things go wrong, it upsets you very little................................. 251
252. You see to it that people do not take advantage of you......................... 252
253. You are inclined to ponder over your past.......................................... 253
254. Some people pay more attention to your comings and goings than they should.. 254
255. The sight of large bugs and spiders gives you a “creepy” feeling............. 255
256. You often feel that a speaker is talking about you personally................. 256
257. You are unhappy unless things in an organization go pretty much as you want them to .... 257
258. You enjoy analyzing your own thoughts and feelings.......................... 258
259. Most people use politeness to cover up what is really “cut-throat” competition... 259
260. You would rather be a building contractor than a nurse....................... 260
261. You have days in which it seems that everything goes wrong................ 261
262. You feel the urge to stir up some excitement when things become dull..... 262
263. You would rather put plans into action than to spend time working them out........ 263
264. The educational system in this country is all right in most ways............... 264
265. You feel sorry for a fish that is caught on a hook.............................. 265
266. You often unburden your troubles to others...................................... 266
267. You would like to have enough money or power in order to impress people who think they are
better than you are ................................................................ 267
268. You frequently find yourself in a meditative state................................ 268
269. People today have just about as many chances for success as in your parents’ day..... 269
270. You feel strongly against kissing a friend of your own sex and age........... 270
271. You are too sensitive for your own good.......................................... 271
272. You have often found it necessary to fight for what you believe to be right... 272
273. You often watch others to see what effects your words or actions have upon them........ 273
274. Most people are out to get more than they give
275. You are willing to take a chance alone in a situation where the outcome is doubtful
276. People have criticized you unjustly to others
277. The opinions of most people are worthless
278. You are inclined to be introspective, that is, to analyze yourself
279. Almost anyone, even though poor, can get a square deal in courts of law
280. You would rather be a miner than a florist
281. It is difficult for you to become interested in the problems of others when you have so many
    of your own
282. It bothers you to have other people tell you what you should do
283. You often wonder about why human life exists and what its future is
284. Some people deliberately make things hard for you
285. Odors of perspiration disgust you
286. Criticism disturbs you very little
287. It bothers you to see someone else bungling a job that you know perfectly well how to manage
288. You are inclined to live in the present, leaving the past and the future out of your thoughts
289. Most people will tell a lie now and then in order to get ahead
290. The sight of an unshaven man disgusts you
291. When you lose something you often begin to suspect someone of either having taken it or
    having misplaced it
292. There are some people whose actions seem continually to irritate you
293. You like to have time to be alone with your thoughts
294. There are entirely too many employees who deserve higher pay than their bosses
295. You like love scenes in a movie or play
296. There are times when it seems that everyone is against you
297. If anyone steps ahead of you in line, he is likely to hear from you about it
298. You often wonder why people behave as they do
299. Nearly all people try to do the right thing when given a chance
300. When you become emotional you come to the point of tears

BE SURE YOU HAVE ANSWERED EVERY ITEM
Please fill in:

Name ____________________________

Age ___________ Sex ______ Date ______

Occupation ________________________

Directions:

On the inside pages there are 5 parts of a test of creative ability. You will take the test one part at a time beginning when the examiner gives the signal and stopping when the examiner says "Stop"! The length of time allowed will be found at the top of the page where that part of the test begins. Pace yourself so that you have enough time to try all of the problems in each part. Do not spend all of your time on one or two problems.

If you should be writing when the signal to stop is given, time will be allowed for you to complete the item upon which you are working.

DO NOT TURN THIS PAGE UNTIL YOU GET THE SIGNAL
PART I - 20 MINUTES

Below are listed five situations, some of which are usual occurrences and others not so common. After each situation, please indicate as many possible consequences as you can. You can supply any information or details that you wish. In other words, you are to think of all the things that might happen as a result of the situation.

A. Two men, their arms loaded with packages, are approaching each other along two sides of a building. The sidewalk is icy and it is certain that the men will bump into each other at the corner of the building.

1. ___________________________ 8. ___________________________
2. ___________________________ 9. ___________________________
3. ___________________________ 10. ___________________________
4. ___________________________ 11. ___________________________
5. ___________________________ 12. ___________________________
6. ___________________________ 13. ___________________________
7. ___________________________ 14. ___________________________

B. In a large industrial plant the addressograph machines which are normally used to address paychecks broke down on a Thursday. Paychecks were to be issued on Friday. It becomes obvious that no checks can be issued on the regular pay day.

1. ___________________________ 8. ___________________________
2. ___________________________ 9. ___________________________
3. ___________________________ 10. ___________________________
4. ___________________________ 11. ___________________________
5. ___________________________ 12. ___________________________
6. ___________________________ 13. ___________________________
7. ___________________________ 14. ___________________________
C. Late at night a small fire breaks out in one of the closets of a man's house. While the damage is not severe, all of his clothes are destroyed. It is certain that he cannot obtain any clothing until the next day.

1. __________________________ 8. __________________________
2. __________________________ 9. __________________________
3. __________________________ 10. __________________________
4. __________________________ 11. __________________________
5. __________________________ 12. __________________________
6. __________________________ 13. __________________________
7. __________________________ 14. __________________________

D. In a final assembly department normally employing sixteen women inspectors, only seven came to work on a given day. The job is sufficiently complex that no replacements can be obtained for that day.

1. __________________________ 8. __________________________
2. __________________________ 9. __________________________
3. __________________________ 10. __________________________
4. __________________________ 11. __________________________
5. __________________________ 12. __________________________
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E. At a large drawbridge over a navigation channel, two small boys have tampered with the electrical system which lowers a traffic gate prior to the raising of the bridge. A ship is approaching the drawbridge, traffic is heavy on the bridge. It is apparent that the bridge tender will raise the bridge not knowing that the warning system is out of order.

1. __________________________ 8. __________________________
2. __________________________ 9. __________________________
3. __________________________ 10. __________________________
4. __________________________ 11. __________________________
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7. __________________________ 14. __________________________
PART II - 10 MINUTES

Below are listed a number of statements which you are to assume are true. Give as many reasons or explanations as you can to explain the truth of these statements.

A. Students who suffer from allergies (hay fever, asthma, etc.) generally rate five to ten percent higher in intelligence tests than non-allergic students.

1. 

2. 

3. 

4. 

5. 

6. 

7. 

B. April is the month of the fewest accidents of all kinds in the U.S.

1. 

2. 

3. 

4. 

5. 

6. 

7. 


C. There is a significantly smaller percentage of fat men in jail than any other physical type.
1. 
2. 
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4. 
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7. 

D. There is a larger percentage of suicides on very bright days than on gloomy or cloudy days.
1. 
2. 
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4. 
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7. 

E. Great quantities of antlers are shed each year by members of the deer family, but few such antlers are ever seen or found.
1. 
2. 
3. 
4. 
5. 
6. 
7.
PART III - 15 MINUTES

Below are listed a number of common machines or appliances. Please list after each one all the things that you think are wrong with them or could be improved over the existing designs.

A. Automatic Toaster

1. _________________________________ 8. _________________________________
2. _________________________________ 9. _________________________________
3. _________________________________ 10. _________________________________
4. _________________________________ 11. _________________________________
5. _________________________________ 12. _________________________________
6. _________________________________ 13. _________________________________
7. _________________________________ 14. _________________________________

B. Lawn Mower (Not motor driven)

1. _________________________________ 8. _________________________________
2. _________________________________ 9. _________________________________
3. _________________________________ 10. _________________________________
4. _________________________________ 11. _________________________________
5. _________________________________ 12. _________________________________
6. _________________________________ 13. _________________________________
7. _________________________________ 14. _________________________________
C. Gas Furnace

1. 
2. 
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8. 
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14. 

D. Electric Razor

1. 
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E. Electric Refrigerator

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14. 

>
PART IV - 20 MINUTES

Below are listed a number of problem situations. For each set there are a number of possible solutions. You are asked to give the solution that is both least expensive and least time consuming. You can assume the availability of any kind of special materials that you may need in solving these problems.

1. The Air Force had established an advanced Air Base on an island in the Atlantic Ocean. Aviation fuel was supplied to this Air Base by means of Navy Tankers. Because there were no harbor facilities it was necessary to transfer the fuel from the tankers to shore by means of an off-shore pipe line. The base of this pipe line was anchored on the ocean floor approximately four miles from shore and at a depth of 200 feet.

During the height of a storm the portion of this line protruding from the water was broken. After the storm had subsided, the end of the pipe line could not be found. Divers were sent down in the general area and were unable to locate the pipe line. Efforts to trace the line out from the shore failed. What method would you use to locate the end of the submerged line?

2. A painter was commissioned to redecorate the interior of a large church. The church was quite old and all blueprints and dimensions had been lost. There were numerous irregularities in the height of the ceiling.

The painter was faced with the problem of determining exactly the various height dimensions at several points in the church. He has to know exactly the size and height of his scaffolds. To get these dimensions by use of ladders at various places seemed to him to be too expensive and time consuming. What method would you suggest for determining these dimensions quickly and accurately. (The painter had no knowledge of mathematics.)
3. In a large three-story house, a woman was cleaning a third story room. The electricity in this room suddenly went off due to a faulty fuse. The fuse box was located in the basement and it contained fourteen fuses for various parts of the house. The woman had no way of knowing which fuse was bad.

Her problem was to find the bad fuse, that is, the fuse governing the circuit in that room. She did not want to replace each fuse one at a time and make a number of trips up and down the stairs to determine if the power was on. Remembering that she could not visually spot the bad fuse, what method could she use to find it without having to make numerous trips up and down stairs?

4. In remodeling an old home, the plasterers somehow completely covered the metal electrical outlets. There were no blueprints available to show the number of these outlets or their location in the room.

Without tearing out the walls at random to find these, what would be a quick way to determine the exact location and number of these outlets?

5. A city's water supply was suddenly partially cut off. After thorough checks it became clear that the pipeline some six miles long from the reservoir to the city pumping station is blocked. All efforts failed to clear the pipe.

It became obvious that the exact location of the block must be found and this section of pipe dug up and cleared. There was no map or diagram showing the route of the pipe underground. How can this blocked section be located quickly without digging up the whole pipe line?
Below are listed several common objects. You are to list all the possible uses to which these objects might be put (both uses that you have seen and uses that you can imagine).

A. A rubber tire

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B. A red brick

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C. A wooden ruler

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D. A hammer

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E. A wire coat hanger

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# SCORE SHEET

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Sum IQ, IIQ, VQ * S. Scores =

Standard Score
BIBLIOGRAPHY

Books


Articles


