EXTENT OF AGREEMENT BETWEEN COLLEGE FRESHMEN AND PSYCHOLOGISTS ON THE CREATIVE PERSON

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In Partial Fulfillment

of the Requirements for the Degree

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EXTENT OF AGREEMENT BETWEEN COLLEGE
FRESHMEN AND PSYCHOLOGISTS ON
THE CREATIVE PERSON

A Thesis
Presented to
The Graduate Division
Drake University

In Partial Fulfillment
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Master of Arts

by
Ingfried Fiskin
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APPENDIX A. Analysis of Extent of Agreement Between
Drake University Freshmen and Psychologists on
Descriptions of the Creative Personality

The purpose of this study was to determine whether there is any agreement on the characteristics of the creative person between two groups: psychologists who have specialized in the subject of creativity, and a more naive group. The subject is complicated by the fact that some writers stress the social importance and originality of the creative product; their concern is with the creative tendency. Others attempt to describe the subjective, psychophysical states or processes that accompany the creative act.

An increasing number of writers are becoming more concerned with the problem of creative potential in all activities, of all people, at all ages. This last group is concerned with discovering the characteristics of the creative personality and the social conditions, particularly in the family and school, which encourage the development of the potential that might result in creative production. The problem of selecting for study from the many points of view the many aspects of the phenomenon raises the question of whether agreement is possible.
CHAPTER I

INTRODUCTION

I. PURPOSE OF THE STUDY

The purpose of this study was to determine whether there is any agreement on the characteristics of the creative person between two groups: psychologists who have published on the subject of creativity, and a more naive group. The subject is complicated by the fact that some writers stress the social importance and originality of the created product; their concern is with the creative genius. Others attempt to describe the subjective psychological states and processes that accompany the creative act.

An increasing number of writers are becoming more concerned with the problem of creative potential in all activities, of all people, at all ages. This last group is concerned with discovering the characteristics of the creative personality and the social conditions, particularly within the family and the school, which encourage the development of the potential that might result in creative production. The problem of meaningful language for study from the many points of view and the many aspects of the phenomena raises the question of whether agreement is possible.
A sample of Drake University freshmen was used as the naive group to be compared primarily with the last described group of psychologists as to the extent of agreement about the characteristics of creative people.

II. PROBLEM FOR EXPLORATION

Definition of the Problem

A group of first semester, Drake University freshmen were tested in October, 1965, on the Opinion, Attitude and Interest Survey (OAIS) which included a total of fourteen scales designed to aid in student assessment for admission or counseling. One of these, the Creative Personality (CP) scale, was the focus of this study. The problem for research was centered on three questions: (1) Do Drake University freshmen describe the creative personality in terms similar to those used by the writers and researchers? (2) Is there a difference between students who score high on the Creative Personality scale and those who score low in the way they describe creative people? (3) Do the descriptions of the high scoring students tend to show greater agreement with the psychologists regarding these characteristics?

The purpose was not to create an instrument to measure the creative potential of students, only to determine their agreement. Subjective self-reference was expected, but it was not to be measured, except as the high Creative Personality group might show a greater tendency to agree.

The Scope and History of the Problem

Aristotle and Coleridge give evidence that concern with the problem in its many aspects is not new. Coleridge tried to distinguish between fancy and creative imagination. Fancy is a memory mode receiving its fixed and definite materials through the laws of association, but emancipated from order of time and space and modified by choice. Primary imagination is the living power and prime agent of all human perception. Secondary imagination echoes the primary and coexists with the conscious will. It dissolves, diffuses and dissipates in order to recreate. Where this is impossible, it struggles to idealize and unify. It is essentially vital. It is the "essemplastic" or unifying power of the imagination which results in creative production.¹


Aristotle's interest in the problems of productive science—the problem of "making"—and his mode of analysis which was to look for the material, the formal, the effective, and the final causes in considering any aspect of any problem suggests J. P. Guilford's work on creativity. The effective cause is the maker, the individual under consideration. Aristotle's material cause can be equated with Guilford's "content" of intellect. The formal cause, the organization imposed on the material by the talents of Aristotle's poet, is similar to the way Guilford treats the application of intellectual operations to the content of intellect. The final cause is the product: for Aristotle, an artistic principle, an effective tragedy or material form, or any part of such products; for Guilford, units, classes, relations, systems and transformations. After 2,300 years, Aristotle's method was adapted to factor analysis!

Until relatively recently, the significance of man's concern with creativity was more demonstrable outside the field of psychology. Guilford reported in 1950, when he was just beginning his large-scale work on the subject, that he had reviewed Psychological Abstracts for the previous twenty-three years looking for research on topics that could

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be in any way related to "creativity." He found that of 121,000 indexed titles, only 186 seemed to definitely bear on creativity. He concluded less than .5 per cent of the total research could have been in some way related.¹ One might date the significant concern in modern psychology from 1950. The OAIS research was begun in 1951, completed in 1961, and included a scale on the creative personality because of the conviction of Fricke that this was a neglected area in the assessment of academic potential.

Harold H. Anderson's 1959 publication of addresses presented at the Interdisciplinary Symposium on Creativity at Michigan State University between April, 1957, and July, 1958, includes presentations by fourteen eminent people from various fields.² Eight were psychologists, attesting to their concern, but few of the addresses are based on research findings.

A rather cursory review of bibliographical references leads to the guess that by 1955, there was a growing philosophical and research interest resulting in many publications in the late fifties. Since 1960, the research studies on various aspects of creativity, using a variety of subjects for testing, have been increasing at a rapid rate.


CHAPTER II

REVIEW OF LITERATURE

The problem is the characteristics of people who display "creative behavior," whether there is reasonable possibility for communication about them, and whether there is any agreement between the speculations or research findings of psychologists and the perceptions of non-experts such as college freshmen. The more subjectively speculative literature will be omitted in the review to follow, although it might well be considered as a source of hypotheses for the growing research interest. The problem would then be to devise research concepts and test materials relevant to some of the poetic or totally generalized descriptive terms which some writers use. Could the serious researcher derive ways of translating for his purposes definitions such as these: creativity is--life itself, --a way of life, --a maximum of self-actualization? How would he translate these terms into testable characteristics of the emotional experiences of people: ecstasy, delight, intensity of encounter, peak experience, a willingness to be born again every day? Such translations are beyond the present objective.
Guilford, in 1950, felt that because creative accomplishments of true excellence were exceedingly rare, standards for defining creativity must be reduced so as to consider lower levels of distinction. He was also concerned about problems of potential, circumstance, and time. The search for characteristics must extend beyond the factor of intelligence. He was concerned about the many methodological problems involved in testing subjects and constructing tests. He wrote of the need for a learning theory that considers insight and creativity. A theory of creativity would involve the entire personality, which he defined as "a unique pattern of traits." Traits, in turn, he defined as "individual differences." He foresaw that by the use of factor analysis and by using the best tests, or devising better ones, at least a half-dozen intellectual factors and large numbers of other personality traits would be discovered. By 1956, Guilford's work and his theory which he called "The Structure of Intellect" was far advanced. He was concerned with two broad classes of intellectual factors, thinking and memory. "Thinking" was in turn sub-classified as cognition (discovery), production, and evaluation. The "production" category was in turn divided into convergent and divergent thinking.

1 Guilford, op. cit., 444-54.

At that time, Guilford used a two-dimensional matrix to analyze a class or sub-class of intellect according to content and production. The availability of suitable tests for each content-product cell determined which cells could be filled in the matrix. He used three types of content: figural (perceptual), structural (various systems of conventional signs), and conceptual (meaningful). What was produced depended on the class of thinking being tested. For example, in convergent thinking the products were names, correlates, orders, changes, unique conclusions. Four of the cells in the conceptual column had been filled by these factors: abstraction naming, ordering, redefinition, and symbol manipulation. "Redefinition" is seen as an important aspect of the creative personality; the others appear essential to the completion of different kinds of creative products.

Divergent thinking as a characteristic of creativity is mentioned by almost all writers. Guilford's analysis of this category has resulted in factor concepts which are widely used.

The three content columns of the matrix remain the same as for convergent thinking: figural, structural, and conceptual. The products of divergent thinking are words, ideas, expressions, shifts, novel responses, details. The conceptual column contains a factor for every product row.
Respectively, these are: **associational fluency**, **ideational fluency**, **expressional fluency**, **spontaneous flexibility**, **originality**, and **elaboration**. Only two factors appear in the structural column: **word fluency** (meaning of no importance) in the first row and **adaptive flexibility** in the "shifts" row. In the figural column, **flexibility of closure** appears in the "shifts" row and **elaboration** in the "details" row. Guilford was not certain whether "elaboration" would remain of two kinds or be found to be the same.

Guilford summarized by saying that certain special creative factors had been hypothesized because of a tendency to think of them as exclusively creative factors. Some were found, some were not.

Creative thinking, like problem solving (they may actually overlap in some cases), depends upon different combinations of factors, and the combination of factors significant to the task will vary from time to time. Although certain factors such as ideational fluency and originality will carry relatively more weight, other factors not obviously creative may often be significant, as when an invention depends upon thinking by analogy or upon visualization.

By 1959, Guilford's **Structure of Intellect** model had become three-dimensional. The classes of intellect were put on one dimension, called **operations**: **cognition**, **memory**, **divergent thinking**, **convergent thinking**, and **evaluation**.

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Products, on a second dimension, had become uniform and included units, classes, relations, systems, transformations, and implications. On the content dimension, figural remained, structural became symbolic, conceptual became semantic, and behavioral was added. The last approximates "social intelligence" in meaning. It was still a theoretical term with no known factors.

The theoretical model predicts 120 distinct intellectual abilities of which fifty had been placed in the matrix. If any of the three dimensions is increased, the model will contain a potential of far more than 120 abilities.

Although the divergent thinking operation and the production of transformation remain most important for the study of creativity, Guilford's increasingly filled matrix shows that every operation can enter at some point depending on person, problem, content, and sought product. Guilford emphasizes the importance of factor analysis as to its implications for psychological theory. Factor analysis finds individual differences by discovering traits, but the results also show how people are alike as functioning individuals. Five classes of intelligence distinguished according to five kinds of content and six varieties of productions suggest a classification of basic forms of information and knowledge.\(^1\) He also emphasizes the importance

\(^1\) Guilford, "Three Faces of Intellect," op. cit., 477.
of his system for vocational testing. He makes a special plea for the recognition within education of the social demand for inventiveness.

--- realization (sic) that the more conspicuously creative abilities appear to be concentrated in the divergent-thinking category, and also to some extent in the transformation category, we now ask whether we have been giving these skills appropriate exercise. It is probable that we need a better balance of training in the divergent thinking area as compared with training in convergent thinking and critical thinking and evaluation. 1

Buel used biographical data for a study designed to assist in the identification of creative research personnel. 2 He concluded that apparently creative personnel in a variety of research areas (petroleum industry, organic chemistry, biological and physiological sciences) could be identified and described in similar terms. The valid items from the study were: positive self-image, need for personal independence in work and social environment, wide interests, history of parental permissiveness insofar as decision-making is concerned, a tendency to become over-involved (in terms of time available for job-related activities), a tendency to seek unstructured work situations, react positively to challenge, and desire contemplative pursuits.

1 Ibid., 478.

Maslow describes his change of view regarding creativity. He reports that he did a study of persons whom he had defined as "positively healthy, highly evolved, and matured, self-actualizing." Prior to the study, he had felt that only specific types of people such as painters, poets, theorists, scientists, or inventors could be creative. He had unconsciously assumed, he continues, that any poet, any painter, any composer was leading a creative life. The results of his study changed his attitude. He quotes from his study of his subjects:

They do not neglect the unknown, or deny it, or run away from it, or try to make believe it is really known, nor do they organize, dichotomize, or rubricize it prematurely. They do not cling to the familiar, nor is their quest for the truth a catastrophic need for certainty, definiteness, and order, such as we see in an exaggerated form in Goldstein's brain injured or in the compulsive-obsessive neurotic. They can be when the total objective situation calls for it, comfortably disorderly, sloppy, anarchic, chaotic, vague, doubtful uncertain, indefinite, approximate, inexact, or inaccurate (all, at certain moments in science, art, or life in general, quite desirable).

Getzels and Jackson in their work with gifted students follow Guilford in their view that traditional Intelligence Quotients tests (and college aptitude tests?) do not result

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in a complete measure of intelligence.\(^1\) From Guilford's many criteria they select his "convergent thinking" and "divergent thinking" as more manageable for their studies. Their work was done in a private school in Chicago where the average Intelligence Quotient of their total sample group was 132 with a standard deviation of fifteen. All students from the sixth through the twelfth grades participated in the major testing; about forty scores were obtained from each student. Sub-samples were selected for two experimental groups: one high in intelligence as defined by the Intelligence Quotient, but not concomitantly high on creativity; the other, high on creativity but not concomitantly high Intelligence Quotient. There was a twenty-three point difference in the mean Intelligence Quotient of the two groups. When the two groups were evaluated on school achievement, both groups performed significantly higher than the total population with a non-significant advantage for the creative group.\(^2\)

The authors' concern was with gifted children in school situations. They pointed out school problems that arose when Intelligence Quotient was considered the full and true measure of intellectual ability and "giftedness." Those children with the lower Intelligence Quotient's, as in the above sample,

\(^1\) Jacob W. Getzels and Philip W. Jackson, Creativity and Intelligence (New York: John Wiley and Sons, Inc., 1962).
\(^2\) Ibid., 24-25.
are not the ones characterized by the school as "gifted children," but are placed "in the pejorative category of 'overachievers.'" The implication is that emotional or motivational factors are "pushing" the child to outdo himself. Sometimes these motivational factors are considered as some type of socio-psychological malfunctioning, "and such children are sometimes sent to the counseling office to reduce their achievement to a level more in line with their I.Q."\(^1\) Intelligence has to be recognized as involving a wider range of distinctive intellectual abilities to avoid the dilemma of "overachievement" which is contradictory to the meaning of "capacity."

E. Paul Torrance has done a great deal of work on factors leading to the development of creativity in children in the school situation from the pre-primary into the secondary level. His theoretical foundation seems similar to that of Guilford, also Getzels and Jackson. He has used and developed a great variety of tests and questionnaires for use with his child subjects as well as with their teachers and parents. His investigations of attitudes of teachers, parents and peers toward the creative child result in the generalization that he is seldom the preferred child; also, that girls suffer more social repression of creative


\(^1\) Ibid., 26.
behavior than boys and are more frequently rewarded for conformity.¹ The characteristics relevant to creative behavior are much the same as those already mentioned. He does point out that, at least for the child subjects, the opportunity to manipulate the objects which come within their experience is very important.²


²E. Paul Torrance, Education and the Creative Potential (Minneapolis: University of Minnesota Press, 1963), 110-15.
CHAPTER III

METHODOLOGY

I. HYPOTHESES AND ASSUMPTIONS

The general hypotheses for this study were (1) that despite the problems of language involved in the study of a complex concept, creativity, the extent of agreement about the variable between naive subjects and psychologists could be studied and possibly determined; and (2) that the subjects scoring high on the criterion, the Creative Personality scale of the OAIS, would show greater agreement.

The specific hypotheses and assumptions of several psychologists who have published on the subject and described the characteristics of creative personalities were the hypotheses to be tested for agreement, by using them as "items" in the test instrument.

In general, the most frequently hypothesized, and perhaps most frequently researched descriptive characterizations in positive terms, seem to be: original, imaginative, questioning, prefer complexity, are redefining, elaborating, perspicacious, problem-oriented, manipulate their environment, are fluent in producing ideas, insightful, honest, easily surprised, flexible, changing, spontaneous, tolerant of frustration, tolerant of ambiguity, tolerant of uncertainty,
optimistic, guided by principles, like to use mind, have a wide interest range, have intellectual interests, interests
in the humanities and social sciences, artistic orientation,
reflective and intuitive thinkers, have heightened conscious-
ess, are self-accepting, have strong drives to self-
development, high personality growth potential, are sensitive,
gregarious, impulsive, have strong sense of humor, are
emotionally healthy, progressive, show taste, need creative evaluation
improvising, experimenting, show ideas, are encouraged by parents and teachers. In the nature-nurture argument,
most emphasize nurture except for special abilities.
The most frequent negatively stated descriptions of
creative personalities seem to be: are not imitators,
are not conforming, conformed, conformists, conformant, self-sufficient, conforming, controlled, submissive,
conformity, concerned about having power, submissiveness,
security, social adjustment, high status conscious, do not have good social adjustment, high
financial aspirations, are not security-oriented, even in
security.
performance, do not have favorable work attitudes, are not practical, accurate on details, orderly, enduring, popular.

There are many terms on which, abstracted from context, there would seem to be disagreement, e.g. achievers, achievement-oriented, achieving. There seems to be more agreement that creative people are not achievement-oriented in the sense of striving to achieve high grades just for the sake of grades nor to achieve "success," as usually defined in the society, for its own sake. Getzels and Jackson made this point strongly, but pointed to the high actual performance. Others were not so certain that high grade averages are typical of creative students; they believe that these students receive their best grades in the kinds of schools and courses which allow for or call for divergent thinking. There is little disagreement that many characteristics of intelligence and other personality traits must enter the process of creating a product.

In considering the relative validity of the two sets of descriptions, one should be reminded that all are not the result of research; that where there was research, there were probably few opportunities for "delinquent" behavior; and that the descriptions at best show statistically significant group differences. Any one subject would probably show contradictory characteristics in both categories, varying as to age and circumstance. All of the freshman subjects (and many of the psychologists) were attempting descriptions from behavior observed in natural conditions.
II. DESIGN OF STUDY

Source of Sample Group

The Drake University Office of Institutional Research administered the OAMS to a random sample of ninety-nine entering Freshmen in October, 1965. The possibility of using this group for a study of their perceptions of the characteristics of creative people seemed feasible as their Creative Personality scale percentile scores could arbitrarily be used for each subject's rating on the creativity criterion.

The purpose of the study was not only to determine to what extent these students might agree with psychologists, but also whether there would be differences between those who ranked high and those who ranked low on the criterion.

Construction of the Test Instrument

During the review of literature, the writer noted almost every descriptive characteristic imputed to creative persons, both negative and positive, except those which were so subjective or poetic as to lack communicative meaning and those which could be related only to recognized creative genius. A deck of cards containing descriptive words, phrases, and clauses was compiled from these positive and negative descriptions, and their implications. Opposite or near opposite statements were constructed for each. Some obviously overly generalized positive or negative statements were modified by "seldom," "sometimes," "frequently," etc.
A total of 405 items resulted. Some additions made by the writer were mainly implications from the psychologists’ statements. The items on concentration and distractibility resulted from interest in a study on under-achievement and distractibility by R. W. Baker and T. O. Madell which was not related to creativity.

**Trial instrument.** The cards were shuffled and a trial check list was constructed. The purpose was to secure the cooperation of a group of sophisticated people in checking the items so as to eliminate the least useful items, to select from those with the most synonymous meanings and to determine what changes or qualifications would make the final instrument more meaningful. The objective was to reduce the number of items and to include relatively clear statements to test agreement, not to test unconscious processes or self-identification.

The instructions given on this trial instrument were approximately the same as those given to the freshmen on the final check list:

**Directions:** Think of those people you know or have read about whom you regard as having highly creative personalities or as showing much creative behavior. Consider both children and adults. Consider faults and virtues. Then circle as many or as few of the following descriptive words or phrases as you feel characterize highly creative people. Do not debate too long over any particular description.

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The group of sixteen who checked the trial instrument consisted of three professors of psychology, one professor of sociology, six professors of English, one young instructor in English, one graduate student in psychology, one senior in the Business School, all men. The wives of three professors also cooperated: an experienced high school English teacher, an editorial worker in a large publishing firm, and a home-economist who, incidentally, had scored at the 99th percentile on the Creative Personality scale of the OAIS.

These people could not be considered as a criterion group of creative people because, with possibly two exceptions, there was no basis for differentiating between them. The recognized poet among the English professors frankly stated his belief that "creative" could be applied only to those engaged in the fine arts. It can be assumed, however, that they should constitute a group of sophisticated judges.

In general, they were highly aware of internal consistency, and close similarities or redundancy among items. If they had checked one item, they were unlikely to check a later item which was contradictory or almost contradictory. Only one item was checked by all, ninety-nine were checked by none.

**Final instrument.** It is important to remember that the above items were drawn out of their original context. Relatively few are clearly defined or well-researched concepts. Almost all occur in everyday communication.
Most of the ninety-nine unchecked items were discarded because the opposite term was retained or because other similar items were checked. None were retained without some change in wording. For example, "have poor work attitudes" was changed to "have poorer work attitudes" because this had been emphasized by some writers.

The items checked most frequently were those on which there is almost complete agreement among the writers. They almost constitute the definition of "creative." "Original" was retained, "imaginative" was dropped as it was included in qualified terms.

If opposites received frequent responses on one item and very few on the other, only one was retained after consideration of relation to other items.

Some terms could be combined: "codifiers and rule-makers;" "dichotomizers and classifiers."

Qualifications seemed necessary for some. For example, "work best on their own" preceded "work best in creative company." The first was checked by twelve, the second by five. It seemed possible that the judges' awareness of their first checking might have resulted in the difference. The items were changed to "work best on their own if situation allows" and "on large projects, work best in company with other creative people." Some items were elaborated to clarify them for the less sophisticated freshmen. For example, to "altruistic" was added "devoted to interests of others."
A large proportion of the frequently checked items was retained as one purpose was to determine agreement by the total group. Many non-characteristic items with few responses were retained for the same reason. Agreement with the experts on these can, of course, only be seen through a low percentage of responses.

To differentiate between the students scoring high and low on the Creative Personality scale, it seemed that those items checked with low and average frequencies should discriminate best. The hypothesized importance of the item had to be considered. "Tolerant of frustration" was checked by only two, although it is supposedly descriptive. It was changed to "more tolerant of frustration," and another item was added: "more seriously upset by frustration."

Many other items were further qualified to allow for different circumstances.

Instead of using random order, the items in the final instrument were arranged with some regard for their relationship to others so as to enable the student to consider his choices and thereby improve internal consistency. When seemingly contradictory terms are checked, this is more likely to reflect that the student saw some other difference between them.

The check-list compiled for the students was entitled Evaluating the Creative Personality, and consisted of 224 items.
The directions were the same as for the trial check-list except for these additions: "When you feel puzzled about an item, stop to consider: 'Is this more true of highly creative people than others?' There are no right or wrong answers."

A sample of the check-list is included in the appendix.

**Subjects**

The group is assumed to be a random sample of the 1965 freshman class. The OAIS was administered to several afternoon English sections. Section assignments were made only on the basis of filling up sections as this was possible in relation to order of registration and other courses in a student's program. There are no selective criteria for English class assignments until the second semester. Roughly, the group represented about six per cent of the freshman class.

Of the ninety-nine students who had completed the OAIS in the fall of 1965, ninety-one were in residence in May, 1966. Of these, eighty-six completed *Evaluating the Creative Personality*.

Scores on the OAIS scales, except for the bias scales, were available for the ninety-nine students. Of these, twenty-one were in the high scoring group on the Creative Personality scale. Twenty-four were in the low scoring group.
Differentiation of sub-groups. High scores on the Creative Personality scale, as well as on the other academic promise and personality scales of the OAIS, are defined by the OAIS Handbook as percentile scores of eighty or above. Low scores are defined as percentile scores of twenty or below.

Of the eighty-six students who completed the checklist, eighteen were in the high scoring Creative Personality group, twenty-four were in the low scoring group. One of the high scoring students had left the University, and two did not complete the checklist. Designating those with average scores as high and low average, there were fifteen in the percentile range of fifty through seventy-nine, and twenty-nine in the range of twenty-one through forty-nine.

Of the eighty-six students who completed the final test instrument in May, 1966, thirty-four were men, fifty-two were women. Of the thirteen who were not available from the original sample of ninety-nine freshmen who had completed the OAIS, nine were men. In this sample of eighty-six, seven men and eleven women were in the high scoring group; nine men and fifteen women were in the low scoring group. There is no significant difference between the observed and expected proportions of men and women in these sub-groups in relation to the total group.
The mean Creative Personality score for the total group was 42.19 which is significantly below the national norm of 50 at the .017 level. The mean Creative Personality score for the High group was 90.22; the mean for the Low group was 9.46.

Characteristics of sub-groups on other OAIS scales. On the other personality scales, several significant differences from the national norms are found between mean scores of the High and Low Creative Personalities (z test of significance):

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<tr>
<th></th>
<th>High CP's Mean Percentile</th>
<th>Low CP's Mean Percentile</th>
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<tbody>
<tr>
<td>Achiever Personality</td>
<td>36.91**</td>
<td>54.54</td>
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<tr>
<td>Intellectual Quality</td>
<td>58.72**</td>
<td>34.42***</td>
</tr>
<tr>
<td>Social Adjustment</td>
<td>42.94*</td>
<td>49.63</td>
</tr>
<tr>
<td>Emotional Adjustment</td>
<td>50.33</td>
<td>28.58***</td>
</tr>
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\* \( P < .05 \) \** \( P < .05 \) \*** \( P < .001 \)

Mean scores on the Masculine Orientation scale were computed by sex.

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<th></th>
<th>High CP's Mean</th>
<th>Low CP's Mean</th>
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<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Means</td>
<td>58.14</td>
<td>56.91</td>
</tr>
<tr>
<td></td>
<td>45.33</td>
<td>57.60</td>
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Fricke states "- - - Regardless of the sex of the student, high percentiles indicate responses given more typically by men; low percentiles indicate responses given more typically by women." 

\[1\] Fricke, op. cit., 4.
Scores of subjects in relation to the educational-vocational interest scales of the OAIS. In addition to interest in a field, these five scales assess the extent to which a student has the personality traits, characteristics, and values similar to those who enter these five educational-vocational areas.

A high score on the interest scales is defined as a percentile of 50 and above; such scores are obtained by half the students who concentrate or specialize in each interest area. Usually, percentiles below 20 can be interpreted as good evidence against interest in an area. Percentiles below 20 are defined as low scores.

Comparisons between the High CP's and Low CP's on the interest scales are differentiated by sex because of the frequency with which it is related to vocational selection.

Scale 10. Business Interest scale (Bus, 104 items)

This scale measures personality attributes associated with interest in accounting, commerce, contracting, finance, management, investments, merchandising, production, real estate, secretarial science, selling, etc.

On the Business scale, the sample scores are summarized as follows:

<table>
<thead>
<tr>
<th></th>
<th>High CP's</th>
<th></th>
<th>Low CP's</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Means</td>
<td>63.57</td>
<td>14.64</td>
<td>61.67</td>
<td>40.13</td>
</tr>
<tr>
<td>Number of scores, 50-99</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Number of scores, below 20</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

1 Ibid., 6.
2 Ibid., 5.
The OAIS Handbook does not predict a high business interest for students who score high on Creative Personality. Although there seems to be little difference between the High CP and Low CP men, an inspection of the actual profiles shows that the difference between them is revealed by the combination with other high interest scores. The High CP men are more likely to have another high score on the Social Science scale; Low CP's receive another high score more frequently on the Physical Science or Biological Science scales.

Scale 11. Humanities Interest scale (Hum; 100 items)

This scale measures personality attributes associated with interest in art, classics, foreign languages, history, dramatic arts, journalism and writing, literature, library science, music, philosophy, religion, speech, etc.

On this scale, the difference between the High and Low CP's is quite obvious, but the difference between men and women is also very great:

<table>
<thead>
<tr>
<th></th>
<th>High CP's</th>
<th>Low CP's</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Means</td>
<td>38.57</td>
<td>61.82</td>
</tr>
<tr>
<td>Number of scores, 50-99</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Number of scores, below 20</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Scale 12. Social Science Interest scale (Soc; 99 items)

This scale measures personality attributes associated with interest in anthropology, economics, criminology, government, education, guidance, human relations, political science, psychology, social work, sociology, etc.

---

1^Ibid., 5.  
2^Ibid., 5.
The difference in interest in the Social Sciences as tested by this scale is very large between the High and Low CP's, particularly for these two small sub-groups of men:

<table>
<thead>
<tr>
<th></th>
<th>High CP's</th>
<th>Low CP's</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Means</td>
<td>65.28</td>
<td>53.27</td>
</tr>
<tr>
<td>Number of scores, 50-99</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Number of scores, below 20</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Scale 13. Physical Science Interest scale (Phy; 117 items)

This scale measures personality attributes associated with interest in astronomy, chemistry, electronics, engineering, geology, mathematics, mineralogy, physics, etc.

For the sample sub-groups, scores are summarized as follows:

<table>
<thead>
<tr>
<th></th>
<th>High CP's</th>
<th>Low CP's</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Means</td>
<td>24.57</td>
<td>33.82</td>
</tr>
<tr>
<td>Number of scores, 50-99</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Number of scores, below 20</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

One wonders whether the relatively low scores, even for the Low CP's, reflects the fact that Drake University has no School of Engineering.

Scale 14. Biological Science Interest scale (Bio; 108 items)

This scale measures personality attributes associated with interest in anatomy, animal husbandry, bacteriology, botany, chiropractic, dentistry, entomology, farming, forestry, horticulture, medicine, nursing, occupational therapy, physiology, veterinary science, wildlife management, zoology, etc.

1Ibid., 5.  
2Ibid., 6.
The summary of score differences on this scale is in the predicted direction for both sexes in relation to CP scores. For the High CP men, the low scores on the Biological Science scale and the high scores on the Social Science scale would enter into counseling in relation to their high scores on Business.

<table>
<thead>
<tr>
<th></th>
<th>High CP's</th>
<th></th>
<th>Low CP's</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Means</td>
<td>8.86</td>
<td>22.00</td>
<td>51.56</td>
<td>55.00</td>
</tr>
<tr>
<td>Number of scores, 50-99</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Number of scores, below 20</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
CHAPTER IV

RESULTS

A summary table is included in the Appendix. This includes the item content, the percentage of the total group checking each item (60 per cent is significant at .05 level), the $X^2$ measure of difference in responses between the subgroups: High CP's compared to all others; Low CP's compared to all others; and Highs compared to Lows. Significance levels are shown, also which sub-group gave the highest frequency of response in any one comparison. The small sample size limits the extent to which the results can be generalized to all Drake freshmen. As mentioned previously, some hypothesized characteristics are negatively stated by the psychologists. Some of the items are in turn in reverse form, i.e., some affirmative hypotheses are stated negatively, some negative hypotheses are stated positively.

The responses to individual items will be considered in groups varying from pairs to many items, in the approximate order of their appearance in the table.

Numbers of responses were converted to percentages and tested by the $X^2$ method, corrected for continuity. The large possibility of between-group chance differences is recognized, particularly on those items receiving a very small percentage of responses.
I. ANALYSIS OF DATA

The first three items are concerned with originality, usually part of any definition of creativity or divergent thinking. The specific word was checked by 98% of all subjects; combine materials or ideas in novel ways, by 83%. Copy the methods and ideas of the great artists and thinkers in their own efforts was checked by only 3%. There was one sub-group significant difference among these few: the High CP's checked it more frequently than the Lows (at .05).

Three items are concerned with aspects of imagination: have constructive imagination and sometimes destroy to rebuild are supposed characteristics. On these two, respectively, 76% and 62% checked. The only significant between-group comparison was between Lows and Others on constructive imagination, the Lows checking less frequently (at .05). On display vandalistic imagination, supposedly non-characteristic, only 14% checked. Of these, the Highs checked more frequently, the Lows, least frequently on all comparisons (beyond .001 level). Agreement with the item shows tendency to disagree with the experts.

Supposedly, creative people are questioning. Of the four items, sometimes question the obvious was checked by 62%, the High CP's checking it significantly more frequently than Others (at .01), the Lows checking it less frequently only as compared to the Highs (at .05).
Frequently puzzled was checked by 49%, Highs agreeing more than Others (at .01) and Lows (at .001). Seldom puzzled was checked by only 9%. Decisive, supposedly not a characteristic, was checked by 34%.

Preference for complexity receives wide agreement among psychologists. Of three items, prefer complexity was checked by 44%; find it difficult to rearrange elements within a whole, by 9%, and reject vague ideas by 21%. The low percentage of responses on the two negative items could perhaps be interpreted to show agreement with the psychologists.

Several psychologists use the term functional fixedness which probably is related to many characteristics considered under other headings. This term is thought definitely not characteristic of creative people, in that they find ways of dealing with the tendency. Perhaps the following six items are indicative: re-defining, changing the meanings or limits was checked by 62%. See new relationships between things, by 88%. On the first, the Lows checked it more frequently than Others (at .01), the Highs, more frequently than the Lows (at .05). On reconstructing of the world picture, 29% of the group as a whole agree with the psychologists who discuss this aspect. There were significant differences on all sub-group comparisons, the Highs agreeing more frequently than Others (at .01) and Lows (at .001); the Lows checked less frequently than Others.
Dogmatic was checked by only 8%, but the agreement with the negative item is by the Highs compared to the Lows (at .001) and by Others compared to Lows (at .01). Two additional items are approximate opposites. Elaborating, ornamenting, a supposed characteristic, was checked by 34%, over-simplifying by only 8%. Elaborating is a characteristic found in much of the research. The writer added "ornamenting" to avoid the implication of "lying," probably unsuccessfully.

Problem orientation with its necessary correlate of perspicacity should be reflected in the following ten items; physical or ideational manipulation is probably included in one. Alert, keen was checked by 84%; recognize analogies was checked by 57%; quick to see a problem, by 51%, tamper with things around them, by 49%. See small degrees of difference was checked by 55%. Careless about missing elements in explanations was checked by 10%; neglect evidence and logic in problem solving was checked by 3%. Overlook practical problems and everyday happenings was checked by 12%. On this, differences between the Lows and Others and between Highs and Lows were at the .001 level, the Highs checking more frequently. Dream at night about problem solving and imaginative productions was suggested by one writer as descriptive. Frequency of total response amounted
to 30%. Differences were highly significant between Lows and Others and between Highs and Lows, the Lows checking least frequently (both at .001).

None of the items to check ideational fluency, frequently a defining characteristic, received a significant number of responses. Perhaps the four positive items are too descriptive of all people, particularly in the freshman age group. Get wild and silly ideas was checked by 42%, with the Highs checking more frequently than Others or Lows (at .01). Have more practical and sensible ideas was checked by 34%. (This item now seems very ambiguous unless the subject keeps the instructions clearly in mind.) The only negative item, produce ideas slowly, was checked by 19%. Get ideas about problems when thinking of nothing in particular was checked by 52%. New ideas come too fast for all to result in creative effort was checked by only 16%, but all between-group comparisons were significant far beyond the .001 level, 33% of the Highs, none of the larger group of Low checking.

Insight is another characteristic stressed by the writers and usually interpreted as a computer-like selection from memory of past experience. Flashes of insight lead to effort on problems of concern was checked by 64%. Its opposite, flashes of insight seldom lead to effort on problems of concern, was checked by only 5%. Frequency was zero for
both Highs and Lows, all responses being in the average group. Put their insight to more practical use than others do is not a particularly hypothesized item, neither is it negative. It was included partly to test practicality on which there is much qualification among the writers. Supposedly, practicality is not generally descriptive of creative people, but they can be practical when the problem clearly calls for it. Of the freshmen, 57% agreed with the item.

Most writers stress honesty as a characteristic and some have tested it. The positive item, honest, received 43% responses (in the trial test of sophisticated people, 50%). The between-group differences are interesting. The Highs checked less frequently than Others and Lows (at .01). Two supposedly non-characteristics items show a similar pattern. Vague about evidence for truth and falsity was checked by only 13% of the group. The difference between Highs and Lows was significant at the .001 level, the Lows checking with the lesser frequency. Likely to distort the truth to prove a point was emphasized as non-characteristic by at least one writer. Only 21% checked the item, but the Highs compared to Others and to Lows checked it more frequently—far beyond the .001 level. The temptation to "psychologize" is great. Does general agreement by only 43% on "honest" cast doubt on the experts' opinion, or do the critical (self-critical?) responses of the High CP's on
the three items lend support to the hypothesis of honesty as characteristic?

Flexibility is another of the defining characteristics used by almost all writers. Various aspects are suggested by the following items, which in turn include other specifically designated characteristics. Flexible personalities was checked by 60%. Nothing surprises them very much (supposedly, they are easily surprised) was checked by 38%. The between-group variation was significant with the Highs checking more frequently than Others (at .01) and Lows (at .001), Others checking more frequently than Lows (at .01). Dichotomizers and classifiers was checked by only 14%, with significant differences between Lows and Others (at .01) and between Highs and Lows (at .01), the Highs agreeing with this negative item more frequently. Tolerant of ambiguity is supposedly a characteristic supported by some research. Only 19% checked. Perhaps the concept is unfamiliar to freshmen, as a related item, ask unanswerable questions, was checked by 50%. Highs agreed more frequently than Others (at .05) and Lows (at .01). On willing to take chances there was significant agreement with the experts at .001 level, 66% checking. Frustration tolerance is hypothesized, also verified by some research, but the group does not seem to agree. On more tolerant of frustration, 30% checked. More seriously upset by frustration was checked by 27%, the Highs
checking more frequently than Others and Lows (at .05). The next four items reflect agreement between the psychologists: Impetuous, changeable was checked by 50%. The Lows checked it significantly less frequently than Others (at .01), the Highs more frequently than Lows (at .05). Spontaneous was checked by 64%, the Highs checking more frequently than Lows (at .05). Take things for granted or in stride was checked by only 16%, but of these, agreement with the psychologists by the Highs was significant (at .001) compared to Lows, the Lows checking less frequently than Others (also at .001).

Those psychologists who discuss the aspect of search for "absolutes" agree that creative people need less certainty, are guided by principles, and are not as inclined toward doctrines as others. On doctrinaire, agreement is probably implied by only 3% responses. They show no general agreement with the writers on the other items: 28% checked guided by principles; 31% checked searching for "absolute" truth. Need fewer certainties about the universe was checked by only 21% but the Highs checked more frequently than Others at the .01 level, than Lows far beyond the .001 level. Lows checked less frequently than Others (at .001).

The need to consider intellect in more complex terms than are measured by Intelligence Quotient or college aptitude scores was stressed or implied by almost all psychologists concerned with creativity. Although only one item received significant general agreement, the pattern of
responses indicates that many of the students also see the problem in these terms. **Like to use mind** was checked by 79%; **mentally lazy**, by only two students. **College aptitude scores fall in all parts of the range** was checked by 53%, the Highs checking more frequently than the Lows (at .05). **Brilliant** was checked by 35%; many showed agreement with the psychologists by checking both this and the previous item. **Uneven grade-getters** was checked by 50% with highly significant differences between groups, the proportion of Highs exceeding all others. **High grade-getters** was checked by 21%; **good memorizers** was checked by 35%.

The purpose of the next twenty-three items was to test agreement on characteristic educational or vocational talents, interests, and attitudes as to general and specific areas, aspects of areas and possibly related thinking habits. The OAIS research, as mentioned previously, predicts that the high scoring CP's will be more interested in the humanities and social sciences, less interested in business, biological and physical sciences. Most writers describe them as having intellectual and artistic interests, as reflective and intuitive thinkers, rather than very rational or scholarly. The "science" or "art" aspects of problems are supposed to be more interesting to them than the details. Patience seems to be considered as a quality frequently lacking but necessary to actual creative production.
Most students made a choice between two items in terms of range of talents, but several checked both, which is not inconsistent. Usually have several potential talents was checked by 63%. The Highs checked more frequently than the Lows (at .01), the Lows less frequently than Others (at .05). Usually have one outstanding talent was checked by 33%. Have wide interest range was checked by 76%. Intellectual interests was checked by 47%, the Highs checking significantly more frequently than Others (at .05) and Lows (at .01).

Reflective thinkers was checked by 53%; intuitive thinkers, by 51%. The Lows checked less frequently than Others and the Highs more frequently than Lows (both far beyond the .001 level). Very rational thinkers was checked by only 20%; scholarly by 30%. Artistic was accepted by 60%. Good businessmen was checked by 28%. The only significant between-group comparison is between Lows and Others, the latter checking more frequently (at .01). Only 22% agreed with poor business school students, but the Highs checked it more frequently than Others or Lows far beyond the .001 level.

Would do better in economic theory than in accounting was checked by 51%. Arithmetic is more fun than higher mathematics was checked by only 7%; of this small number, the Highs agreed more frequently than all others at the .001 level.

The large majority of High CP's did, of course, not agree; but did the word "fun" capture the few? (Numerical interests supposedly non-characteristic.) Think more about the
"science" of a subject than the data was checked by 52%. Find scientific theories more interesting than scientific work was checked by 40%; the Highs agreed more frequently than Others (at .05) and Lows (at .01). Biological laboratory work is more interesting than biological theory was checked by 26%, the Lows checking less frequently than Others (at .01). Poor nurses and medical technicians was checked by only 15%. The number of responses probably does not reflect degree of interest in a profession closely related to biology as much as the feeling that creative qualities are useful in any field. Interested in the social sciences was checked by 45%; on uninterested in social and political affairs only 5% agreed with the item. Interested in the humanities received responses from 64%; enjoy art and literature, 74%. Average interests in literature received only 16% responses; but of these, the Highs again checked more frequently than Others and Lows (at .01) on a somewhat negative item.

The next seventeen items reflect various self-attitudes and drives: supposedly creative personalities are self-accepting but not complacent; have heightened consciousness, awareness, and sensitivity; are autonomous and have strong drives to self-development.

On self-accepting, 31% agreed. Differences between Lows and Others and between Highs and Lows were significant (at .01) in the direction of greater acceptance by the Highs.
Complacent was checked by only 9%. Self-approving and don’t expect to change was accepted by only 6%. None of the Highs or Lows checked, resulting in a significance of difference for each as compared to Others at the .05 level. Aware of own deficiencies received agreement from 53%. It appears that on these four items complacency was rejected although the group was not strongly affirmative on self-acceptance. Have heightened consciousness was checked by 36%; feelings of consciousness about the same as other people was checked by only 15%. Sensitive, however, was accepted by 64%. Most writers stress acute awareness; some say that this awareness is also objective. The students showed greater acceptance of the first idea: acutely aware was accepted by 55%, objectively aware by 24%. On the latter, Others agreed more frequently than Highs (at .01). Have strong conscious desires and goals was checked by 43%. It may be that freshmen define "goals" as vocational and many are undecided. Have high personality growth potential was accepted by 41%, Highs more frequently than Others, Lows less frequently than Others at .01 level; between Highs and Lows, the difference was significant far beyond .001. Have weak sense of self was checked by only 5%, Others checking more frequently than Highs (at .05). Autonomous was checked by only 22%; Others accepted it more frequently than Highs (at .05). Free was accepted by 38%; Lows checked less frequently than Others (at .01), Highs more frequently than Lows (at .001).
controlled was checked by only 16%. Feel free to accept own feelings and ideas under social pressure received agreement from 52%, the lows agreeing less frequently than others (.05 level). Evaluate the tools, methods and materials of others was checked by 49%, the highs agreeing more frequently than others (at .05). Rebellious toward ordinary social discipline (supposedly non-characteristic—probably not researched) was checked by 42%. The lows checked less frequently than others (at .01), but the highs as compared to others and to lows checked more frequently far beyond the .001 level. (The acceptance of the highs of pejorative implications is again evidenced.)

Three items relate to achievement motivation: Highly motivated in general toward achievement was accepted by 60%. Have low general motivation toward achievement was checked by only 5%. Lows checked less frequently than others (at .05), highs checked more frequently than others (at .01) and more frequently than lows (at .001). Selectively motivated toward achievement was checked by 36%.

Another large set of items was designed to test agreement on hypotheses related to other aspects of motivation and related behaviors. Generalizing from the many authors, the following approximate portrait of the creative personality seems to emerge: creative individuals are dominant, but seldom "leaders" and have little need for power. They are
perhaps aggressive, generally trusting, but not submissive or acquiescing. They are affectionate, friendly, gregarious, but not affiliating. They identify with the feelings of others, but are not altruistic. They are generous about things and money, but selfish about their own desires. Although much interested in social affairs, they are not markedly high on social conscience. They are somewhat competitive and argumentative, and sometimes play Devil's Advocate; but they are more inclined to humility than vanity.

The following items are analyzed in their approximate order of appearance in the above "portrait:" Dominant was checked by 27%; leaders was checked by 51%. Unconcerned about having power received 22% agreement. Codifiers and rule-makers was checked by only 16%. Aggressive was accepted by 42%; seek conflict by 23%. The Highs, however, checked the latter more frequently than Others (at .01) and more frequently than Lows (at .05). Generally trusting was checked by 35%. The Lows agreed less frequently than Others (at .05) and Highs exceeded Lows (at .01). Only 2% checked acquiescent; the Highs exceeded Lows (at .05) because one High and no Lows checked. Affectionate was selected by 34%; gregarious by only 14%, the Lows checking this less frequently than Others (at .01), the Highs more frequently than Others or Lows beyond .001 level. Talkative was checked by 36%, delighted by the humorous, by 55%. Lows checked the second item less
frequently than Others (at .01); Highs more frequently than Lows (at .001). Pickle in friendships was checked by 12%; like to join organizations, by 40%. Identify with the feelings of others was checked by 28%. The Lows agreed less frequently compared to Others, and Highs more frequently than Lows, both comparisons beyond .001. Altruistic, devoted to interests of others was accepted by 23%; all between-group comparisons were significant with greater agreement by the Highs: High vs. Others at .05, Lows vs. Others at .01, and Highs vs. Lows beyond .001. Generous was selected by 40%; selfish, by only 6%—of this small number, the Lows agreed less frequently than Others and Highs agreed more frequently than Lows (at .05). (One might wonder whether there is a small group of "self-denigrators" among the Highs, but the tendency has also appeared on items with relatively high frequency of response.) Have strong social conscience was checked by 35%. Like competition was checked by 60%. Argumentative about social or political affairs or theories received agreement from 44%. Sometimes take what they know is the wrong side of the argument, checked by 42%, received more agreement from Highs compared to Lows and less agreement from Lows compared to Others (both at .05). Only 15% selected rather vain. But of these, Others and Highs agreed more frequently than Lows, at beyond the .001 level on both comparisons. A slightly larger proportion, 22%, checked have a sense of humility, the Highs agreeing more frequently than Others and Lows (at .05).
Several authors agreed that creative personalities rank higher on tests than they do on teacher or peer ratings of emotional adjustment. The ratings probably reflect some factors of social adjustment on which they score lower on tests. Torrance points out that originality or novelty of production necessarily implies, at least in the beginning, a minority of one. "Even when matters of fact are involved, . . . there are few people who can endure being a minority of one, which leaves a person with too few 'anchors in reality.'"1 His point seems to be that a highly creative child, overly suppressed, is endangered as to emotional adjustment.

Emotional adjustment items are considered first. Wholesome, integrated personalities was checked by 38%; neurotic by 10%, the Highs checking this more frequently than the Lows (at .001). More free to call up pre-conscious ideas and feelings received agreement from 44%; Others and Highs checked more frequently than Lows at .01 and .001 levels respectively. On highly anxious, 35% agreed, the Highs checking more frequently than Others and Lows (at .001). Moderately anxious (supposedly more characteristic) was checked by only 15%.

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1 Torrance, Education and the Creative Potential, 41.
Optimistic was checked by 44%; Highs checked more frequently than Others (at .01) and more frequently than Lows (beyond .001). Lows checked less frequently compared to Others at .05 level. On introverted, supposedly non-characteristic, only 20% agreed with the item. On extroverted, not particularly hypothesized, 44% agreed, probably indicating a direction of preference between the two items. Impulsive is generally hypothesized; 62% of the students agreed, the Lows checking less frequently than Others (at .01) and the Highs more frequently than Lows (at .001). Compulsive was accepted by only 14%. Vitality and strong reactions are mentioned by many psychologists. Have vitality was checked by 55%, the Lows checking less frequently than Others (at .05). Have intense reactions was checked by 35%, the Highs checking more frequently than Others (at .05) and Lows (at .001), the Lows checking less frequently than Others (at .05). Have frequent feelings of abandon was checked by only 22%, but the Highs agreed more frequently far beyond .001 level as compared to Others (at .01). Feel isolated was also checked by 22%. Relatively non-defensive to themselves about own faults, supposedly characteristic, was checked by only 17%, the Highs agreeing more frequently than Others (at .05). Immature was checked by only 3% of the total group, but the Highs checked it more frequently than Others (at .001). Dream at night about their conflicts and guilt-caused problems (suggested only by the earlier "dream" item)
was checked by only 6%, the Highs again agreeing more frequently. Comparisons with Others was at .05, with Lows at .01. Lows checked less frequently than Others at .05. (A pattern of "kindness" in judging seems to have been emerging on the part of the Lows.)

The students do not contradict the psychologists on social adjustment on the next five items, but a larger proportion check the more favorable than the less favorable items. Think before they act was checked by 40%; lacking in tact, by 16%. On the latter, the Highs agreed more frequently than Others (at .01) and Lows (at .05). Somewhat socially awkward, supposedly characteristic, was checked by only 20%; socially adept by 38%. Agreement with the psychologists may be reflected in the low frequency of responses to social adjustment is better than their emotional adjustment—only 15%. Highs and Others, however, checked it more frequently than Lows (at .01).

The next twenty items are mainly related to various values, but there are some implications for social adjustment problems. Critical of many values that most people share was agreed to by 49%. Accept values that are considered beyond dispute was agreed to by only 7%. Lows checked less frequently than Others (at .01) and Highs (at .001) out of the small number checking. Intensely committed to a few things in daily living is hypothesized, but only 19% of the
students agreed. Of these, the Highs checked more frequently than Others (at .05) and Lows (at .001). The Lows checked less frequently than Others (at .05). World-minded was accepted by 49%; progressive by 49%; liberal by 50%; Lows checking less frequently than Others (at .05) and Highs checking more frequently than Lows (at .05). Reactionary was checked by only 15%. The Lows checked less frequently than Others at beyond .001, but the Highs checked more frequently than Others and Lows far beyond .001 (Chi-squares of 58.50 and 50.58). Irreligious was checked by only 13%, Lows checking less frequently than Others (at .05) and Highs, more frequently than Lows (at .01). (Religious was one of the zero-response items in the trial instrument.) Seldom go to church was accepted by only 17%, but the Highs agreed more frequently than Others well beyond .001 level and more frequently than Lows far beyond the .001 level. Lows agreed less frequently with Others (at .01). Likely to try several different churches received 44% agreement. Realistic was accepted by 40%; idealistic, by 52%. There seemed to be a tendency for more of the Highs to check both items. Idealism is rather frequently hypothesized by the psychologists. Sophisticated was checked by 24%; naive by only 9%. A few psychologists mentioned the first, one or two suggested the second and other "child-like" characteristics. Social and financial ambitions and need for security are
supposedly not characteristic. **Socially ambitious** was checked by 35%; **care little about social status**, by 43%, the Highs agreeing less frequently than Others (at .05). **Have high financial aspirations** was checked by 23%; **care little about money**, by 26%. Others checked the latter more frequently than Lows (at .001); Highs, more frequently than Lows (at .01). **Worry about future security** was checked by 27%; **security not very important**, by 30%. On the second, Others agreed more frequently than Lows (at .001) and Highs, more frequently than Lows (at .01). (On many of the "near opposites," there is a tendency toward not making a choice. This may indicate that the original instructions to check items more characteristic of creative people have been kept in mind.)

Some psychologists find that creative people, especially students, have less favorable work attitudes, qualified by statements about courses in which they do well or poorly. Others emphasize the differences in work situations as related to effectiveness of performance. There seems to be agreement that the creative worker is disrupting of routine, but that he eventually finds more answers to complex problems. Three of the descriptive items receive significant agreement from the freshmen group. The pattern of responses seems to reflect that the students are also to some extent "qualifying". **Have poorer work attitudes** was checked by only 14%, but the Highs agreed more frequently than Others (at .05). **Work best**
on their own if situation allows was accepted by 72%. On large projects, work best in company with other creative people was checked by 27%, Others checking more frequently than Lows (at .05) in the direction of agreement with some psychologists. Work best when they are singled out from group was also checked by 27%, the Highs disagreeing more with the very few psychologists who mentioned it by checking the item more frequently than Others (at .05) and Lows (at .001). The Lows agreed with the item less frequently than Others (at .01). Dependable was checked by 38%; enterprising, by 29%; uneven in performance by 22%. The Highs checked the last item more frequently than Others and Lows beyond .001 level; the Lows checked less frequently than Others (at .01). Good supervisors was checked by 40%, the Highs checking more frequently than the Lows (.05). Poor organizers was agreed to by only 7%, the Highs agreeing even less frequently than Others and Lows (at .05). (The psychologists seem inclined to see poor organization during the creative process with a more effective pattern emerging after information search.) Practical was checked by 28%; likely to try impractical schemes and fail by 30%, the Highs agreeing more frequently than Lows (at .05). Concerned about the best materials and techniques for a product was accepted by 37%. Experimenting received agreement from 80%, the Lows checking less frequently than Others (at .05).
Improvising was accepted by 65%, the Highs checking more frequently than Lows (at .05). Avoid what they can't do well was checked by 21%. Distracted by almost anything, any time was checked by only 12%, but the Highs checked more frequently than Others and Lows far beyond .001 level. The Lows checked less frequently than Others (at .001). Able to concentrate when they are concerned was checked by 55%. More distractable than others from tasks they can do well was accepted by only 10%, Highs checking more frequently than Lows (at .001) and Others checking more frequently than Lows (at .01). More distractable from interesting tasks by humorous events than by annoyances or discomfort received agreement from 29%; Others checked more frequently than Lows (at .01), Highs, more frequently than Lows (at .001).

The next four items were designed to determine whether students see lack of confidence about abilities or knowledge as "blocking" creative behavior. The results are inconclusive, tending to negate such an hypothesis. Lack of confidence in own abilities can block creative effort was checked by 21%; they don't worry about abilities, they just go ahead was checked by 53%. They seldom worry about whether they know enough to go ahead with a project was checked by 38%; if much concerned about insufficient knowledge, work is put off was checked by only 17%. It might be that these items reflect experience common to most people; but if the
students were so considering them, it would seem that the difference in responses between near opposites would not be so great or in the "carefree" direction.

Many psychologists are concerned about how teachers and supervisors can best help the creative person in the classroom or work situation. Of the following five items, the first four are hypothesized, the fifth is non-characteristic. Produce better with "trouble-shooting" help than directive help received only 20% agreement; but Lows agreed less frequently than Others (at .01), Highs, more frequently than Lows (at .001). Accept criticism better than most people was checked by 40%; do best when they receive creative evaluation, by 48%. Respond to recognition of their contributions was accepted by 47%, but the Highs agreed less frequently than Others (at .01). Need obvious rewards to complete work was checked by only 8%.

On accuracy, orderliness, and endurance, the students are more kind in their judgments than the psychologists, assuming, of course, that these are desirable characteristics. They do agree with the psychologists on the first item, properly qualified. Persistent when seriously involved in a meaningful production received agreement from 70%. Long and strong on endurance was checked by 53%, Lows agreeing more with the psychologists by checking less frequently than Others (at .001); Highs checked more frequently than Lows (at .05). Persevering was checked by 45%. Frequently
inaccurate on details was checked by only 16%, but the Highs agreed with the psychologists more frequently: compared with Others, well beyond .001 level; compared with Lows, far beyond .001 level. Seem to create disorder when handling their things or tools was checked by 23%. Highs agreed more frequently than Others (at .01) and Lows (at .001). Others checked more frequently than Lows (at .05).

On the influence of heredity versus environment, the students are environmentalists. Probably much like other babies at birth was checked by 72%; as new-born infants, were different from other infants was checked by only 6%. Of these few, the Highs checked less frequently than Others (at .05) and Lows (at .01); the Lows checked more frequently than Others (at .01). Parents and teachers gave them training in how to do things the right way was checked by 28%. The Highs checked more frequently than Others (at .05) and Lows (at .01). Lows checked less frequently than Others (at .05). Parents and teachers encouraged their ideas and efforts during childhood was agreed to by 64%.

The next, and last, group of items is mainly concerned with the classroom situation: how "creative" students appear to teachers and fellow students, how well they are accepted and understood. Absent-minded students was checked by only 20%, the Lows checking less frequently than Others (at .01) and Highs (at .05). Attentive students was checked by 43%, Highs checking less frequently than Others (at .05). Poor students in classes they don't like received agreement
from 51%. Trouble-makers in classroom was checked by only 16%, but the Highs checked more frequently than Others and Lows (both at .01). Make classes interesting for others was checked by 51%; enjoyable companions by 60%, the Highs agreeing more frequently than the Lows (at .05). Spoil friendships by their attitudes and behavior was checked by only 10%. Show taste received 58% agreement. Irritating was checked by only 6%, exasperating to their teachers by 21%. (Are the students more likely to believe that teachers are less tolerant than they themselves are?) Teachers enjoy them and forget other students was checked by only 14%, Others being more in agreement than Highs (at .05). Should have more directive help and control by teachers was approved by 19%. Misunderstood by others was granted by 38%, Others agreeing more frequently than Lows (at .05).

The pattern of responses by students does not reflect the hypothesized social pressure of the classroom in terms of student relationships. It may be, however, that the responses are more indicative of how students would like to regard their more creative fellow students, or how they would like to be regarded in their more creative moments.
Almost one hundred hypotheses, many interrelated, were tested for agreement by 224 items, stated positively or negatively, many qualified to permit choice. Significance of agreement with item content was determined at 60% or higher frequency of response. Students were asked to check as many or as few of the items as they thought more descriptive of highly creative people than of less creative people. The critical region of significance at the .05 level should be relatively stringent for the small sample, as there were no forced choices between items. The mean number of responses per questionnaire was 78 on a negatively skewed distribution. The range was from 15 to 140 responses; the majority of students checked from 70 to 110 items of the 224. The variation was apparently not related to CP scores.

I. STUDENTS' PERCEPTIONS OF CREATIVE PEOPLE

The freshmen agreed significantly with thirty of the hypothesized characteristics which were stated in positive terms. A composite picture drawn from these is not different from the broad characteristics by which the psychologists define creativity or those on which they generally agree.
The students differentiate highly creative from less creative people in the following terms: Creative people are original, and combine materials or ideas in novel ways. They are possessed of constructive imagination, but sometimes destroy to rebuild. They question the obvious, are redefining and changing of meanings or limits. They are perspicacious, seeing new relationships between things and noting inconsistencies in the culture. Their flashes of insight lead to effort on the problems which concern them. They are willing to take chances and are marked by spontaneity of response. Creative people like to use their minds, usually have several potential talents and a wide range of interest. They are interested in the humanities, enjoy art and literature and are artistic. They are sensitive and impulsive and have strong drives to self-development. They like competition and are highly motivated toward achievement. Creative people are improvising, experimenting and work best on their own if the situation allows. They are persistent when involved in a meaningful production. They were much like other babies at birth, but their parents and teachers encouraged their efforts and ideas during childhood. They are enjoyable companions.

Over 60% of the students accepted the unqualified statements about high achievement-orientation and liking for competition, statements which the psychologists qualify.
Whether they actually enjoy their creative fellow students or friends as much as they seem to think is contradicted by some of the classroom research of Torrance and Getzels and Jackson, previously mentioned. The item, as stated, is used descriptively by one or two others.

All of the above items reflect agreement with positively stated hypotheses. Is it possible to find evidence for agreement in the low-frequency responses regarding non-characteristic behavior or in items stated in negative form? Some of the low-frequency items are opposites to those on which agreement was significant. The extreme example is in the frequencies on the first two items. "Original" was checked by 98%, "copy methods and ideas of the great thinkers in their own efforts" was checked by 3%. It seems logical to assume that the students agreed that creative people are not imitators.

At what percentage of response could one find a low frequency significant when no choice is demanded, and by what method? Thirty-nine items were checked by less than 15% of the group; twenty-two of these by less than 10%. Content considered, the majority reflect agreement, three are items much qualified by the psychologists, and one seems to be a non-differentiating characteristic.
To complete the picture, therefore, items receiving less than 15% responses, after eliminating those which are opposites to the high significance items, are arbitrarily used for the following description:

Creative persons are not dogmatic, doctrinaire, nor dichotomizers and classifiers. They do not oversimplify. They do not find it difficult to rearrange elements within a whole, nor are they careless about missing elements. They do not neglect evidence and logic in problem-solving; nor are they vague about evidence for truth or falsity. Not infrequently, they are puzzled. They are not distracted by everything. Arithmetic is not more enjoyable than higher mathematics, and they are not uninterested in social or political affairs. They are not complacent or self-approving. They are not fickle in friendships, nor do they spoil friendships by their arguments. They do not need obvious rewards, nor are they acquiescent. They are not neurotic, compulsive, immature, nor irritating, and they dream at night about their conflicts and guilt-caused problems no more frequently than others. They are less likely to accept beliefs that are considered beyond dispute. Also, they are not irreligious. (In the trial instrument, none checked "religious"; 19% checked "irreligious" as compared to 13% of the students.) Religiosity does not appear to be a differentiating characteristic if any generalization is warranted.
The students do not agree with some of the statements by psychologists, without qualifications: creative people are not seen as having poorer work attitudes, as being poor organizers, nor as overlooking practical problems. Students did not think of creative people as selfish (6% did), although only 40% were willing to call them more generous than others.

Most of the hypothesized characteristics which are not covered above are reflected in items for which the responses frequencies ranged from 35% through 59%. The student group did not accept them as differentiating creative people from others. This does not imply that they would not have included them as characteristics possessed by creative people. This was frequently evidenced by a much lower response on an opposite item.

There remains a rather small group of items on which students tend not to agree with the psychologists, even when responses to qualified, parallel or opposite items are considered. Some of these concepts may be rather sophisticated for freshmen.

The psychologists do not see creative personalities as long on endurance although they supposedly are high on vitality. Perhaps the freshmen considered endurance in more physical terms than the psychologists. The students gave 53% responses on the endurance item, 55% on vitality and 45% on perseverance the last indicating more doubt perhaps on psychological endurance.
This student generation group was not inclined to go along with the psychologists about money; neither did they strongly disagree. Starving for one's art may be out of fashion. About one-fourth checked each of these items: "Care little about money" and "have high financial aspirations." (Of course, 75% did not disagree with the psychologists on each item.)

Twice as many students checked "socially adept" as compared to "somewhat socially awkward" (40% versus 20%).

Only 27% thought creative people prefer to work with other creative people. Only 20% agreed that they produce better with "trouble-shooting" help than with directive help. The habits of disorder, which Maslow regarded with such enthusiasm, and to which others agree as a fact, received only 23% agreement.

Four psycho-philosophical items received little support. Students did not see creative people as more tolerant of ambiguity, needing fewer certainties about the universe, guided by principles, or tolerant of frustration. Responses ranged from 19% on the first to 30% on the last. These are among the more emphasized characteristics in the literature but may have little meaning, as conceptualized, for this sample group.
II. DIFFERENCES BETWEEN HIGH AND LOW SUB-GROUPS

In addition to the extent of students' agreement with the psychologists, two other questions are posed as problems for this study: (1) Are there differences between the students who scored high and those who scored low on the Creative Personality scale of the OAIS in the way they describe creative people? (2) Do the high-scoring students tend to show greater agreement with the psychologists?

Some degree of self-identification must be expected on a test constructed as was the questionnaire. The OAIS contains un-obvious items, validated by external criteria. It is important to know that the students received reports of their percentile scores on the three academic promise scales, of which the Creative Personality scale is one, and on the five educational-vocational interest scales. Assuming that the students remembered their rankings on creativity, a greater degree of self-description might be expected from the Highs, a greater degree of others-descriptions from the Lows. But evidence of self-characteristics must be assumed to appear indirectly for all subjects. Only as these seem related to differences on the creativity criterion will they be mentioned.

The statistical analysis of all response frequencies in Chapter IV contains all the details of differences between the Highs compared to all others, the Lows compared to all
others, and between Highs and Lows. It seems necessary to review only the more important differences between the Highs and Lows. Evidence on the two above questions can be combined by noting differences and the direction of agreement.

Of the thirty items which the total group checked at a significant level of agreement with psychologists, there was a significant difference between the Highs and Lows on nine items. On all nine, the Highs agreed more frequently with the psychologists than all others. This can be taken as adding emphasis to the characteristics of intuitive thinking, impulsiveness, variety of potential talents, questioning the obvious, redefining, improvising, noting cultural inconsistencies, spontaneity and being enjoyable companions.

The most striking differences between Highs and Lows appear on the items which were checked by less than 60% of the whole group. There were forty-two such items on which the significance level of the High-Low comparison was at .001. The Highs agreed with the item more frequently on all of the forty-two. Of these forty-two items, twenty-eight reflect agreement with the psychologists, fourteen reflect disagreement with the psychologists. On these fourteen, then, the Lows agree more with the psychologists.
Interestingly, there was greater agreement by the Lows with only two items considering all significance levels: on "honest" (at .01) the Lows agreed with the psychologists. On "as new-born infants were different from other infants" (at .01) only 6% of the whole group responded. All responses came from the Low and Low Average groups, 13% of the Lows checking. Obviously, most of the Lows did not agree, but the implications from the content of this particular item are intriguing.

The reader is referred to Table I in the Appendix to identify the items with significant response differences between the sub-groups.

The fourteen items on which the Lows were in greater agreement with the psychologists, the Highs checking the negative item more frequently, deserve attention because of item content, despite the low percentages of total agreement with the items. Seven of the fourteen were considered in the earlier discussion of items receiving less than 15% response. Response percentages range from 15% to 38% on the others. (All differences are significant at the .001 level.)

Among these fourteen which the Highs checked more frequently, there is only one carrying high social evaluation: altruistic, devoted to interests of others. Three might be considered neutral: arithmetic is more fun than higher mathematics, nothing surprises them very much,
overlook practical problems and everyday happenings. All of
the other ten carry some implication of social undesirability:
vandalistic imagination; dogmatic; vague about evidence for
truth or falsity; likely to distort the truth to prove a
point; rather vain; neurotic; highly anxious; reactionary;
distracted by anything, any time; more distractable than
others from tasks they can do well.

One of the bias scales on the OAIS is the Social
Undesirability scale. (Bias scales are not available to
the writer.) Fricke describes this scale:

This scale measures a student's tendency to
give socially desirable or undesirable responses. Students who score very high on the Social Un-
derability scale have not marked their answers
with the intention of making a good impression.
On the contrary, they have been overly frank,
honest, and perhaps even self-deprecatory.
Students who obtain very low Social Undesirability
scores have given an abnormally large number of
socially desirable responses; they have attempted
to make themselves appear socially and emotionally
better than they are. The Social Undesirability
scores reflect the student's picture of what he
thinks he is like, or how he would like to be per-
ceived. It is important to note that the Social
Undesirability scores normally do not reflect
actual social and emotional adjustment as evaluated
by peers, psychologists, and others. (As indicated
earlier the Social and Emotional Adjustment scales
are useful for this purpose.)

Perhaps the results on these ten items have selected
those among the High CP's who also received high "Social
Undesirability" scores. But what about the Low CP's who

1Fricke, op. cit., 7.
did not check these? If they were describing others, knowing their own low CP scores, why were they not more inclined to criticize? Perhaps they are more kind in judgment of others. It is probably also true that no one is without some creative ability, that everyone has creative moments or suppressed creative urges. Using this interpretation, the Lows would also be self-describing, and their self-descriptions differentiate them from the Highs.

The objective validity of self-reporting is a methodological problem of some importance. If it is given no status in science, all scientific endeavor is invalidated because reports of observations must be made. Despite the extent to which the High CP's, trying to be objective observers, confirm the psychologists' other hypotheses, the conclusion has to be made that on these ten low-frequency disagreements the High CP's confirm the psychologists' views by their attitudes. Their replies cast little shadow on the hypotheses in question.

III. DISCUSSION

Language problems cause much communication difficulty in all behavioral sciences. This is particularly true in psychology with its increasing emphasis in this century on scientific methodology, especially as to objectivity and definitions suitable for research. This may be one of the reasons why a rather amorphous subject such as creativity was as deficient in research as Guilford found it to be.
Intelligence would seem to be an equally broad and amorphous concept, but the early work of Galton and Binet opened up an area and outlined a method by which scientific investigation could proceed. Now the criticisms of the restricted usefulness of the derived instruments are appearing because the instruments have been considered as complete measures rather than as limited-aspects measures of intelligence. As the work on creativity progresses toward scientific respectability, will the above-mentioned critics be able to avoid producing overly restricted results?

The problem of communication was part of the writer's motivation for this study. If a naive group such as college freshmen could consider the subject of creativity in terms which the psychologists are using at this relatively early stage of investigation, the problem of communication should not be insurmountable. That a good deal of agreement is possible seems to be evidenced by the results.

Vagueness is to be expected in early stages of research in any area; ambiguity must be avoided. The problem of vagueness involves lack of knowledge and the need for empirical research. The problem of ambiguity involves search for more definable concepts and clarity of statement.

Although aware of the problem, the writer did not succeed in ruling out ambiguity in all items. Some ambiguity was in the original data from which the items were constructed. The items could not be elaborated as the psychologists' statements were within context.
The large number of items was unwieldy for the present purpose. More experienced researchers would probably have been able to accomplish more with fewer and better items. Analysis of the data would have been simplified by using only positive statements regarding characteristics and non-characteristics. The purpose of the inverse form was to check on the extent of agreement by allowing disagreement. This was seen as including an important aspect of the open-ended questionnaire. Multiple-choice items might have provided better opportunity for testing significance and could perhaps have allowed disagreement with all other choices. Unless all questions included the same number of choices, the analysis would not be simplified.
CHAPTER VI

SUMMARY

The problem was to determine whether communication is sufficiently possible on a concept as broad as creativity to result in substantial agreement between two groups: psychologists who have published on the subject and a more naive group. Differences in frequency and direction of agreement were to be tested between two sub-groups: those who scored high and those who scored low on the criterion, the percentile ranks on the Creative Personality scale of the OAIS—to determine whether the high criterion group would show greater agreement with the psychologists.

A pre-tested random sample of Drake University freshmen had completed the OAIS. Eighty-six of the original ninety-nine students completed the Evaluation of the Creative Personality, designed to test agreement with the psychologists. This was a check-list of 224 items constructed from statements in the psychological literature after a trial instrument of 405 items was checked by a sophisticated adult group to help determine which items could be eliminated or needed revision. Extent of agreement and between-group differences were tested by the Chi-Square method, corrected for continuity. The high and low-scoring criterion groups were compared as to differences in responses to the test instrument and as to whether the high criterion group would show a greater tendency to agree with the psychologists as was hypothesized.
Significant agreement was found between freshmen and psychologists on thirty frequently hypothesized characteristics. Substantial agreement was found or implied on many other characteristics. There were some characteristics on which it seemed clear that the freshmen did not tend to agree with the psychologists. Lack of agreement was particularly noted on characteristics described in terms which were perhaps too sophisticated for freshmen. Some response frequencies seemed to reflect the greater physical or psychological buoyancy of this age group. The high criterion group tended to agree with the psychologists more frequently than all others. The comparison between the two criterion groups showed highly significant differences on many items, the highs agreeing more frequently on the majority of hypothesized characteristics. There was a definite tendency for the high CP group to check socially undesirable characteristics more frequently than the low CP group. In general, however, it seems that the Creative Personality scale of the OAIS has differentiated a group of more creative students who, in self-reporting, have some awareness of their own characteristics. What they believe to be true of creative people shows greater agreement with the psychologists than do the responses of less creative students.

Despite the language problems, the results indicate substantial agreement between naive subjects and psychologists. Such agreement at this relatively early state of investigation indicates that the problems of objective communication are not insurmountable on a very complex subject.
BIBLIOGRAPHY


BIBLIOGRAPHY

A. BOOKS


B. PERIODICALS


APPENDIXES
### TABLE I
ANALYSIS OF EXTENT OF AGREEMENT BETWEEN
DRAKE UNIVERSITY FRESHMEN AND
PSYCHOLOGISTS ON DESCRIPTIONS
OF THE CREATIVE PERSONALITY

<table>
<thead>
<tr>
<th>ITEM CONTENT</th>
<th>Percent of Total Agreeing with Item</th>
<th>$X^2$ Tests of Difference Between Groups; Direction of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High CP's vs Others</td>
<td>Low CP's vs Others</td>
</tr>
<tr>
<td>Original</td>
<td>97.67*** NS</td>
<td>NS</td>
</tr>
<tr>
<td>Copy methods and ideas of the great artists and thinkers in their own efforts</td>
<td>3.49 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Combine materials or ideas in novel ways</td>
<td>82.56*** NS</td>
<td>NS</td>
</tr>
<tr>
<td>Display vandalistic imagination</td>
<td>13.95 13.65*** H</td>
<td>14.69*** O</td>
</tr>
<tr>
<td>Have constructive imagination</td>
<td>75.58*** NS</td>
<td>5.87* L</td>
</tr>
<tr>
<td>Sometimes destroy to rebuild</td>
<td>61.63* NS</td>
<td>NS</td>
</tr>
<tr>
<td>Seldom puzzled</td>
<td>9.30 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Decisive</td>
<td>33.72 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Frequently puzzled</td>
<td>48.84 10.72** H</td>
<td>NS</td>
</tr>
<tr>
<td>Sometimes question the obvious</td>
<td>61.63* NS</td>
<td>NS</td>
</tr>
<tr>
<td>Prefer complexity</td>
<td>44.19 NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Group agrees more often
H: High CP's
O: Others
L: Low CP's

Significance of Differences:
* -- $P < .05$
** -- $P < .01$
*** -- $P < .001$
NS -- Not Significant

(continued)
<table>
<thead>
<tr>
<th>ITEM CONTENT</th>
<th>Percent of Total Agreeing with Item</th>
<th>X² Tests of Difference Between Groups; Direction of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find it difficult to rearrange elements within a whole</td>
<td>9.30</td>
<td>NS</td>
</tr>
<tr>
<td>Reject vague ideas</td>
<td>20.93</td>
<td>NS</td>
</tr>
<tr>
<td>Reconstructing of the world picture</td>
<td>29.06</td>
<td>8.06**</td>
</tr>
<tr>
<td>Dogmatic</td>
<td>8.14</td>
<td>NS</td>
</tr>
<tr>
<td>Redefining, changing the meanings or limits</td>
<td>61.63*</td>
<td>NS</td>
</tr>
<tr>
<td>See new relationships between things</td>
<td>86.37***</td>
<td>NS</td>
</tr>
<tr>
<td>Over-simplifying</td>
<td>8.14</td>
<td>NS</td>
</tr>
<tr>
<td>Elaborating, ornamenting</td>
<td>33.72</td>
<td>NS</td>
</tr>
<tr>
<td>Alert, keen</td>
<td>83.72***</td>
<td>NS</td>
</tr>
<tr>
<td>Careless about missing elements in explanations</td>
<td>10.47</td>
<td>NS</td>
</tr>
<tr>
<td>See small degrees of difference</td>
<td>54.65</td>
<td>NS</td>
</tr>
<tr>
<td>Recognize analogies</td>
<td>56.97</td>
<td>NS</td>
</tr>
<tr>
<td>Neglect evidence and logic in problem solving</td>
<td>3.49</td>
<td>NS</td>
</tr>
<tr>
<td>Overlook practical problems and everyday happenings</td>
<td>11.63</td>
<td>NS</td>
</tr>
<tr>
<td>Quick to see a problem</td>
<td>51.16</td>
<td>NS</td>
</tr>
<tr>
<td>Tamper with things around them</td>
<td>48.84</td>
<td>NS</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>ITEM CONTENT</th>
<th>Percent of Total Agreeing with Item</th>
<th>High CP's vs Others</th>
<th>Low CP's vs Others</th>
<th>High CP's vs Lows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note the inconsistencies in our culture</td>
<td>62.79* NS</td>
<td>NS</td>
<td>NS</td>
<td>5.92* H</td>
</tr>
<tr>
<td>Dream at night about problem solving and</td>
<td>30.23 NS</td>
<td>11.38***</td>
<td>13.82***</td>
<td></td>
</tr>
<tr>
<td>imaginative productions</td>
<td></td>
<td>0</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Produce ideas slowly</td>
<td>18.60 NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Get wild and silly ideas</td>
<td>42.86 8.90** H</td>
<td>NS</td>
<td>NS</td>
<td>8.10** H</td>
</tr>
<tr>
<td>Have more practical and sensible ideas</td>
<td>33.72 NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Get ideas about problems when thinking of</td>
<td>52.33 NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>nothing in particular</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New ideas come too fast for all to result in</td>
<td>16.28 17.82*** H</td>
<td>17.36***</td>
<td>37.36***</td>
<td></td>
</tr>
<tr>
<td>creative effort</td>
<td></td>
<td>0</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Flashes of insight seldom lead to effort on</td>
<td>4.65 .NS</td>
<td>4.06*</td>
<td>NS</td>
<td></td>
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<td>problems of concern</td>
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<td>Flashes of insight lead to effort on</td>
<td>63.96** NS</td>
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<tr>
<td>Put their insights to more practical use</td>
<td>56.98 NS</td>
<td>NS</td>
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<td>than others do</td>
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<td>Honest</td>
<td>43.02 10.16** 0</td>
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<td>Vague about evidence for truth or falsity</td>
<td>12.79 NS</td>
<td>13.36***</td>
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<th>Percent of Total Agreeing with Item</th>
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<tr>
<td>Likely to distort truth to prove a point</td>
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<td>Nothing surprises them very much</td>
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<td>Dichotomizers and classifiers</td>
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<td>Flexible personalities</td>
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<td>Ask unanswerable questions</td>
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<tr>
<td>Tolerant of ambiguity</td>
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<tr>
<td>Willing to take chances</td>
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<tr>
<td>More tolerant of frustration</td>
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<tr>
<td>More seriously upset by frustration</td>
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<td>Optimistic</td>
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<td></td>
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<tr>
<td>Take things for granted or in stride</td>
<td></td>
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<tr>
<td>Impetuous, changeable</td>
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<td></td>
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<tr>
<td>Show variable personality aspects and moods</td>
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<tr>
<td>Spontaneous</td>
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<td>Doctrinaire</td>
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<tr>
<td>Guided by principles</td>
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<td></td>
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<td>High CP's vs Others</td>
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<td>Searching for &quot;absolute&quot; truth</td>
<td>31.40</td>
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<td>Need fewer certainties about the universe</td>
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<td>Brilliant</td>
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<tr>
<td>Good memorizers</td>
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<td>NS</td>
</tr>
<tr>
<td>High grade-getters</td>
<td>20.93</td>
<td>NS</td>
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<tr>
<td>Uneven grade-getters</td>
<td>50.00</td>
<td>10.02** H</td>
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<td>College aptitude scores fall in all parts of range</td>
<td>53.48</td>
<td>NS</td>
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<td>Mentally lazy</td>
<td>2.33</td>
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<tr>
<td>Like to use mind</td>
<td>79.07***</td>
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<tr>
<td>Usually have one outstanding talent</td>
<td>32.56</td>
<td>NS</td>
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<tr>
<td>Usually have several potential talents</td>
<td>62.79*</td>
<td>NS</td>
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<tr>
<td>Have wide interest range</td>
<td>75.58***</td>
<td>NS</td>
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<tr>
<td>Good businessmen</td>
<td>27.91</td>
<td>NS</td>
</tr>
<tr>
<td>Poor business school students</td>
<td>22.09</td>
<td>12.72*** H</td>
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<tr>
<td>Arithmetic is more fun than higher mathematics</td>
<td>6.97</td>
<td>12.71*** H</td>
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<th>$X^2$ Tests of Difference Between Groups; Direction of Agreement</th>
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<tr>
<td>Would do better in economic theory than in accounting</td>
<td>51.16 NS</td>
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<td>Think more about the science of a subject than the data</td>
<td>52.33 NS</td>
<td>NS NS NS</td>
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<tr>
<td>Patient researchers in those sciences which interest them</td>
<td>38.38 NS</td>
<td>NS NS NS</td>
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<tr>
<td>Find scientific theories more interesting than scientific work</td>
<td>39.53 6.46* H</td>
<td>NS 8.14** H</td>
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<tr>
<td>Biological laboratory work is more interesting than biological theory</td>
<td>25.58 NS</td>
<td>7.00** 0</td>
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<td>Poor nurses and medical technicians</td>
<td>15.12 NS</td>
<td>NS NS NS</td>
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<tr>
<td>Uninterested in social and political affairs or theories</td>
<td>4.65 NS</td>
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<td>Interested in the social sciences</td>
<td>45.35 NS</td>
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<td>Average interests in literature</td>
<td>16.28 7.96** H</td>
<td>NS 10.44** H</td>
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<td>Enjoy art and literature</td>
<td>74.42*** NS</td>
<td>NS NS NS</td>
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<td>Interested in the humanities</td>
<td>63.95** NS</td>
<td>NS NS NS</td>
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<td>Artistic</td>
<td>60.47* NS</td>
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<td>High CP's vs Others</td>
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<td>Scholarly</td>
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<td>Reflective thinkers</td>
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<td>NS</td>
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<tr>
<td>Intuitive thinkers</td>
<td>51.16</td>
<td>NS</td>
</tr>
<tr>
<td>Very rational thinkers</td>
<td>19.77</td>
<td>NS</td>
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<td>Intellectual interests</td>
<td>46.51</td>
<td>4.52* H</td>
</tr>
<tr>
<td>Have feelings of consciousness about the same as other people</td>
<td>15.12</td>
<td>NS</td>
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<tr>
<td>Have heightened consciousness</td>
<td>36.05</td>
<td>NS</td>
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<tr>
<td>Complacent</td>
<td>9.30</td>
<td>NS</td>
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<tr>
<td>Self-accepting</td>
<td>31.40</td>
<td>NS</td>
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<tr>
<td>Have strong drives to self-development</td>
<td>62.80*</td>
<td>NS</td>
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<tr>
<td>Aware of own deficiencies</td>
<td>53.49</td>
<td>NS</td>
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<tr>
<td>Self-approving and don't expect to change</td>
<td>5.81</td>
<td>5.04*</td>
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<tr>
<td>Have strong conscious desires and goals</td>
<td>43.02</td>
<td>NS</td>
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<tr>
<td>Have weak sense of self</td>
<td>4.65</td>
<td>4.30*</td>
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<tr>
<td>Have high personality growth potential</td>
<td>40.70</td>
<td>10.33** H</td>
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<thead>
<tr>
<th>ITEM CONTENT</th>
<th>Percent of Total Agreeing with Item</th>
<th>High CP's vs Others</th>
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<th>High CP's vs Lows</th>
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<tbody>
<tr>
<td>Acutely aware</td>
<td>54.65</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>Objectively aware</td>
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<td>7.09**</td>
<td>NS</td>
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<td>Sensitive</td>
<td>63.95**</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>Autonomous</td>
<td>22.09</td>
<td>5.23*</td>
<td>NS</td>
<td>NS</td>
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<td>Evaluate the tools, methods, and materials of others</td>
<td>48.84</td>
<td>6.51*</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>Free</td>
<td>38.37</td>
<td>NS</td>
<td>8.60**</td>
<td>12.15***</td>
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<tr>
<td>Feel free to accept own feelings and ideas under social pressure</td>
<td>52.33</td>
<td>NS</td>
<td>4.55*</td>
<td>NS</td>
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<tr>
<td>Rebellious toward ordinary social discipline</td>
<td>41.86</td>
<td>31.91***</td>
<td>7.26**</td>
<td>28.75***</td>
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<tr>
<td>Controlled</td>
<td>16.28</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>Have low general motivation toward achievement</td>
<td>4.65</td>
<td>7.95**</td>
<td>4.06*</td>
<td>11.00***</td>
</tr>
<tr>
<td>Highly motivated in general toward achievement</td>
<td>60.46*</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>Selectively motivated toward achievement</td>
<td>36.05</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>Aggressive</td>
<td>41.86</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>Affectionate</td>
<td>33.72</td>
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(continued)
### TABLE I (continued)

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<th>ITEM CONTENT</th>
<th>Percent of Total Agreeing with Item</th>
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<tbody>
<tr>
<td>Seek conflict</td>
<td>23.26</td>
<td>10.40**</td>
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<tr>
<td>Codifiers and rule makers</td>
<td>16.28</td>
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<tr>
<td>Unconcerned about having power</td>
<td>22.09</td>
<td>NS</td>
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<tr>
<td>Generally trusting</td>
<td>34.88</td>
<td>NS</td>
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<tr>
<td>Dominant</td>
<td>26.74</td>
<td>NS</td>
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<tr>
<td>Rather vain</td>
<td>15.11</td>
<td>NS</td>
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<tr>
<td>Leaders</td>
<td>51.16</td>
<td>NS</td>
</tr>
<tr>
<td>Sometimes take what they know is the wrong side of the argument</td>
<td>41.86</td>
<td>NS</td>
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<tr>
<td>Like competition</td>
<td>60.46*</td>
<td>NS</td>
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<tr>
<td>Have a sense of humility</td>
<td>22.09</td>
<td>5.50*</td>
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<tr>
<td>Pickle in friendships</td>
<td>11.63</td>
<td>NS</td>
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<tr>
<td>Feel isolated</td>
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<td>NS</td>
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<tr>
<td>Talkative</td>
<td>36.05</td>
<td>NS</td>
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<tr>
<td>Like to join organizations</td>
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<td>NS</td>
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<tr>
<td>Argumentative about social or political affairs or theories</td>
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<tr>
<td>Acquiescent</td>
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TABLE I (continued)

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<th>Percent of Total Agreeing with Item</th>
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<tr>
<td>Delighted by the humorous</td>
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<td>9.03** H</td>
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<td>Identify with the feelings of others</td>
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<td>14.83*** 0 H</td>
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<td>Have strong social conscience</td>
<td>34.88 NS</td>
<td>NS NS NS</td>
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<tr>
<td>Generous</td>
<td>39.53 NS</td>
<td>5.38* 0 H</td>
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<tr>
<td>Selfish</td>
<td>5.81 NS</td>
<td>4.5* H</td>
</tr>
<tr>
<td>Altruistic, devoted to interests of others</td>
<td>23.26 4.14* H</td>
<td>10.15** 0 H</td>
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<tr>
<td>Introverted</td>
<td>19.77 NS</td>
<td>NS NS NS</td>
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<td>Extroverted</td>
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<td>Gregarious</td>
<td>13.95 14.35*** H</td>
<td>6.95** 0 H</td>
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<td>Neurotic</td>
<td>10.47 NS</td>
<td>NS NS 11.00*** H</td>
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<td>Wholesome, integrated personalities</td>
<td>37.70 NS</td>
<td>NS NS NS</td>
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<td>Impulsive</td>
<td>61.63* NS</td>
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<tr>
<td>Compulsive</td>
<td>13.95 NS</td>
<td>NS NS NS</td>
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<td>More free to call up pre-conscious ideas and feelings</td>
<td>44.19 8.85** 0 H</td>
<td>11.72** H</td>
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<td>Have intense reactions</td>
<td>34.88 6.48* H</td>
<td>5.96* 0 H</td>
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<th>ITEM CONTENT</th>
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<th>High CP's vs Others</th>
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<td>Have frequent feelings of abandon</td>
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<td>22.94***</td>
<td>9.02**</td>
<td>26.44***</td>
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<td>Highly anxious</td>
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<td>12.38***</td>
<td>NS</td>
<td>11.72***</td>
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<td>Moderately anxious</td>
<td>15.12</td>
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<td>Immature</td>
<td>3.49</td>
<td>15.19***</td>
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<td>Relatively non-defensive to themselves about own faults</td>
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<td>5.95*</td>
<td>NS</td>
<td>NS</td>
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<td>Have vitality</td>
<td>54.65</td>
<td>NS</td>
<td>5.76*</td>
<td>NS</td>
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<td>Dream at night about their conflicts and guilt-caused problems</td>
<td>5.81</td>
<td>4.10*</td>
<td>5.38*</td>
<td>11.00***</td>
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<td>Think before they act</td>
<td>39.53</td>
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<td>NS</td>
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<td>Lacking in tact</td>
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<td>Somewhat socially awkward</td>
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<td>NS</td>
<td>NS</td>
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<td>Socially adept</td>
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<td>NS</td>
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<td>NS</td>
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<td>Social adjustment is better than their emotional adjustment</td>
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<td>8.14**</td>
<td>7.12**</td>
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<td>Accept beliefs that are considered beyond dispute</td>
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<td>NS</td>
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<td>11.00***</td>
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<td>Critical of many values that most people share</td>
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<td>High CP's vs Others</td>
<td>Low CP's vs Others</td>
<td>High CP's vs Lows</td>
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<td>World minded</td>
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<td>5.78*</td>
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<td>5.37*</td>
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<td>16.03***</td>
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<td>14.31***</td>
<td>10.59**</td>
<td>24.30***</td>
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<td>Likely to try several different churches</td>
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<td>Realistic</td>
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<td>Idealistic</td>
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<td>Sophisticated</td>
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<td>Naive</td>
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<td>Socially ambitious</td>
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<td>NS</td>
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<td>Care little about social status</td>
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<td>Have high financial aspirations</td>
<td>23.26</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Care little about money</td>
<td>25.58</td>
<td>NS</td>
<td>12.57***</td>
<td>10.44**</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>ITEM CONTENT</th>
<th>Percent of Total Agreeing with Item</th>
<th>X² Tests of Difference Between Groups; Direction of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security not very important</td>
<td>30.23 NS</td>
<td>'11.61*** 0</td>
</tr>
<tr>
<td>Worry about future security</td>
<td>26.74 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Have poorer work attitudes</td>
<td>13.95 4.54* NS</td>
<td>NS</td>
</tr>
<tr>
<td>Avoid doing what they can't do well</td>
<td>20.93 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Dependable</td>
<td>38.37 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Uneven in performance</td>
<td>22.09 12.72*** H</td>
<td>9.02** 0</td>
</tr>
<tr>
<td>Enterprising</td>
<td>29.07 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Good supervisors</td>
<td>39.53 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Poor organizers</td>
<td>6.97 6.27* 0</td>
<td>NS</td>
</tr>
<tr>
<td>Work best on their own if situation allows</td>
<td>72.09*** NS</td>
<td>NS</td>
</tr>
<tr>
<td>Work best when they are singled out from group</td>
<td>26.74 5.34* H</td>
<td>8.00** 0</td>
</tr>
<tr>
<td>On large projects, work best in company with other creative people</td>
<td>26.74 NS</td>
<td>3.89* 0</td>
</tr>
<tr>
<td>Practical</td>
<td>27.90 NS</td>
<td>NS</td>
</tr>
<tr>
<td>Likely to try impractical schemes and fail</td>
<td>30.23 NS</td>
<td>NS</td>
</tr>
<tr>
<td>ITEM CONTENT</td>
<td>Percent of Total Agreeing with Item</td>
<td>(X^2) Tests of Difference Between Groups; Direction of Agreement</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Concerned about the best materials and techniques for a product</td>
<td>37.21 NS</td>
<td>NS NS NS</td>
</tr>
<tr>
<td>Improvising</td>
<td>65.11** NS</td>
<td>NS 5.92* H</td>
</tr>
<tr>
<td>Experimenting</td>
<td>80.23*** NS</td>
<td>4.21* NS NS</td>
</tr>
<tr>
<td>Distracted by almost anything, any time</td>
<td>11.63 22.56*** H 12.01*** 30.80*** H</td>
<td>0 0 0 0</td>
</tr>
<tr>
<td>Able to concentrate when they are concerned</td>
<td>54.65 NS</td>
<td>NS NS NS</td>
</tr>
<tr>
<td>More distractable than others from tasks they can do well</td>
<td>10.47 NS</td>
<td>10.70*** 17.59*** H</td>
</tr>
<tr>
<td>More distractable from interesting tasks by humorous events than by annoyances or discomfort</td>
<td>29.07 NS</td>
<td>10.09** 13.62*** H</td>
</tr>
<tr>
<td>Lack of confidence in own abilities can block creative effort</td>
<td>20.93 NS</td>
<td>NS NS NS</td>
</tr>
<tr>
<td>They don't worry about abilities; they just go ahead</td>
<td>53.48 NS</td>
<td>NS NS NS</td>
</tr>
<tr>
<td>They seldom worry about whether they know enough to go ahead with a project</td>
<td>38.37 NS</td>
<td>NS NS NS</td>
</tr>
<tr>
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</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>If much concerned about insufficient knowledge, work is put off</td>
<td>17.44 NS</td>
<td>NS VS Others</td>
</tr>
<tr>
<td>Accept criticism better than most people</td>
<td>39.53 NS</td>
<td>NS VS Others</td>
</tr>
<tr>
<td>Do best when they receive creative evaluation</td>
<td>47.67 NS</td>
<td>NS VS Others</td>
</tr>
<tr>
<td>Produce better with &quot;trouble-shooting&quot; help than directive help</td>
<td>19.77 9.11** NS</td>
<td>6.83** NS VS Others</td>
</tr>
<tr>
<td>Need obvious rewards to complete work</td>
<td>8.14 NS</td>
<td>NS VS Others</td>
</tr>
<tr>
<td>Respond to recognition of their contributions</td>
<td>46.51 7.49** 0</td>
<td>NS VS Others</td>
</tr>
<tr>
<td>Frequently inaccurate on details</td>
<td>16.27 17.84*** H</td>
<td>17.36*** 0</td>
</tr>
<tr>
<td>Seem to create disorder when handling their things or tools</td>
<td>23.26 10.40** H</td>
<td>5.10* 13.82***</td>
</tr>
<tr>
<td>Long and strong on endurance</td>
<td>53.49 NS</td>
<td>12.09*** 0</td>
</tr>
<tr>
<td>Persevering</td>
<td>45.38 NS</td>
<td>NS VS Others</td>
</tr>
<tr>
<td>Persistent when seriously involved in a meaningful production</td>
<td>69.77*** NS</td>
<td>NS VS Others</td>
</tr>
<tr>
<td>Probably much like other babies at birth</td>
<td>72.09*** NS</td>
<td>NS VS Others</td>
</tr>
</tbody>
</table>

(continued)
TABLE I (continued)

<table>
<thead>
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<th>$X^2$ Tests of Difference Between Groups; Direction of Agreement</th>
</tr>
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<tbody>
<tr>
<td>As new-born infants, were different from other infants</td>
<td>5.81</td>
<td>5.04* 0</td>
</tr>
<tr>
<td>Parents and teachers gave them training in how to do things the right way</td>
<td>27.91</td>
<td>4.14* H</td>
</tr>
<tr>
<td>Parents and teachers encouraged their ideas and efforts during childhood</td>
<td>63.95** NS</td>
<td>NS</td>
</tr>
<tr>
<td>Absent-minded students</td>
<td>19.97</td>
<td>NS</td>
</tr>
<tr>
<td>Attentive students</td>
<td>43.02</td>
<td>5.27* 0</td>
</tr>
<tr>
<td>Poor students in classes they don't like</td>
<td>51.16</td>
<td>NS</td>
</tr>
<tr>
<td>Trouble-makers in classroom</td>
<td>16.27</td>
<td>7.96** H</td>
</tr>
<tr>
<td>Make classes interesting for others</td>
<td>51.16</td>
<td>NS</td>
</tr>
<tr>
<td>Enjoyable companions</td>
<td>60.47* NS</td>
<td>NS</td>
</tr>
<tr>
<td>Spoil friendships by their attitudes and behavior</td>
<td>10.47</td>
<td>NS</td>
</tr>
<tr>
<td>Show taste</td>
<td>58.14</td>
<td>NS</td>
</tr>
<tr>
<td>Irritating</td>
<td>5.81</td>
<td>NS</td>
</tr>
<tr>
<td>Exasperating to their teachers</td>
<td>20.93</td>
<td>NS</td>
</tr>
</tbody>
</table>

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High CP's vs Others</td>
</tr>
<tr>
<td>Teachers enjoy them and forget other students</td>
<td>13.95</td>
<td>4.68*</td>
</tr>
<tr>
<td>Should have more directive help and control by teachers</td>
<td>18.60</td>
<td>NS</td>
</tr>
<tr>
<td>Misunderstood by others</td>
<td>38.37</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Group agrees more often
H: High CP's
O: Others
L: Low CP's

Significance of Differences:
* -- P < .05
** -- P < .01
*** -- P < .001
NS -- Not Significant
INSTRUMENT FOR EVALUATING
THE CREATIVE PERSONALITY
(TRIAL RUN)

DIRECTIONS: Think of those people you know or have read about whom you regard as having highly creative personalities or as showing much creative behavior. Consider both children and adults. Consider faults and virtues. Then circle as many or as few of the following descriptive words or phrases as you feel characterize highly creative people more than they characterize less creative people. Do not debate too long over any particular description.

1. enjoyable companions
2. distracted by almost anything, anytime
3. emotionally anxious
4. liberal
5. look for missing elements in explanations
6. project their anger
7. anti-intellectual
8. make new deductions from the known
9. identify with feelings of others
10. extroverted
11. hide their anger
12. seldom puzzled
13. talkative
14. vague about evidence for truth or falsity
15. sensitive
16. more distractable than others from tasks they can do well
17. nothing surprises them very much
18. get their opinions and ideas from friends
19. emotionally well adjusted
20. enterprising
21. decisive
22. cautious
23. produce ideas slowly
24. indecisive
25. gregarious
26. low susceptibility to outside stimuli
27. imaginative
28. resent suppression
29. nationalistic
30. selectively motivated
31. spoil friendships by their disagreements
32. poor business-men
33. wary
34. compulsive
35. impractical
36. poor students in classes they don't like
37. fad-followers
38. able to concentrate when they are concerned
39. get practical and sensible ideas
40. guided by principles
41. materialistic
42. show variable personality aspects and moods
43. give up easily
44. emotional adjustment is better than their social adjustment
45. high-grade-getters
46. mild reactors
47. have strong drives to self-development
48. impulsive
49. see new relationships between things
50. question beliefs that are considered beyond dispute
51. motivated to do well in everything
52. reject unclear ideas
53. loyal to friends
54. need directive help
55. average interests in literature
56. uneven-grade-getters
57. have biological science interests
58. slow to get the point of a joke
59. regular and methodical in performance
60. good nurses and medical technicians
61. objectively aware
62. poor organizers
63. take things for granted or in stride
64. selfish
65. neglect evidence and logic in problem analysis
66. conservative
66. versatile
67. behave in unexpected ways
68. generally trusting
69. neglect what is known
70. more distractable from interesting tasks by humorous events than by annoyances or discomfort
71. cynical
72. have high financial aspirations
73. honest
74. avoid conflict
75. they don't worry about abilities; they just go ahead and do what is truly different
76. idealistic
77. self-accepting
78. have difficult personalities
79. very rational thinkers
80. unconcerned about having power
81. flat moral and ethical standards
82. uneven in performance
83. quick to see a problem
84. bold
defenders
85. fad-setters
86. hold no destructive ideas
87. likely to distort the truth to prove a point
88. spontaneous scientific theories more interesting than
89. attentive students
90. conservative
prescribers are usually involved in a meaningful
cold... 
have stable personalities that will change little
maladjusted emotionally
never take what they know to be the wrong side of
the argument
regular church-attenders show a narrow range of interests
sorrowful intellect
feel that they are accepted and understood
dull more control by teachers
overlook what is truly different
one-sided
if overly concerned about insufficient knowledge,
this blocks effort
redefining to more practical use than are do
unambitious dedicated in general toward achievement
poor nurses and medical technicians
generous
do best when they receive creative evaluation
poor memorizers by schematic
social adjustment is better than their emotional
adjustment hard on everything
combine materials or ideas in novel ways
find scientific theories more interesting than
scientific work
113. persistent when seriously involved in a meaningful production
114. sometimes destroy to rebuild
115. non-classifying
116. poor business-school students
117. un-responsive interest in classical art, music, or unresponsive to feelings of others
118. accept critical evaluation better than most people
119. work very logically to develop ideas about problems
120. need definiteness
121. unconventional interests
122. need more control by teachers
123. introverted
124. quiet
125. insensitive to feelings of others
126. rebellious
127. put insight to more practical use than others do
128. highly motivated in general toward achievement
129. seek conflict
130. suspicious of others
131. adventuresome
132. seriously upset by frustration
133. think before they act
134. concentrate hard on everything
135. self-destroying
136. fearful and stifled
137. note the inconsistencies in our culture
138. achieving
139. mentally lazy or imagination
140. only average imagination
141. vain
142. avoid distortion of truth and ideas of others
143. only average interests in classical art, music, or literature
144. joyous about whether they know enough
145. think about the "science" of a subject
146. have literary interests of absolute truth
147. searching for absolute truth of others
148. task-oriented in values
149. neurotic
150. find it difficult to rearrange elements within a whole
151. religious
152. rather poorly adjusted socially
153. respond to recognition of their contributions
154. artistic
155. hypochondriacal and tired
156. accepting of explanations by authorities
157. child-like
158. questioning interests
159. flashes of insight do not lead to effort on problems
160. interested in the social sciences
161. dogmatic

162. have constructive imagination

163. flashes of insight lead to effort on problems of concern

164. search for the tools, methods, ideas of others

165. predictable

166. they seldom worry about whether they know enough to go ahead with a project

167. over-simplifying

168. have frequent feelings of abandon

169. seldom exercise arbitrary rule over others

170. agree with group values

171. practical

172. improvising

173. complying

174. ask the most obvious questions

175. tolerant of ambiguity

176. absent-minded students

177. tolerant uncertainty

178. seclusive

179. carefully deliberate

180. elaborating

181. intellectual interests

182. ingenious

183. naive

184. realistic
185. as new-born infants, were different from other
infants.
186. blind to problems.
187. submissive.
188. critical of many values that most people share.
189. self-sufficient.
190. interested in business courses.
191. seldom dictate to others.
192. followers.
193. non-conforming.
194. preparing.
195. low anxiety level.
196. see the unique.
197. original.
198. average intelligence.
199. seldom have feelings of abandon.
200. fickle in friendships.
201. sometimes take what they know is the wrong side
of the argument.
202. withdrawing.
203. sometimes question the obvious.
204. parents and teachers gave them strict training
in how to do things the right way.
205. enjoy art and literature.
206. believe the American way of life is right.
207. fluent in producing ideas.
work best on their own
immature
have a wide interest range
inventive
see small degrees of difference
don't expect to change
like themselves as they are and don't expect to change
brilliant
brilliant
disorganized
easily upset by ordinary happenings
create disorder when handling their things
pre-conscious ideas and the same as
pretty good social adjustment
keen
uninterested in social and political affairs or theories
reflective thinkers
reflective thinkers
tamper with things around them
misunderstood by others
impatient
mature sense of self
courageous
231. show taste
232. lethargic
233. concerned about the best materials and techniques for a product
234. non-meditative
235. care little about money
236. usually have several potential talents
237. hating
238. long-suffering
239. suppress pre-conscious ideas and feelings
240. tight
241. have feelings of consciousness about the same as
242. other people's mind
243. probably much like other babies at birth
244. need fewer certainties
245. copy the methods and ideas of the great artists and thinkers in their own efforts
246. ambitious
247. rigid
248. have poor work attitudes
249. have strong conscious desires and goals
250. more free to call up preconscious ideas and feelings
251. dream about their conflicts and guilt-caused problems
252. have weak sense of self
253. display vandalistic imagination
253. altruistic
254. recognize analogies
255. college aptitude scores fall in all parts of the range
256. conscientious
257. annoying
258. have need for safety
259. aggressive
260. alert
261. affectionate
262. feel free to accept own feelings and ideas under social pressure
263. like to use mind
264. aware of own deficiencies
265. irreligious
266. exasperating to their teachers
267. accurate on details
268. scholarly
269. moderately anxious
270. controlled
271. dishonest
272. have social know-how
273. persevering
274. argumentative
275. depressed
276. reconstructing of the world picture
104

277. get ideas about problems when thinking of nothing in particular

278. enjoy arithmetic tasks

279. energetic

280. spiritually inclined

281. trouble-makers in classroom

282. have intense reactions

283. defiant

284. new ideas come too fast for all to result in creative effort

285. get wild and silly ideas

286. wondering

287. wholesome

288. tactful

289. have low general motivation toward achievement

290. autonomous

291. power-hungry

292. doctrinaire

293. popular

294. pessimistic

295. willing to take chances

296. dream about problem solving

297. unrestrained in emotional expression

298. dichotomizers

299. lacking in tact

300. humble
imitators in beliefs and ideas under social pressure

self-actualizing is oriented

likely to try several different churches

problem oriented

never question the obvious

neglectful part objects in a different

see what others miss

afraid of self

easily convinced of self

dependent socially oriented

have poor perception

leadership puzzled

world-minded stands out others or stands out

reliable as men

optimistic

show poor taste or sense

rule-makers guide

seek social status

relatively non-defensive to themselves about own faults

disagreeing

light-hearted

sophisticated

organizers

impatient

mainly need "trouble-shooting" help
326. censor their feelings and ideas under social pressure
327. security not very important
328. spenders
329. mature
330. look hard at things
331. seldom see partial similarities between different ideas
332. team-work oriented
333. have strong sense of self
334. somewhat socially awkward
335. self-dissatisfied
336. frequently puzzled
337. unaware of attempts by others to suppress them
338. good business-men
339. responsive
340. have weak conscious desires and goals
341. looking for guidance
342. have vitality
343. progressive
344. work best in creative company
345. don't lay down the law
346. unadventurous
347. play with or handle the environment
348. daring
349. feel a need to defend themselves against themselves
350. interested in the "art" of a subject
351. stingy
352. acquiescent
353. experimenting
354. argumentative about social and political affairs or theories
355. interested in the humanities
356. intuitive thinkers
357. intensely committed to a few things in daily living
358. conventional
359. hard to convince
360. warm and mellow as well as tolerant to see it
361. have high personality growth potential
362. free
363. care little about social status
364. cheerful
365. tolerant of frustration
366. parents and teachers encouraged their ideas and efforts during childhood
367. delighted by the humorous
368. flexible
369. poor contrivers
370. more interested in biological theory than in laboratory work
371. orderly
372. patient researchers
373. accept meanings and limits as given
374. reactionary
375. inspiring
376. frequently inaccurate on details
377. acutely aware
378. undependable
379. make classes interesting for others
380. have good work attitudes
381. loving
382. feel that arithmetic is just a chore
383. guided by regulations
384. see the world much as they were taught to see it
385. integrated
386. complacent
387. unartistic
388. teachers' pets
389. rote learners
390. shiftless
391. conforming
392. rough
393. good members of their parents' churches
394. need obvious rewards to complete work
395. starry-eyed
396. usually have one outstanding talent
397. find few things very important
398. seldom go to church
399. likely to try impractical schemes and fail
400. irritating
401. feel isolated
402. ask un-answerable questions
403. unpopular
404. have heightened consciousness
405. lack of confidence in abilities can block creative effort

Read each sentence by having highly creative people sound like they are achieving much creative behavior. Circle both abilities and faults. Consider faults and virtues.

Then circle as many or as few of the following descriptive words or phrases as you feel characterize highly creative people more than they characterize less creative people. Do not dwell too long over any particular description. Then you feel puzzled about an item, stop to consider. Is this more true of highly creative people than others?

There are no right or wrong answers.
EVALUATING THE CREATIVE PERSONALITY

BY

INGFRIED FISKIN

DIRECTIONS: Think of those people you know or have read about whom you regard as having highly creative personalities or as showing much creative behavior. Consider both children and adults. Consider faults and virtues. Then circle as many or as few of the following descriptive words or phrases as you feel characterize highly creative people more than they characterize less creative people. Do not debate too long over any particular description. When you feel puzzled about an item, stop to consider: "Is this more true of highly creative people than others?"

There are no right or wrong answers.

START HERE:

1. original
2. copy the methods and ideas of the great artists
   and thinkers in their own efforts
3. combine materials or ideas in novel ways
4. display vandalistic imagination
5. have constructive imagination
6. sometimes destroy to rebuild
7. seldom puzzled
8. decisive
9. frequently puzzled
10. sometimes question the obvious
11. prefer complexity
12. find it difficult to rearrange elements within a whole
13. reject vague ideas
14. reconstructing of the world picture
15. dogmatic
16. redefining, changing the meanings or limits
17. see new relationships between things
18. over-simplifying
19. elaborating, ornamenting
20. alert, keen about
21. careless about missing elements in explanations
22. see small degrees of difference
23. recognize analogies
24. neglect evidence and logic in problem solving
25. overlook practical problems and everyday happenings
26. quick to see a problem
27. tamper with things around them
28. note the inconsistencies in our culture
29. dream at night about problem solving and imaginative productions
30. produce ideas slowly
112

31. get wild and silly ideas
32. have more practical and sensible ideas
33. get ideas about problems when thinking of nothing in particular
34. new ideas come too fast for all to result in creative effort
35. flashes of insight seldom lead to effort on problems of concern
36. flashes of insight lead to effort on problems of concern-getters
37. put their insights to more practical use than others
38. honest
39. vague about evidence for truth or falsity
40. likely to distort the truth to prove a point
41. nothing surprises them very much
42. dichotomizers and classifiers, talents
43. flexible personalities, range
44. ask unanswerable questions
45. tolerant of ambiguity
46. willing to take chances
47. more tolerant of frustration
48. more seriously upset by frustration
49. optimistic about the future
50. take things for granted or in stride
51. patient, thinkers in general, interest them
impetuous, changeable personality aspects and moods
show variable personality aspects and moods
spontaneous aspects work more interesting
doctrinaire outlook
guided by principles and standards
searching for "absolute" truth
need fewer certainties about the universe
brilliant in the social sciences
good memorizers in literature
high grade-getters in grade
uneven grade-getters in grades
college aptitude scores fall in all parts of the range
mentally lazy learners
like to use minds
usually have one outstanding talent
usually have several potential talents
have a wide interest range
good businessmen
poor business school students
arithmetic is more fun than higher mathematics
would do better in economic theory than in accounting
think more about the "science" of a subject than about the data
patient researchers in those sciences which interest them
74. find scientific theories more interesting than scientific work
75. biological laboratory work is more interesting than biological theory
76. poor nurses and medical technicians
77. uninterested in social and political affairs or theories
78. interested in the social sciences
79. average interests in literature
80. enjoy art and literature
81. interested in the humanities
82. artistic
83. scholarly
84. reflective thinkers
85. intuitive thinkers
86. very rational thinkers
87. intellectual interests
88. have feelings of consciousness about the same as other people
89. have heightened consciousness
90. complacent
91. self-accepting
92. have strong drives to self-development
93. aware of own deficiencies
94. self-approving and don't expect to change
95. have strong conscious desires and goals
96. have weak sense of self
97. have high personality growth potential
98. acutely aware
99. objectively aware
100. sensitive
101. autonomous
102. evaluate the tools, methods, and ideas of others
103. free
104. feel free to accept own feelings and ideas under social pressure
105. rebellious toward ordinary social discipline
106. controlled conscience
108. have low general motivation toward achievement
109. highly motivated in general toward achievement
110. selectively motivated toward achievement
111. aggressive
112. affectionate
113. seek conflict
114. codifiers and rule-makers
115. unconcerned about having power
116. generally trusting
117. dominant
118. rather vain
119. leaders
120. sometimes take what they know is the wrong side
121. like competition
122. have a sense of humility
123. fickle in friendships
124. feel isolated
125. talkative
126. like to join organizations
127. argumentative about social and political affairs or theories
128. acquiescent
129. delighted by the humorous
130. identify with feelings of others
131. strong social conscience
132. generous
133. selfish
134. altruistic, devoted to interests of others
135. introverted
136. extroverted
137. gregarious
138. neurotic
139. wholesome, integrated personalities
140. impulsive
141. compulsive
142. more free to call up pre-conscious ideas and feelings
143. have intense reactions
144. have frequent feelings of abandon
145. highly anxious
146. moderately anxious
147. immature
148. relatively non-defensive to themselves about own faults
149. have vitality
150. dream at night about their conflicts and guilt-caused problems
151. think before they act
152. lacking in tact
153. somewhat socially awkward
154. socially adept
155. social adjustment is better than their emotional adjustment
156. accept beliefs that are considered beyond dispute
157. critical of many values that most people share
158. world-minded
159. intensely committed to a few things in daily living
160. liberal
161. reactionary
162. progressive
163. irreligious
164. seldom go to church
165. likely to try several different churches
166. realistic
167. idealistic by almost anything
168. sophisticated
169. naive
170. socially ambitious
171. care little about social status
172. have high financial aspirations
173. care little about money
174. security not very important
175. worry about future security
176. have poorer work attitudes
177. avoid doing what they can’t do well
178. dependable
179. uneven in performance
180. enterprising
181. good supervisors
182. poor organizers
183. work best on their own if situation allows
184. work best when they are singled out from group
185. on large projects, work best in company with other
186. creative people
187. practical
188. likely to try impractical schemes and fail
189. concerned about the best materials and techniques
190. for a product
191. improvising
192. experimenting
193. distracted by almost anything, any time
192. able to concentrate when they are concerned
193. more distractable than others from tasks they can do well
194. more distractable from interesting tasks by humorous events than by annoyances or discomfort
195. lack of confidence in own abilities can block creative effort
196. they don't worry about abilities; they just go ahead
197. they seldom worry about whether they know enough to go ahead with a project
198. if much concerned about insufficient knowledge, work is put off
199. accept criticism better than most people
200. do best when they receive creative evaluation
201. produce better with "trouble-shooting" help than directive help
202. need obvious rewards to complete work
203. respond to recognition of their contributions
204. frequently inaccurate on details
205. seem to create disorder when handling their things or tools
206. long and strong on endurance
207. persevering
208. persistent when seriously involved in a meaningful production
209. probably much like other babies at birth
210. as new-born infants, were different from other infants
211. parents and teachers gave them training in how to do things the right way
212. parents and teachers encouraged their ideas and efforts during childhood
213. absent-minded students
214. attentive students
215. poor students in classes they don't like
216. trouble-makers in classroom
217. make classes interesting for others
218. enjoyable companions
219. spoil friendships by their attitudes and behavior
220. show taste
221. irritating
222. exasperating to their teachers
223. teachers enjoy them and forget other students
224. should have more directive help and control by teachers
225. misunderstood by others