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A Comparative Study Of Creativity In Comprehensive And Continuation High School Students, Grades Eleven And Twelve.

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University of the Pacific

A COMPARATIVE STUDY OF CREATIVITY IN COMPREHENSIVE AND CONTINUATION HIGH SCHOOL STUDENTS, GRADES ELEVEN AND TWELVE

A Dissertation

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the Faculty of the Graduate School

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Doctor of Education

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by

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A COMPARATIVE STUDY OF CREATIVITY IN COMPREHENSIVE AND CONTINUATION HIGH SCHOOL STUDENTS, GRADES ELEVEN AND TWELVE

Abstract of Dissertation

It was the purpose of this study to investigate and compare relationships which exist between the tested creative behavior of eleventh and twelfth grade continuation high school students and their counterparts in a comprehensive high school. Creativity scores were obtained for each og three ranked IQ groups of students tested at each of the two participating schools. Creativity scores were obtained for each of the four creative ability factors, Fluency, Flexibility, Originality, and Elaboration as measured by the Torrance Tests of Creative Thinking, Figural--B. (A copy of this test is available through the University of the Pacific Library, Stockton, California.)

Based upon scores obtained on the Lorge-Thorndike Intelligence Tests, Multi-Level Edition, the populations of a comprehensive and continuation high school were each stratified into three groups, low IQ, 75-90; medium IQ, 91-110; high IQ, 111 and above. A sample of thirty students were randomly selected from each IQ stratum for a total of 180 students. The creativity tests were administered to students at each school and then sent to Athens, Georgia, Personnel Press, for expert scoring. To determine whether the creative ability factor mean scores for each IQ level differed, the Student's *t* statistical test was used.

The conclusions from the study were outlined under four divisions and included the following: (1) there was no significant difference in the Fluency scores of comprehensive and continuation high school students tested: (2) there was no significant difference in Flexibility scores between comprehensive and continuation high school students tested: (3) there was no significant difference in the Originality scores of low and medium IQ comprehensive high school students tested. High IQ comprehensive high school students did score significantly higher in Originality than did high IQ continuation high school students: (4) low, medium, and high IQ comprehensive high school students scored significantly higher in Elaboration than did low, medium, and high IQ continuation high school students.

The findings in this study strongly suggest the need to undertake research to: (1) determine whether there is a significant difference in the Flexibility scores of medium IQ comprehensive high school students and medium IQ continuation high school students: (2) to determine if there is a significant difference, in the direction of continuation high school students, in the Originality scores of low IQ continuation high school students and low IQ comprehensive high school students: (3) to determine if there is a significant difference between the Originality scores of medium IQ comprehensive high school students and medium IQ continuation high school students: (4) to compare the relationship of creativity to rural comprehensive high school students and rural continuation high school students:

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Dr. Dewey Chambers, chairman of the Dissertation Committee, is deserving of a special debt of thanks for his expert advice and patient counsel during the long months of work expended on this study. His enthusiasm, knowledge, and expert advice provided the writer with sufficient confidence to make the quest for the knowledge provided by this study.

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CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS

I. INTRODUCTION

Creativity is one of the most highly valued human characteristics and is one of the most difficult to scrutinize and evaluate. The elustive and ambiguous nature of creativity has been reflected upon by many authors. Eric Hoffer emphasizes this ambiguous nature of creativity as he comments on the duality of youth and creativity in the following statement:

> ...My feeling is that the tendency to carry youthful characteristics into adult life, which renders man perpetually immature and unfinished, is at the root of his uniqueness in the universe, and is particularly pronounced in the creative individual. Youth has been called a perishable talent, but perhaps talent and originality are always aspects of youth, and the creative individual is an imperishable juvenile.[1]

The precocity of youth is many times stifled through authoritative teaching and a conforming society. E. Paul Torrance expands upon this notion when he discusses the student who is constantly being disciplined and relegated to an obscure and lowly position in the classroom because of his misunderstood and misdirected creative behavior. He indicates that the creative child may sometimes commit an illegal act because of misdirected creative talent.[2] Troublesome

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[1] Eric Hoffer, The Ordeal of Change (New York: Harper and Row, 1963), p. 78.

[2] E. Paul Torrance, "Creative Kids," Today's Education (January, 1972), pp. 25-28.

youngsters in comprehensive high schools are many times relegated to continuation high schools.

The concept of continuation education is relatively new. Because of its newness, and its importance to this study, it deserves some degree of explanation and discussion. A brief discussion of the history and philosophy of continuation education is included in the following paragraphs.

Continuation education was first organized in California in 1919 for working students. This original program was flexible enough in its scheduling procedures to allow students to work part time and to obtain a diploma at the same time. More recently, these schools have begun to enroll other students, for example: students with attendance problems or adjustment problems.[3]

Continuation programs are built on the premise that there are individual differences in all students, and that every student, regardless of past problems, has the right to an education. Each student works at his own pace and at his own level of achievement and ability. Classes are small, approximately fifteen to twenty students per classroom. These small classes provide for a greater degree of flexibility in courses offered within a given classroom as well as an increase in student-teacher contacts. Instruction is individualized, and is often offered on a diagnostic and prescriptive basis

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[3]Robert E. Ehlers, Operation Reach: Orientation to Continuation Education (Riverside, California: Offices of Imperial and Riverside Counties, Superintendents of Schools, State of California, 1967), p. 1.

Students are normally referred to continuation schools by their high school principal, vice-principal, or counselor. Motivation to continue with their education after dropping out of the comprehensive high school is provided by a flexible and diverse instructional program which is geared to suit the educational needs of the student as closely as possible.

Counselors and teachers quickly become aware of the divergent emotional, psychological, and physical character of many continuation high school students. Counselors and teachers, with their small student ratio, are able to cope with individual student problems almost as soon as they occur.

Generally, continuation instructional programs offer many elective subjects, and all the required subjects needed for graduation. Physical education subjects, though required for graduation from the comprehensive high schools of the State of California, are not required for graduation from the state's continuation schools.

Continuation schools differ academically from comprehensive high schools in that students work on an individual contract basis, thereby being able to progress at their own speed, and being credited when work is completed. Because of the individualized nature of the program, students may enroll into continuation schools at anytime during the school year with no credit loss for work approved and previously done at their leaving school. The philosophy of the continuation program can be stated as follows: "Take the student where

he is and help him develop into a contributing citizen at the highest level possible within the limits of his ability and his personality."[4]

In continuation schools, teachers do not lecture to classroom groups. There are, however, teacher-led discussion groups. Units of work can be started and finished at anytime. Students are graded on the successful completion of prescribed course content, with students starting and finishing a course at anytime during the school year. Students need not wait until the end of the school semester to graduate from high school. There is no set time for graduation. They graduate when they have completed those course requirements and course credits mandated by each school district within the State of California.

Continuation students need not attend school a full six or eight periods per day as do students in most comprehensive high schools. Continuation students, when regularly employed, are required to attend their assigned continuation school not less than four hours per week, and three hours per day when unemployed.

With few exception, "Education Codes 12551, 12553, and 12101"[5] have set the minimum age for entrance into continuation schools at sixteen years of age.

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[4]Ehlers, op. cit., p. 2.

[5]John W. Voss, Handbook on Continuation Education in California (Sacramento, California: Bureau of Elementary and Secondary Education, California State Department of Education, 1968), p. 27.

Student referrals to continuation high schools are generally initiated by either the administration or the counseling staffs of the leaving school only after the student is found to be unable to benefit from instruction in the comprehensive high school.

John R. Eales, consultant in secondary education, California State Department of Education, has reported that there were 61,868 students enrolled in the state's 237 continuation high schools during the 1971-72 school year. He also reports that during the same year, 37 per cent of the students enrolled in continuation schools were girls. When reporting on the distribution of ethnic minority groups, he indicated that 55 per cent of the state's continuation high schools had a greater number of ethnic minorities enrolled than did their feeder comprehensive high schools. He points out, however, that in those districts where the ethnic minority ratio was greater in the continuation high schools than in the comprehensive high schools, a great many were only 1-3 percentage points above the district figure.[6]

The California Continuation Education Association answers the question "Who Attends Continuation Schools?" in the following quotation:

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[6]John R. Eales, Clip Sheet on Continuation Education (Sacramento, California: California State Department of Education, Division of Instruction, October, 1972), pp. 5-6.

> ...Those students attending may have learning problems, poor attendance patterns or jobs which conflict with regular school classes. Pregnancy is another acceptable reason. In general, then, students who for one reason or another may not or cannot go to the regular high school are eligible.[7]

Robert E. Ehlers expands upon the statement of the California Continuation Education Association by characterizing the different types of continuation students in the statement listed below:

> ...Students who are socially or physically mature. May be capable, but needs course or requirement makeup. May be accelerated but bored student, or a gifted but unchallenged student.
>
> Student with a need for individual and personal attention. This may be a culturally deprived student, or imminently terminal student.
>
> Dropouts - students returning after a period of absence.
>
> Students who must be enrolled in continuation school or classes due to legal requirements--those who have been suspended 10 days or are probation and parole referrals and in some cases for truancy.
>
> Working students, full or part-time.
>
> Student with health problems who must of necessity be absent from school for certain periods. Pregnant, asthmatic, etc., students.
>
> Late semester enrollees, out of state students, those with nomadic family background, such as migrant workers.
>
> Students with serious anti-social behavior--drug users, overly hostile students, serious non-conformists, runaways, and showing erratic behavior.[8]

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[7]The California Continuation Education Association, Continuation Education, California (Los Angeles, California: Orange County Department of Education, 1973), p. 2.

[8]Ehlers, op. cit., p. 40.

Upon examining the characteristics of continuation students listed above, it is possible to tentatively assume that the continuation high school population included in this study has a higher index of rebel-like and divergent behavior than does its counterpart in the comprehensive high school.

James C. Bennett, in discussing the Educationally Unappreciated Youth, comments on the changing patterns and practices within families which contribute to the high dropout rate of students attending public high schools His comments concerning the unstructured and permissible home life of many high school dropouts, and how these factors influence their preoccupation with survival, are pertinent when related to the statement of Getzels and Jackson as listed below.[9]

Getzels and Jackson compare the home environments and types of parents of youngsters with high creative quotients and high intelligence quotients. According to their description, there are indications that youngsters are more creative if they come from homes in which individual divergence is admitted and risks are accepted than are youngsters who come from homes where risks and individual divergence are limited. Their findings are as follows:

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9 James C. Bennett, "Educationally Unappreciated Youth--Scope and General Overview of Problems," The Disadvantaged and Potential Dropout, ed. John Curtis Gowan (Springfield, Illinois: Charles C. Thomas Publishers, 1966), p. 21.

> ...There are indications that basic differences between highly creative and highly intelligent children have their beginnings in the home and family environment before they come to school. The high I.Q. family is one in which individual divergence is limited and risks minimized while the high creative family is one where individual divergence is admitted and risks are accepted.[10]

Dewey Chambers comments upon the social personality traits of the highly creative individual and extends an opinion in the following statement:

> ...The highly creative individual is less subject to group standards and controls and is not concerned about social norms. His nonconforming nature may get him into trouble. He may even become institutionalized because of his misdirected creative talents. I have a hunch that institutions housing delinquent and predelinquent youth may contain more than their share of highly creative youngsters.[11]

In discussing creativity and conformity, Clark Moustakas relates to how conformity has a tendency to stifle the creative urge. He continues by inferring that the nonconformist is free to explore beyond imposed limits, and adds that we as adults many times set limits which are too rigid for youngsters to demonstrate their creative urges.[12]

Melvin Tumin, in discussing obstacles to creativity, reiterates the need for a less structured social order when

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[10]Jacob W. Getzels and Philip W. Jackson, Creativity and Intelligence: Explorations with Gifted Students (New York: John Wiley and Sons, Inc., 1962), p. 117.

[11]Opinion expressed by Dr. Dewey Chambers, lecture in Creative Teaching, University of the Pacific, Stockton, California, November 11, 1969.

[12]Clark Moustakas, Creativity and Conformity (New York: Van Nostrand Reinhold Company, 1967), p. 37.

he states that "a society which has a minimum orientation to status is the one which has the possibility of having a maximum orientation to creativity."[13]

Some of the characteristics assigned to creative individuals have been used in describing many continuation high school students. David F. Wyzik points out that continuation students have been characterized as being nonconforming, as living in unstructured and permissive home environments, and as being anti-social in their relationships with adults and their peers. He continues by explaining how their anti-social behavior is reflected in their dress, appearance, their writing, and their art.[14]

In discussing the function of the continuation education program in the total education picture, Ehlers points out that:

> ...Continuation programs serve students who are often referred to as divergent youth. By divergent youth is meant those who have had characteristics of personality which are at the extremes of a normal distribution curve. Individual continuation students might have a number of divergent characteristics. Example: ability, weight, social skills, motivation, appearance, reading achievement, etc.[15]

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[13]Melvin Tumin, "Obstacles to Creativity," A Source Book for Creative Thinking, ed. Sidney J. Parnes (New York: Charles Scribner's Sons, 1962), p. 107.

[14]David F. Wyzik, "Are They Really Dropouts? Or Should We Use Other Adjectives?," Continuation Education: A Report of the 1968 Summer Workshops (Sacramento, California: California Continuation Education Association, 1968).

[15]Ehlers, op. cit., p. 1.

Educators serving in the area of continuation education are very much aware that there are few curricula and instructional techniques which have been successful in the education of continuation students. They recognize the need to search for innovative curricula and instructional techniques which offer some degree of hope in motivating the continuation student to stay in school and obtain a high school diploma. E. Paul Torrance offers, in the statement below, a suggestion in how the creative urge of delinquent youngsters might be used to improve their instruction:

> ...Some experts on delinquency believe that the future criminal is frequently a child who has little chance to use his creative abilities in socially accepted ways and who therefore uses his potentialities to plan and carry out an illegal act. In my opinion, the curriculum at any educational level or in any subject has possibilities for providing equally exciting and certainly more rewarding outlets for these potentialities.[16]

II. THE PROBLEM

Statement of the Problem

This study was undertaken to ascertain if there was a comparative difference in creative behavior, as measured by the Torrance Tests of Creativity,[17] between continuation high school students and comprehensive high school students. The research was limited to grades eleven and twelve and included

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[16]Torrance, op. cit., p. 25.

[17]Ibid., Torrance Tests of Creative Thinking (Princeton, New Jersey: Personnel Press, Inc., 1966).

a comparative study of the creative behavior of comprehensive and continuation high school students stratified into three IQ groups at each of the two schools studied. IQ parameters were as follows: Low IQ, 75-90; Medium IQ, 91-110; High IQ, 111 and above.

Significance of the Study

This study is of importance for the following reasons:

1. This study will provide evidence to determine if there is a need to develop a curriculum and instructional program specially designed for highly creative youngsters referred to continuation high schools.

2. The continuation high schools of California provide an ideal proving ground for testing evaluative instruments sensitive to extremes in behavior. Little research has been done in the analysis of the creative behavior of continuation high schools students. This research would be a contribution to the knowledge available in studies relating to creativity and continuation high school students.

3. This study will provide evidence to determine if there are indeed a greater proportion of highly creative students in continuation schools than in comprehensive high schools. If there were a greater proportion of highly creative youngsters in continuation schools, then many students referred to continuation high schools and who previously were ignored or repulsed for their anti-social behavior may achieve success experiences in an instructional program which may be developed to capitalize on their creativity. The benefits derived from a program geared to the needs of creative students will be shared by all society.

III. PURPOSE OF THE STUDY

It was the purpose of this study to investigate and compare relationships which exist between the tested creative behavior of continuation high school students and their

counterparts in a comprehensive high school of Sacramento, California. It attempted to determine to what extent the creative behavior of students referred to the continuation high school for behavior related problems differed from the creative behavior of students successfully enrolled in the comprehensive high school. Reasons for the referral of students to the continuation high school included in this study are listed in the Sacramento City Unified School District Continuation High Schools Referral Form found in Appendix A of this publication.

The research was limited to grades eleven and twelve. This limitation is due to the immediate availability of eleventh and twelfth grade continuation high school students participating in this study. Education code 12551[18] sets the age of sixteen years as the minimum age for attendance in any of the continuation schools in the State of California. American Legion High School, the continuation school participating in this study, has a student body which is mostly composed of eleventh and twelfth graders. Because of the sixteen year old age minimum for continuation school attendance, the study was also limited to eleventh and twelfth grade comprehensive high school students used in the study as the comparative group. One comprehensive high school, randomly selected from a population of six, was included as the comparative population.

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[18]Voss, op. cit., p. 54.

Students from the comprehensive high school and the continuation high school were each divided into three ranked groups based upon student I.Q. scores. I.Q. scores were based upon scores obtained on the California State mandated Lorge-Thorndike Intelligence Test[19] administered during grades six and twelve. I.Q. scores rankings for each of the two schools included in the study were as follows: low IQ., 90 and below; medium IQ., 91-110; high I.Q., 111 and above.

IV. RESEARCH METHODOLOGY

Data collected in this investigation were obtained through ex post facto research. Kerlinger states that "the most important difference between experimental research and ex post facto research is control."[20] The ex post facto investigator must take things as they are and try to disentangle them. Ex post facto research is neither completely descriptive nor is it completely experimental in its approach to a problem. In relating to ex post facto research, Gilbert Sax states that "it is descriptive in the sense that E has no direct control of experimental conditions; it is experimental because an attempt is made to infer causal relationships."[21]

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19 I. Lorge, B. L. Thorndike, and Elizabeth Hagen, The Lorge Thorndike Intelligence Tests (Boston: Houghton Mifflin, 1964).

20 Fred N. Kerlinger, Foundations of Behavior Research (San Francisco: Holt, Rinehart and Winston, Inc., 1964), p. 361.

21 Gilbert Sax, Empirical Foundations of Educational Research (Englewood Cliffs, New Jersery: Prentice-Hall, Inc., 1968), p. 340.

One of the unique characteristics of ex post facto research is that it takes things as they are.

An inherent weakness of ex post facto research is its inability to pin down and succinctly interpret causality. In this study, one can not be absolutely sure that there is or is not a relationship between creative behavior and students identified as candidates for enrollment in a continuation high school. Other known factors too difficult to interpret, and other unknown factors too elusive to discover, may exert an untold influence upon the outcome of this study. The matching of the two groups being studied, through random selection into stratified samples ranked into three different I.Q. levels, and limiting the study to continuation students as the quasi experimental group, and the comprehensive high school students as the control group, should decrease the predictive error as much as possible.

The control of variables through randomization, and the manipulation of independent variables in the experimental research design allows for a greater degree of accuracy in the interpretation of causal relationships. Though the experimental design allows for a greater certainty in prediction, its use is limited. Deobold B. Van Dalen expands upon this notion in the following statement;

> ...No one design solves all problems. The nature of the problem determines which basic design is most appropriate and how the design should be tailored to meet the needs of the investigation.[22]

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[22]Deobold B. Van Dalen, Understanding Educational Research (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968), p. 253.

The ex post facto design is used to a large extent in the study of variables influencing sociological or psychological behavior. These are factors already present in the population being studied. It is the researcher's responsibility to determine which variables exert the greatest influence upon a particular factor being studied, and whether there is a causal relationship between the two. Kerlinger expands upon the notion listed above by defining the ex post facto research in the following statement:

> ...Ex post facto research may be defined as that research in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. He then studies the independent variables in retrospect for their possible relations to and effects on, the dependent variable or variables.[23]

It has been made quite clear that the ex post facto research design is a legitimate and respected method of educational research for this problem. The present investigation selected the ex post facto research as a source for data for the following reasons:

First, creativity, the dependent variable, is inherently present in all youngsters except the feeble-minded and others incapable of logical thought processes. Anti-social behavior and rebel-like behavior, as defined in this investigation, is present in all youngsters in varying degrees. Both of the above criteria are present in the definition of the ex post facto research.

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[23]Kerlinger, op. cit., p. 360.

Secondly, no treatment had been used on either the control, the comprehensive high school students, or the experimental group of continuation high school students.

Randomization in the selection of all samples used in the study was limited to groups which were categorized into stratified samples ranked into three I.Q. levels, high, medium, and low. Students were self-selected on the basis of whether they were comprehensive high school students or continuation high school students. No other criteria for the selection of these two large groups was used.

Kerlinger, in discussing the limitations of ex post facto interpretations, states that:

> ...Ex post facto research has three major weaknesses, two of which have already been discussed in detail: 1) the inability to manipulate independent variables, 2) the lack of power to randomize, and 3) the risk of improper interpretation. In other words, compared to experimental research, other things being equal, ex post facto research lacks control; this lack is the basis of the third weakness: the risk of improper interpretation.[24]

Kerlinger continues by discussing some of the values of ex post facto research in the statement that follows:

> ...A little reflection on some of the important variables in educational research--intelligence, aptitude, home background, creativity, parental upbringing, teacher personality, school atmosphere--will show that they are not manipulable. The most

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[24] Ibid., p. 373.

> important social scientific and educational research problems do not lend themselves to experimentation, although many of them do lend themselves to controlled inquiry of the ex post facto kind.[25]

It was of major significance to this study in that the continuation schools of the State of California are ideally suited for the study of deviate behavior in the young adult. This investigator is fortunate in that he is the principal of the continuation school participating in the study and therefore has available to him many documents and student records, useful to this study, but not readily available to other investigators.

Ex post facto research as a source of data was particularly suitable to the purpose of the present study, with its emphasis on the self selection of students into the two groups studied, and the inherent characteristics of continuation students which allows for their selectivity.

V. ASSUMPTIONS AND LIMITATIONS

The assumptions upon which this study was based include:

Assumptions

1. The continuation high school population of California has a higher index of divergent behavior than does the comprehensive high school population of the state.

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[25] Ibid.

2. Administrators and counselors referring students to the continuation high school do not refer students who are either physically or mentally handicapped according to the California State Requirement with respect to the evaluation and placement of students.

3. The results of this study will be of value to continuation high school educators in planning new curricula, instructional techniques, or research dealing with the improvement of continuation high school education.

4. The data gathered about a selected number of continuation high school students, and comprehensive high school students will be adequate in developing answers to the questions raised in this study.

The investigation was also based upon certain limitations which are included in the statements below:

Limitations

1. Those inherently present in the nature and scope of the testing instruments used in the investigation.

2. Those inherently present in the nature and scope of the selection procedures used by counselors and administrators in identifying and referring comprehensive high school students to continuation high schools.

3. Those set by including in the study only those continuation and comprehensive high school students who have ninety or more credits towards graduation, or those who qualify as juniors and seniors in the high schools of the Sacramento City Unified School District.

4. Those resulting from the comparative analysis of the creative behavior of comprehensive high school students and continuation high school students of the Sacramento City Unified School District.

5. Those set by the investigator's decision to explore the creative behavior of continuation high school students and not to explore the underlying causes of their anti-social and rebel-like behavior.

6. Any bias that the researcher has concerning this study.

VI. DEFINITIONS OF TERMS USED

The following definitions of terms have been used throughout this study:

1. Continuation Education: As now defined, continuation education is a program that leads toward a high school diploma; prepares students for entrance into occupational training, and provides some schooling which, accompanying employment, can contribute very much to the individual's immediate and long-term interests. Instruction is completely individualized and is so arranged that a student may enter the program at any time and adopt any schedule pattern without disturbing the program's continuous and effective progress. It emphasizes the development of attitudes and appreciations through the establishment of courteous, respectful relationships with fine teachers in small, friendly, mature school environments. Its flexibility promotes adaptation of curricular offerings to the performance levels and interests of the students. Credits are issued as earned, and the opportunity for making up work through longer school days is readily possible as individual student interest is kindled or rewakened.[26]

2. Comprehensive High School: The comprehensive high school, as defined in this study, offers under one administration, secondary education for almost all the high school aged children within the boundaries of a high school district. The instructional programs of these schools are predominantly academic, but include some business, vocational, and physical education courses. Originally these schools were developed to serve the educational needs of all educable high school aged youngsters in a given town or neighborhood. This concept of education has changed with the identification of the unique needs of certain groups of high school aged youngsters. These include, among others, students participating in Regional Occupation Programs, and students participating in advanced placement programs in community colleges or universities.

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[26]Voss, op. cit., p. 1.

3. Creativity: James A. Smith states that creativity is sinking down taps into our past experiences and putting these selected experiences together into new patterns, new ideas or new products.[27] This definition is simple but descriptive enough to give the term a frame of reference sufficient for the qualitative description of creativity used in this study.

   Since the Torrance Tests of Creativity[28] were used in this study, it seemed prudent to include his definition as the one used in the evaluation of test data. He defines creativity as a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results.[29]

4. High Creativity: High creativity is defined as a student's total figural score (average of the fluency, flexibility, originality, and elaboration scores) which is at least one standard deviation above the mean on a normal distribution curve. (This definition is only applied to this study.)

5. Figural Fluency: This score is useful primarily in helping the user understand the other figural scores. The impulsive thinker, the banal thinker, and even the nonthinker can achieve rather easily high scores, even maximum scores within the time limits. Such persons, however, almost always have low Flexibility, Originality, and Elaboration scores. More meaning may perhaps be attached to low than to high scores. Usually a low score results when the test taker does a great deal of elaborating.[30]

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[27]James A. Smith, Setting Conditions for Creative Teaching in the Elementary School (Boston: Allyn and Bacon, 1966), p. 4.

[28]E. Paul Torrance, Torrance Tests of Creative Thinking--Figural B (Princeton: Personnel Press, 1966).

[29]Ibid.

[30]Ibid., p. 74.

6. Figural Flexibility: The interpretation of the Figural Flexibility score is basically the same as for Verbal Flexibility, except that we are concerned with figural rather than verbal modes of thinking. A person might be quite flexible in viewing, manipulating, and otherwise using figural elements and at the same time be quite restrictive in shifting his approach in dealing with words. Figural Flexibility is most clearly manifested in the third test activity of the battery. It is in this activity that the subject must return to the same stimulus and each time perceive it in a different way.[31]

7. Figural Originality: A high score requires an ability to delay gratification or reduction of tension. Anchors to interpretation can be derived by looking at the Originality score in a relation to Fluency and Elaboration scores. A person may produce a small number of responses, none or few of which may be original.[32]

8. Figural Elaboration: This score reflects the subject's ability to develop, embellish, embroider, carry out, or otherwise elaborate ideas. Some minimum ability to do this kind of thing represented by this score seems to be necessary for satisfactory adjustment. Delinquents and school dropouts seem to be characterized by low Figural Elaboration scores although they may have high Figural Flexibility and Originality scores.[33]

9. Ex Post Facto Research: That research in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. He then studies the independent variables in retrospect for their possible relations to and effects on, the dependent variable or variables.[34]

10. High I.Q. Scores: Intellectual capacity reflected by a derived Intelligence Quotient score on the Lorge-Thorndike Intelligence Test which is 111 and greater.

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[31] Ibid.

[32] Ibid.

[33] Ibid., p. 75.

[34] Kerlinger, op. cit., p. 360.

11. Medium I.Q. Score: Intellectual capacity reflected by derived Intelligence Quotient scores on the Lorge-Thorndike Intelligence Test which is greater than 90, and less than 111.

12. Low I.Q. Score: Intellectual capacity reflected by a derived Intelligence Quotient score on the Lorge-Thorndike Intelligence Test which is less than 90.

13. Anti-Social or Rebel-Like Student Behavior: Anti-social or rebel-like student behavior is defined in this study as student behavior reflected in one or several of the following observable personality traits: chronic truancy; insubordination and belligerancy; the open use of drugs on campus; pregnancy resulting from a loosely structured home environment; loud and abusive language in the classroom or school; disregard for a structured class schedule or district course of study; students who are chronically tardy and who wander in the school halls and the school campus.

14. Divergent Youth: By divergent youth is meant those who have characteristics of personality which are at the extremes of a normal distribution curve. Individual continuation students might have a number of divergent characteristics. Example: ability, social skills, motivation, appearance, reading achievement, etc.[35]

VII. RESEARCH HYPOTHESES

The statement of the problem related earlier in this chapter is now restated in the form of the research hypotheses tested in this study. The hypotheses listed below are restated in Chapter IV in the null form.

H_1. There will be a difference in creativity between eleventh and twelfth grade continuation high school students who rank high in intelligence, and eleventh and twelfth grade

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[35]Ehlers, op. cit., p. 1.

comprehensive high school students who rank high in intelligence.

H_2. There will be a difference in creativity between eleventh and twelfth grade continuation high school students who rank medium in intelligence, and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_3. There will be a difference in creativity between eleventh and twelfth grade continuation high school students who rank low in intelligence, and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

VIII. SUMMARY

This chapter includes an introductive statement to the dissertation, states the problem, specifies the significance of the study, outlines the assumptions and limitations of the research, and defines those terms deemed important to the hypotheses developed.

Four additional chapters are included in the study. Chapter II reviews the literature related to this study. This chapter includes a discussion of the essence and function of the continuation high school, and relates to research and the opinions of experts in the field of creativity.

Chapter II describes the design and describes the selection of the samples, selection and administration of the instruments, description of the instruments, the experimental treatment, the experimental design, and the statistical procedures. Chapter V contains the conclusions based upon the investigation and recommendations for further study.

CHAPTER II

REVIEW OF THE LITERATURE RELATED TO THIS STUDY

The literature reviewed in this study was divided into three specific areas: (1) the essence and function of the continuation high school, (2) opinions of experts in the field of creativity concerning the characteristics and creative behavior of rebel-like or divergent youth, and (3) the research in the field of creativity which deals specifically with characteristics and creative behavior of rebel-like or divergent youth.

Because of the recent origin of continuation high schools, and because they are a unique segment of the public school programs of the State of California, a brief discussion of the essence and function of these schools will be included in the review of the literature.

There is a dearth of research in areas concerning the creative behavior of divergent youth who have characteristics of personality which are at the extremes of a normal distribution curve. On the other hand, the number of research studies which relate to the creative behavior of youth who have characteristics of personality which are within the median range of a normal distribution curve are numerous and readily available. This review of the literature will be mainly concerned with opinions and research related to the creative behavior of divergent youth with extremes in personality traits.

I. THE ESSENCE AND FUNCTION OF THE CONTINUATION SCHOOL

Continuation education was first established in the State of California in 1919. The purpose of continuation education at that time was to allow for the education of youth between the ages of sixteen and eighteen who could not obtain a high school diploma without part-time or full-time employment as a means of support.[1]

Continuation education is considered by many educators to be one of the oldest forms of special education in the State of California. This form of education was the first mandated alternate to regular full-time attendance in the comprehensive high school.[2] Historically, the mechanism for the support, maintenance, and organization of these schools was left to each individual district.

Legislative action since 1919 and up to 1965 has allowed for the integration of continuation high schools into the secondary school programs of all the school districts in the state. John R. Eales has reported that the number of school districts implementing continuation schools has increased from 30 in 1961-62 to 237 in 1971-72. Within these same comparative years, he reports that student enrollment in continuation

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[1]John W. Voss, Handbook on Continuation Education in California (Sacramento: California State Department of Education, 1968), p. 3.

[2]Robert E. Ehlers, Resume' of Continuation Education (Sacramento: California State Department of Education, December, 1970), p. 1.

schools has increased from 8,250 students in 1961-62 to 61,868 in 1971-72.[3]

In 1965, new legislation ordered that no student be suspended from school for more than ten days in a school year unless he is first transferred to a continuation class or a continuation school.[4] Prior to the enactment of legislation in 1965, student suspensions from comprehensive high schools could be extended for the duration of a semester. There were no alternative programs available to suspended students in many of the districts in the State of California before the enactment of Assembly Bill 2240 in 1965.[5] Suspended students remained in the custody of their parents the duration of their suspension period.

Assembly Bill 2240 mandated that each district establish and maintain a continuation education program or be subject to financial penalty. With the enactment of this Bill, predelinquent youth were provided with an alternative education designed to suit their divergent needs. Donald R. Reed aptly

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[3]John R. Eales, "Clip Sheet on Continuation Education" (Sacramento, California: California State Department of Education, 1972), p. 6. (Mimeographed.)

[4]Voss, op. cit., p. 3.

[5]James Regan, "An Evaluative Study of a Continuation High School" (Eugene, Oregon: Oregon School Study Council, College of Education, University of Oregon, 1972), p. 5. (Bulletin.)

expresses the philosophy of continuation education in the statement listed below:

> ...The philosophy can perhaps be expressed simply as an acceptance of any student at his own level--regardless of his problems or his degree of learning--and a diligent effort to help him find a satisfactory role in life and become a productive citizen within the framework of his own ability and personality.[6]

Ehlers states this same philosophy but in different words. He adds: "Take the student where he is and help him develop into a contributing citizen at the highest level possible within the limits of his ability and his personality."[7]

Moss Fuellenbach characterizes continuation high school students as having a generally poor self-image, lack appreciation for education and future, non-conformists, pre-delinquent or delinquent, socially or psychologically immature, non-academic, occupationally oriented, underachiever, pregnant, married, students with children, and hardship cases. He points out that continuation education is not meant for students that normally qualify for Special Education Programs that exist in the comprehensive schools such as E.M.R., Physically Handicapped, etc.[8]

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[6]Donald R. Reed, "The Nature and Function of Continuation Education," Journal of Secondary Education, XLIV (November, 1969), p. 293.

[7]Robert E. Ehlers, Operation Reach: Orientation to Continuation Education (Riverside, California: Offices of Imperial and Riverside Counties, Superintendents of Schools, State of California, 1967), p. 1.

[8]Moss Fuellenbach, "Continuation Education: Fremont Unified School District," (Fremont, California: Williamson High School, 1968), p. 1. (Mimeographed.)

Ehlers cites five characteristics which describe the essence of continuation schools: (1) The continuation school must be small, have small individual classes with a small teacher-pupil ratio; (2) There should be a minimum number of rules and regulations relating to student behavior; (3) Instruction should be individualized allowing each student to work within his own ability level and at a rate which is most comfortable for him; (4) The continuation school functions as a counseling oriented institution as opposed to the subject matter orientation of the typical comprehensive high school. It must, he points out, be able to provide a highly academic program for selected students; (5) Students attending continuation schools should spend a minimum of 180 minutes in the classroom per day with no physical education classes required.[9]

Several authors have indicated that continuation education programs have developed a negative image as educational institutions. Elder points out that many continuation schools have been assigned a subordinate status in many districts throughout the state. He adds that their poor image has resulted from philosophical discrepancies related to the inability of educators to conceptualize accurately the function and essence of continuation high school programs.[10]

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[9]Ehlers, op. cit., pp. 1-9.

[10]Glen H. Elder, Jr., "Continuation Schools and Educational Pluralism," Journal of Secondary Education, XLIV (November, 1969), pp. 325-326.

Program Description: American Legion High School

American Legion High School continuation students were selected as the quasi-experimental group used in this study. The school was first implemented by the Sacramento City Unified School District in September of 1966. The school now serves five large senior high schools of approximately two-thousand pupils each, grades 10-12. The Sacramento City Unified School District is serviced by two continuation high schools, American Legion High School and Lincoln High School. The Lincoln High School services those students with fewer than ninety credits accumulated toward graduation, while American Legion High School services those with more than ninety credits. Student enrollment at American Legion High School is maintained at approximately 320 pupils, while the enrollment at Lincoln High School is maintained at 180 pupils. Both continuation schools have similar instructional programs.

American Legion High School was initially housed with two other programs, the American Legion Adult School, and the American Legion Pre-school. The adult school was moved from the American Legion School site in July of 1972. The pre-school has remained but is only accommodated by one large room on the first floor of the building and is physically removed from the continuation high school program.

The original concept of adults serving as an inspiration to continuation students in a combined continuation-adult

school program was not sufficiently successful to warrant its continuance.[11] Since the adult school students were housed in the same building as the continuation students, administrative efforts to keep adult school students from walking into and disrupting classroom sessions were extremely difficult.

Students entering American Legion High School may elect to attend either a morning or an afternoon session of 180 minutes each. The morning session extends from 8:45 A.M. to 11:45 A.M.; whereas the afternoon session extends from 12:05 P.M. to 3:05 P.M. Both the morning and afternoon sessions are divided into four class periods of approximately forty-five minutes each.[12]

Students attending the school must complete seventy-five days of successful work in any one class before receiving five semester units of credit for the course. Success experiences are emphasized, with no student being allowed to progress to the next lesson until he has successfully completed the previous lesson.

The instructional program of the school is as varied as that of the five comprehensive high schools of the district, and includes a few which are unique to continuation schools or to the American Legion High School Campus. The school contains a cyesis or pregnant girl program and a nursery or infant-toddler program for the children of young

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11 Ehlers, op. cit., p. 6.

12 Russell L. Chimento, "American Legion High School Student Handbook" (Sacramento, California: Sacramento City Unified School District, 1972), p. 14. (Mimeographed.)

mothers attending the school. A program unique to the school is the American Legion Open School which is housed in classrooms of the first English Luthern Church located just a hundred feet from the campus proper.[13]

The Cyesis (Greek for pregnant) program at American Legion High School is for pregnant girls, ages 14-18. The legislative enactment of Education Code 6809 allowed for the provision of state funds for the support of the program.[14] Girls enrolled in the program are required to take three of five courses. These include Philosophy of Womanhood, Physiology, and Child Development; two elective classes are also required for a total of five classes per day. Students participating in the program take part in many small group and individualized activities which are structured to help them during and after their pregnancy.[15]

All courses offered may count towards the student's graduation. The course numbers are the same as those offered at the regular high schools. There is nothing in the course name or course title which indicates that they are special courses for pregnant girls.[16]

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[13] Ibid., pp. 25-26.

[14] Dale F. Ely, Selected California Laws Relating to Minors (Los Angeles: College Book Store, 1968), p. 65.

[15] Chimento, loc. cit.

[16] Ibid.

A nurse, four full-time teachers, and a part-time psychologist are available to help the ninety-five students enrolled in the program. These school personnel help pregnant students with their course work and any health problems that the student might encounter during her stay at the school.

All pregnant minors between the ages of 14 and 18 must be referred to American Legion High School before they reach their fourth month of pregnancy. Students may elect to stay home following conception if they so choose. Pregnant minors thirteen years of age and younger may be recommended for home teaching.[17]

An infant-toddler nursery has been established to provide care for the infants of the girls at American Legion High School. This nursery offers opportunities for observing and working with small children from ages three months to three years. A full-time counselor, social workers, and a school psychologist are available to mothers as the need arises. There were thirty infants enrolled in the program in the Fall of 1972.[18]

The Open School is a program unique to American Legion High School. This program, though physically removed from the American Legion High School site, is a part of the continuation program. Student referrals to the Open School are

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[17] F. Melvyn Lawson, Administrative Handbook: Sacramento City Unified School District (Sacramento: Sacramento City Unified School District, 1968), p. 37.

[18] Chimento, loc. cit.

made by the principal of American Legion High School. A screening committee composed of the principal, the Teacher Corps team leader, a counselor, and a teacher make the final determination as to whether a student would benefit from this program. Students referred to the Open School are those continuation students with extreme behavioral problems or those who are chronic truants.

The Teacher Corps project is supported by federal funds, and sponsored by the California State University, Sacramento. The school is staffed by a team leader and five certificated teachers doing advanced work toward a master's degree in a specialized area of their choice. These teachers are not employed by the district, but receive a federal stipend for living expenses and all tuition expenses while attending California State University, Sacramento. Each of the teachers assigned to the Open School is assigned five pupils each. The school maintains an enrollment of twenty-five students.[19]

It is the goal of the Open School to provide a supportive educational service in conjunction with the Sacramento City Schools, County Probation, The California Youth Authority and the Community. The greatest student concern is to increase his success experiences as much as possible. Within the scope of a student-centered curriculum, a learning experience developed to raise levels in reading, mathematics, social science, and science has been provided.

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[19] Chimento, op. cit., p. 25.

Beyond subject improvement, it is believed that the teacher-student ratio provided, approximately 1:5, will increase the personal attention that the teacher gives the individual student and aid greatly in resolving personal conflicts and improve the student's self-image.

Though the Open School has the same course offerings as American Legion High School, it has a flexible schedule which includes a first, four-course, session that meets from 9:00 A.M. to 12:00 P.M. and a second session meeting from 1:00 P.M. to 4:00 P.M. Students with special scheduling problems may take courses beyond the regular scheduled times. If the need arises, students will be provided educational services up to 10:00 P.M.[20]

As mentioned previously, American Legion High School provides continuation school services to five large, (grades 10-12) senior high schools located within the boundaries of the Sacramento City Unified School District. Student referrals to the district's continuation high schools are made by either the district hearing officer, a high school principal, or a school counselor.

How successful the district's continuation school program is remains an unanswered question. The use of school reports, field observations, and student and staff evaluative comments have been the yardsticks for measuring the school's successes and failures. One yardstick for the determination of the

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[20]Chimento, op. cit., p. 26.

success of the program is the increasing number of graduates receiving diplomas from the school. In 1967, the first graduating class, there were seventy-five graduates. This number has increased to one-hundred and ten students in 1971.

II. OPINIONS OF EXPERTS IN THE FIELD OF CREATIVITY CONCERNING THE CHARACTERISTICS AND CREATIVE BEHAVIOR OF REBEL-LIKE OR DIVERGENT YOUTH

The opinions of experts expressed in this review of the literature were based upon information obtained from the expert's direct involvement in, and knowledge of, careful and sustained investigations relating to the divergent behavior of creative individuals.

Most of the opinions of experts in the field of creativity do not refer to the divergent behavior of continuation students specifically. Continuation high schools were established as an integral part of the secondary school programs of the State of California in 1965.[21] The recent establishment of continuation high schools has not allowed investigators sufficient time to thoroughly study them. Many opinions of experts do, however, refer to youngsters with deviate personality traits which are characteristics of many continuation high school students.

The continuation schools of the State of California provide an ideal laboratory for the study of divergent personality traits or the rebel-like behavior of young adults. Ehlers

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[21] Voss, loc, cit.

characterizes many continuation students as those youngsters referred to continuation schools from comprehensive schools because of serious anti-social behavior, drug use, excessive hostility, serious non-conforming behavior, runaways, and students displaying erratic behavior because of their home problems.[22]

Torrance refers to the behavior problems of many creative youngsters. His thoughts concerning this issue are as follows:

> ...In most classrooms, highly creative children are handicapped by their creativeness and are regarded as behavior problems. Frequently, such children are diagnosed as having learning disabilities. For these reasons, I have suggested that highly creative children be designated a new category of handicapped children.[23]

Torrance in the same article, Creative Kids, discusses the abuse and misunderstanding that many creative youngsters experience because of their precocious nature. Many of these youngsters, he continues, are relegated to a circle of "hopeless" children in the rear of the room in order that they might not disturb the normal classroom routine. He continues with his discussion by stating that the creative youngster is often seated next to the teacher where she might keep an eye on him and thereby exert a more stringent control over his nonconforming and precocious nature.[24]

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[22]Ehlers, op. cit., p. 40.

[23]E. Paul Torrance, "Creative Kids," Today's Education (January, 1972), p. 25.

[24]Ibid., pp. 25-28.

Torrance, in referring to the beliefs of other experts on creative behavior, agrees that the future criminal is often a child who has had little opportunity to use his creative abilities in socially accepted ways and that these youngsters may use their creative potential to plan and carry out an illegal act.[25]

Getzels and Jackson point out that the socialization process of life often destroys the creative development of the child. Commenting further, they state that creative thought is stifled by authoritarian teaching techniques and that the child who succumbs to socializing conforming pressures learns to renounce, suppress, or redirect drives and impulses which deviate from the social norm.[26] James A. Smith adds that "the socialization process may give us the masses of non-entities who are neither individuals nor self-realized citizens. Rigid thought processes resulting from socialization pressures may be warning signals that we are over-organizing children and over-conforming them."[27]

Barbars H. Kemp, in discussing The Youth We Haven't Served, characterizes continuation students in the following manner:

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[25] Ibid., p. 28.

[26] Jacob W. Getzels and Philip W. Jackson, Creativity and Intelligence: Explorations with Gifted Students (New York: John Wiley & Sons, Inc., 1962), p. 117.

[27] James A. Smith, Setting Conditions for Creative Teaching in the Elementary School (Boston: Allyn and Bacon, 1966), p. 68.

> ...They are creative, motivated, and proficient in areas where their interests lie. If they feel a thing has little or no relevance to their needs, as they perceive them, they will consider it useless or a waste of time; this is particularly true of abstract ideas, plans for the future, or subject matter which they have never understood in terms of the purpose in their overall education.[28]

Donald W. Mackinnon, commenting on What Makes a Person Creative, relates some of the characteristics of the creative person to those of continuation students described by Kemp in the above statement. He states that "the creative person is relatively less interested in small detail, more concerned with meaning and implication. He is relatively uninterested in policing his own impulses and images or those of others."[29]

The creative child is many times typified as an individual who creates tensions or disruptions within classroom groups. Smith describes the creative person as one who often causes tensions within a group because he presents a threat to the plans of the group. This type of youngster, he continues, strives for autonomy and solutions, he seeks to find ways of by-passing blocks to creativity developed by others and to subdue restrictions and organizational controls.[30]

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[28]Barbara H. Kemp, The Youth We Haven't Served (Washington: United States Department of Health, Education, and Welfare, 1966), p. 74.

[29]Donald W. Mackinnon, "What Makes a Person Creative," Saturday Review (February, 1962), pp. 15-17.

[30]Smith, op. cit., p. 50.

Ehlers, in describing types of continuation students and their general characteristics, comments on the mental and social conflicts experienced by the continuation high school student. He describes many of them as students with serious anti-social behavior -- drug users, overly hostile students, serious non-conformers, runaways, and students displaying erratic behavior because of home problems.[31] Getzels and Jackson relate creative behavior to conflict as they summarize the Freudian concepts of creative activity in the following statement:

> ...(1) Creativity has its genesis in conflict, and the unconscious forces motivating the creative "solution" are parallel to the unconscious forces motivating the neurotic solution. (2) the psychic function and effect of creative behavior is the discharge of pent-up emotion resulting from conflict until a tolerable level is reached.[32]

Students are many times referred to continuation schools because of insubordination and non-conformity. The highly creative child is many times bored with routine and structured classroom assignments. Smith comments on the problems of the highly creative child in the structured classroom in the statement that follows:

> ...Studies of creative children as identified by these tests (tests which measure creativity) show that the creative child is often treated along punitive lines by his teachers. His many questions and answers

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[31]Ehlers, op. cit., p. 40.

[32]Getzels and Jackson, op. cit., pp. 91-92.

> tend to irritate the rigid teacher who often puts him in his place--sometimes before the class--and thereby brings disfavor on the child. This resulting boredom and inability to concentrate may eventually cause such a child to withdraw within himself and a valuable member of society is lost.[33]

Ehlers, in discussing types of continuation students and their general characteristics, indicates that deviation from established academic and social norms from within the school is one of the many reasons for the referral of comprehensive high school students to continuation schools.[34]

Richard S. Crutchfield relates conformity to a loss in self reliance which inhibits a person's ability to sense and grasp basic reality. He continues by discussing how the loss of self reliance undermines the person's creative powers by weakening his trust in the essential validity of his own processes of thought and imagination. Crutchfield postulates that conformity tends to destroy creativity by alienating the creator from a reliance on his own thought processes, and from contact with the basic realities of his own environment. The non-conformist, according to Crutchfield, is able to break free from the powerful constraints and restrictions of habitual or conforming thought and of stereotyped perception.[35]

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[33]Smith, loc. cit.

[34]Ehlers, loc. cit.

[35]Richard S. Crutchfield, "Conformity and Creative Thinking," Contemporary Approaches to Creative Thinking, ed. Howard E. Gruber (New York: Atherton Press, 1964), pp. 120-124.

Glen H. Elder, in discussing The Schooling of Outsiders, describes continuation high school students as non-conformists. Many of these students, he continues, have been unwilling to knuckle under the social pressures exerted by their peers. He states that "labeled as 'outsiders' by both the comprehensive high school staff and pupils, these youth include working students, parolees, pregnant girls, and academic failures."[36]

Clark Moustakas refers to the pitfalls of conformity. He relates how a person in just existing and becoming a part of the social framework of a community can many times lose his identity and his ability to be a free and independent creative thinker. He expands upon this notion in the following:

> ...I believe it is the real feelings, within a vital experience, in an intimate relation to nature or other selves, that constitute the creative encounter. When a person's involvement in a situation is based on appearances, expectations, or the standards of others; when he acts in a conventional manner, or according to prescribed roles and functions, when he is concerned with status and approval; his growth as a creative self is impaired. When the individual is conforming, following, imitating, being like others, he moves increasingly in the direction of self-alienation. Such a person fears issues and controversies. He fears standing out or being different. He does not think through his experience to find value or meaning, does not permit himself to follow his own perceptions to some natural conclusion. He avoids directly facing disputes and becomes anxious in situations which require self-awareness and self-discovery.[37]

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[36]Glen H. Elder, Jr., The Schooling of Outsiders (Berkeley: Bay Area Educational Research Services, 1966), pp. 1-25.

[37]Clark Moustakas, Creativity and Conformity (New York: Van Nostrand Reinhold Company, 1967), p. 34.

Kemp relates to the non-conforming, rebel-like behavior of continuation students as she notes that many of them have, among other divergent traits, the following personality characteristics: "anti-intellectual attitudes; indifference to responsibility; nonpurposeful activity, much of which is disruptive; and a disregard for promptness, school rules, and structured classroom activities."[38]

In his discussion of What Makes a Person Creative, Donald W. Mackinnon points out that the creative person, regardless of the level of his intelligence, and this is especially true of the artistically creative, is characterized by a relative absence of repression and suppression as mechanisms for the control of impulse and imagery. He continues in stating that:

> ...Repression operates against creativity, regardless of how intelligent a person may be, because it makes unavailable to the individual large aspects of his own experience, particularly the life of impulse and experience which gets assimilated to the symbols of aggression and sexuality. On a number of tests of masculinity-femininity, creative men score relatively high on femininity, and this despite the fact that, as a group, they do not present an effeminate appearance or give evidence of increased homosexual interests or experience.[39]

Mackinnon closely identifies many of the characteristics of continuation students with those of highly creative persons

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[38]Kemp, loc. cit.

[39]Donald W. Mackinnon, "What Makes a Person Creative?" Creativity, Theory into Practice, V, No. 4 (October, 1966), pp. 152-156.

when he describes the majority of the creative to be introverted and relatively free of conventional or social restraints. He continues by noting that the creative person's behavior is dictated more by his own set of values and by ethical standards that may not be precisely those of others around him.[40]

Robert E. Botts discusses the Profile of a Continuation High School and makes mention of several reasons for the referral of comprehensive students to this continuation high school. He points out that students are referred to Will J. Reid High School for many of the same reasons they are referred to other continuation high schools. These include unacceptable behavior, excessive suspension, multiple failure, late enrollment, working part-time, married or pregnant, and adjustment problems. Botts notes that the continuation school program is flexible and developed to suit the needs of these deviate students. He continues by discussing the nonparticipatory and nonconforming nature of these students as related to their resistance in taking part in scheduled extracurricular activities.[41]

Barron relates to some of the personality characteristics of continuation high school students as described by Botts. He mentions that the creative child is many times misunderstood by teachers and is often identified as a problem child. He continues his critical discussion by stating that the creative

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[40]Ibid.

[41]Robert E. Botts, "Will J. Reid: Profile of a Continuation High School," Phi Delta Kappan (May, 1972), pp. 574-576.

child sometimes seeks out or brings about a disordered or disharmonious situation or condition in order that he might create a new arrangement or situation which appears to be more superior and acceptable to him.[42]

Elder describes continuation students as being non-conformists and as resisting any socializing pressures exerted by either adults or their peers.[43] Taher Razik while discussing Recent Findings and Developments in Creative Studies, states that "the creative person has a particular view of himself and the universe that may be different from that of others. He is a distinct individual and exhibits what one writer calls 'a constructive non-conformity'."[44]

Ehlers indicates that many comprehensive high school students are referred to continuation high schools because teachers have found that working with them in a regular classroom situation is most difficult, and in some cases almost impossible. These are the ones, he continues, who are described as hostile, withdrawn, delinquent, hyperactive, and immature.[45] Botts notes that even though these students comprise a small percentage of the typical class, they are

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[42]Frank Barron, "Creativity Can Be Cultivated Curriculum Specialists Find," New York State Education, V, No. 5 (April, 1963), pp. 1-35.

[43]Elder, loc. cit.

[44]Taher Razik, "Recent Findings and Developments in Creativity Studies," Creativity Theory into Practice, V, No. 4 (October, 1966), p. 163.

[45]Ehlers, loc. cit.

very obvious to all around them, and take up most of the teacher's attention even though they do the least work.[46]

Razik expands upon Ehlers' notions of the non-conforming continuation high school student.[47] Razik's description is listed in the following statement:

> ...Consideration of some characteristics and attitudes of creative people can help show why the highly creative child is not discovered and rated as favorably as some of the others in schools. Those with high creative abilities are not always satisfactory students. They often resist group work and may want to follow their own interests, sometimes stubbornly. Creative children often do not pay attention in school and seem unwilling to accept what they are told. If, as research suggests, school programs are not providing sufficient opportunities for developing creativity, these characteristics and attitudes of highly creative children would be likely to manifest themselves in ways that seem extremely difficult and unacceptable. The non-constructive aspects of creative talents would be predominant because abilities are not being used in constructive ways. An understanding of the problem behind the behavior is the first step toward helping teachers and counselors redefine some of their ideas about creative children and identify them in classrooms.[48]

There are further indications that non-conforming behavior in the classroom may be one of the chief reasons for the referral of comprehensive high school students to the continuation high school. Elder, for instance, has described many continuation students as being non-conformists, and as stubborn and unwilling to succumb to the socializing pressures

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[46]Botts, loc. cit.

[47]Ehlers, loc. cit.

[48]Razik, op. cit., p. 165.

of their peers and authority figures such as teachers, parents, and policemen.[49] Kemp, on the other hand, has described continuation education students as being creative, motivated, and proficient in areas where their interests lie.[50] Botts contends that many teachers find nonconforming students undesirable because of their disruptive behavior. Many of these students, he adds, are troublesome to teachers because of their inability to adjust to a comprehensive classroom situation.[51]

Torrance has also found indications that teachers, as a general rule, rate highly intelligent students as being more desirable, more ambitious and hardworking, more friendly, and less unruly. He continues discussing misconceptions of teachers concerning creative children by saying that because of the limited concept of giftedness and emphasis on academic ability, it appears quite natural that those students who answer questions correctly, produce conforming assigned work, and are able to produce evidence that they understand what the textbook says, are considered to be the most desirable and superior students. The creative child, Torrance contends, does not usually fit this model.[52]

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[49]Elder, loc. cit.

[50]Kemp, loc. cit.

[51]Botts, loc. cit.

[52]E. Paul Torrance, "Are There Tops in Our Cages?," American Vocational Journal (March, 1972), pp. 20-22, 38.

Ehlers typifies continuation high school students as being hostile towards authority figures, and often unwilling to cooperate in a conforming way. These are the students, he contends, who are assigned to the continuation schools because they are considered to be less desirable as students by the comprehensive high school teachers and because they are just too hard to handle.[53]

Razik contends, however, that disregard for authority figures may be an indication of high creativity. He expands upon this notion when he contends that creative people usually are not impressed by what other people think, and the words of authoity often frustrates them. He continues by discussing the non-conforming nature of the creative person when he indicates that creative adults, even when under strong pressure to conform, continue to remain relatively independent. He also contends that the strong trait of independence on the part of the highly creative youngster may many times cause him to lose interest in school and possibly drop out. Razik reaffirms this in the following statement. "Here again, in the school situation, the creative child may be 'squelched' or influenced by his peers, perhaps not to conform entirely but to lose interest in school and friends."[54]

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53 Ehlers, loc. cit.

54 Razik, op. cit., p. 165.

James Regan, in describing the "average" group profile of continuation high school students, states that "he (continuation school referral) has been a discipline problem in terms of the criteria established by the administration of the regular schools, and this behavior pattern has contributed to his transfer to continuation school."[55] These students, he contends, are generally harder to get along with and are prone to be unpredictable in their behavior in a given situation. Regan continues by indicating that one of the more common types of referrals is the student who repeatedly demonstrates overt aberrational behavior to the point of dismissal from regular school. Frequent emotional outbursts of behavior such as fighting, insubordination, lack of cooperation, disrespect, insolence, and a total disregard of authority, almost invariably results in transfer to continuation school.[56]

Regan discusses the individual profile of students referred to continuation school for lack of motivation and indicates that these students exhibit a behavior in school which generally identifies them as being withdrawn. These students, he contends, have been the subject of repeated conferences with the principal, vice-principal or counselor.[57]

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55 James Regan, Bulletin: An Evaluative Study of a Continuation High School (Eugene: University of Oregon, 1972), p. 18.

56 Ibid., p. 23.

57 Ibid., p. 20.

Getzels and Jackson are of the opinion that many students who appear to be withdrawn are thought of as being odd or different by either their peers or their teachers. They add that many parents and teachers are of the opinion that group involvement and a gregarious personality are synonymous with characteristics of a well adjusted child. They point out that group involvement or togetherness activities are not required for many creative and inventive acts. They continue by stating that it may not be advisable to insist upon group involvement as the most desirable type of activity for all youngsters. It is their feeling that gregariousness should not be overemphasized in the one direction, so that almost any desire for aloneness is viewed as at least incipient morbidity. They contend that to be withdrawn, or to want to be alone should not be misconstrued with opporbium. To want to be alone or to work in isolation are not unhealthy character traits within themselves. They, in fact, urge or encourage able students to work on their own interests, even if it means being withdrawn and working alone.[58]

Ehlers points out that the noncompetitive nature of many entering continuation students is due to poor motivation. These students, he contends, have experienced failure so often, that they find it difficult to attempt anything new or challenging. He continues by stating that continuation

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[58]Getzels and Jackson, op. cit., p. 126.

students low in motivation consistently try to find reasons for not doing assigned work and question the relevancy and need for required courses and assignments. Group discussions, he adds, are often unsuccessful when applied to continuation high school students.[59] In describing the difficulty that many teachers have experienced in attempting group discussions with continuation high school students, Ehlers makes the following points:

> ...Continuation students are typically non-competitive and the variety of assignments going on in a given classroom at a given moment provides security for the continuation student. He is not directly or subtly being compared to the speed and achievement of the fellow next to him. He personally feels that he is accomplishing more because he is working without frustration.[60]

Ehlers continues:

> ...Often teachers new to the continuation program desire to change the typical individualized instructional approach to one of group interaction and are often soon bitterly disappointed. Frequently the teacher who is trying to develop class discussions with continuation students will, if the atmosphere is permissive, find that some students are crude and disrespectful, which results in bedlam.[61]

Torrance contends that the motivation of the deviate youngster is frequently difficult and trying. He states that "by motivation I mean arousing, sustaining, and directing behavior--in this case, productive creative behavior, learning, and achievement toward a worthwhile career and contributions

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[59] Ehlers, op. cit., p. 6.

[60] Ibid.

[61] Ibid.

to society."[62] He adds that it is difficult to determine the potentiality of a child on past indicators of success such as school grades when he has not been motivated through most of his experiential life. He stresses this point by indicating that even in the histories of many of the nations of the world, most prominent men such as Thomas Edison, Albert Einstein, Franklin Roosevelt, Eleanor Roosevelt, and John F. Kennedy there was little indication during their early youth and adolescent years that they had the potential of achieving even a fraction of the status which each attained. He continues by stating that Goertzel and Goertzel (1962) report that 60 per cent of the over 400 eminent people in their study had serious school problems and it is likely that their school records would have indicated lack of promise. Many of these creative people, he notes, were bullied, ignored, or were bored by their fellow students.[63] Torrance summarizes his observations in the following statement:

> ...I feel sure that workers in the Disadvantaged Youth Opportunity Centers now being activated will find that many of their clients will have these characteristics in common with the eminent men and women in the Goertzels' study. Their problem will be to see creative potentialities where they exist and to motivate and guide such youth in the achievement of their potentiality.[64]

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[62] E. Paul Torrance, "Motivating the Creatively Gifted Among Economically and Culturally Disadvantaged Children," The Disadvantaged and Potential Dropout, ed. John Curtis Gowan, (Springfield, Illinois: Charles C. Thomas, 1966), pp. 302-303.

[63] Ibid.

[64] Ibid., p. 303.

In discussing why pupils reject school, Robert D. Strom states that many potential dropouts begin rejecting school before they ever attend. He indicates that the failure of brothers and sisters tend to be a negative influencing factor in their attitude toward school. Many of these students, he contends, have had few success experiences even during their early years in school. Many of them, he adds, consider themselves to be pawns for the success of others when he is daily forced to compete in situations where he has little or no chance to win. The dropout, he continues, is likely to be a loner, rejecting or being rejected by his peers. Strom continues with this notion by indicating that the school dropout is many times resentful and prejudiced toward those different from himself. The dropout's home, he continues, often reflects a cultural pattern or status which is different or incompatible with that of teachers and most of his peers. The negative attitude of the school dropout toward educational institutions due to a failure syndrome and other related reasons, Strom contends, has caused many of these youngsters to be suspicious of any form of academic measuring instrument. Special pains, he maintains, must be taken in order to properly orient these students to tests, and school work in general, if valid and meaningful data is to be obtained in the evaluation of these students. Perhaps, Strom conjectures, we have to reevaluate our curriculum in terms of the potential dropout, and review

our present stance concerning the academic and creative potential of adolescents who have overtly rejected our present educational institutions. These youngsters, he contends, may have abilities which have been untapped and which might flourish if provided an instructional curriculum and learning environment which is more in keeping with their expressed needs.[65]

Ehlers has characterized many continuation students as non-conformists and negative in their attitude toward any form of highly structured educational experience.[66] George D. Stoddard states that "conformity rules, not because people crave it but because they fear deviation."[67] Botts contends that this fear of divergency may be one of the reasons why many comprehensive high school students resist being sent to continuation high schools.[68] Harold H. Anderson expands upon Stoddard's statement as he notes that Western cultures have been brainwashing their children into conforming modes of behavior for generations. They have, he adds, stifled the

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[65]Robert D. Strom, "A Realistic Curriculum for the Predictive Dropout," The Disadvantaged and Potential Dropout, ed. John Curtis Gowan, (Springfield, Illinois: Charles C. Thomas, 1966), pp. 293-309.

[66]Ehlers, op. cit., p. 40.

[67]George D. Stoddard, "Creativity in Education", Creativity and its Cultivation, ed. Harold H. Anderson, (New York: Harper and Row, 1959), p. 181.

[68]Robert E. Botts, "An Interview With Two Continuation High School Students and Their Principal," Continuation Education: A Report of the 1968 Summer Workshops (Sacramento: Continuation Education Association, 1968), pp. 1-13.

creative urges of children in small bits and pieces at home and in the schools. This polite form of brainwashing, he contends, is not sudden, or dramatic or easily detected. He indicates that in cases where the child has not revolted, the spirit becomes heavy, the motivation is sluggish, and student activity lacks direction, meaning, or purpose. He continues by stating that when the spirit of discovery diminishes through conforming pressures, the spark of creativity becomes stifled. He adds that it is in the deprivation of the child of spontaneous experiences that children become uncreative, unimaginative, self-conscious, self-protecting conformists.[69]

Don W. Fowler divides continuation high school student referrals into four major groups. These include students with behavioral related problems, academic problems, economic problems, and physical problems. Most of the students attending continuation high schools, he contends, have found the social structure and the instructional programs of the comprehensive high schools to be too structured and too conforming for them to successfully complete their requirements for graduation. Students referred to continuation schools, he adds, found their leaving schools to be rigid and inflexible in terms of the strictness and number of rules which must be observed and obeyed. These students, he points out, also

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[69]Harold H. Anderson, "Creativity as Personality Development," Creativity and its Cultivation, ed. E. Harold Anderson (New York: Harper and Row, 1959), pp. 119-141.

found the curriculum of the comprehensive high school to be too regimented, too impersonal, too narrow in terms of course offerings, and too irrelevant to suit their divergent needs.[70]

John Curtis Gowan supports the concerns of continuation high school students concerning the inflexibility of comprehensive high schools when he relates creative expression to a flexible, unstructured, and non-authoritarian type of work environment. He points out that authoritarian principals, counselors, and teachers tend to repress and subdue much of the creativity that might emerge from students working in such an environment. He adds that a strict authoritarian home atmosphere would also be stifling to the innate desires of many youngsters to expand their horizons to discover and create new and exciting products and concepts. Curtis expands upon these notions in the following statement:

> ...The compartmentalization, stereotyping and anti-intraception of the authoritarian personality prevents creative functioning. Hence the degree to which we have been tarnished with authoritarian practice diminishes our creative potential, and narrows the possible avenues of creative endeavor. Investigations with the California Psychological Inventory, for example, show that flexibility (creativity) and tolerance (lack of authoritarianism) are well correlated. This view of creativity suggests that children can be helped to preserve their creativity by non-authoritarian attitudes on the part of parents and teachers, especially by not having negative evaluations put upon their initial efforts. The importance of the child's being first the recipient of, and later the producer of, sound (rather than pejorative) evaluations is a most important adjunct

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[70]Don W. Fowler, Individualized Instruction in Continuation Education (Fresno, California: Fresno County Office of the Superintendent, 1968), pp. 2-3.

> to his becoming productively creative. For this kind of evaluation is the way in which creative fantasy becomes bonded in useful reality. Like sistole and diastole, they are the complementary components of 'effective surprise'.[71]

William Hill is of the opinion that the public schools have treated deviate or divergent student behavior in a most unacceptable way. He questions the use of suspensions and expulsions as a means of dealing with students having deviate or divergent personality traits. It is better, he points out, to develop programs within the comprehensive schools which might better serve the needs of these divergent youths than it would be to isolate or cast them aside as undesirables or unwanted segments of our society. The schools, he remarks, fail in their public trust of providing an equal educational opportunity to all youth when large segments of our school population, as is the case of students referred to continuation high schools, are relegated to confinement institutions such as Juvenile Hall, and other reform school types of institutions. These institutions, with their strict authoritarian administration, further suppress any deviation from the norm, whether these deviate forms of behavior are desirable or not. Hill expands upon these notions in the statement below as he questions society's connotation of deviate or divergent behavior:

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[71]John Curtis Gowan, "What Makes a Gifted Child Creative?" Creativity: Its Educational Implications, ed. John Curtis Gowan (New York: John Wiley & Sons, Inc., 1967), p. 11.

> ...What is divergent youth, or what the psychologists would like to call, deviate behavior? When we talk about these things, obviously, we have to have a definition as to what is deviant, what is divergent. It is obvious, if you are deviant or divergent, you have to be deviant or divergent in something. The real question isn't what is deviant behavior, but what is the something. We are not too sure about what the something is; least ways we are pretty sure about us but we are not sure about them. We get up tight about kids wearing long hair, using four letter words, and being creative in the bright and odd shaped paintings they paint and the clothes they wear. At the Youth Studies Center where I work, we've got a something or other going on out there, which really, after you have worked there for awhile, does not disturb you. You don't think of people as being Negro, as having long hair, as smoking pot or whatever. They blend into the situation. It is people like me that look a little odd, a little square, a little divergent, a little deviant if you like. And I expect for you and your school the norms have changed. Kids this year have really long hair, both the boys and the girls. If you could go back five years, some of the kids who you think are okay, now you would have been upset about. A girl who has her dress two, three inches above her knee looks a little square, a little dowdy, so you wonder what kind of a repressive mother she has.[72]

Once again, then, William Hall exemplifies how some of the divergent behavior of some students maybe creative, and that the precocious and impatient nature of some creative students may cause teachers to stereotype them as behavior problems. In short, highly creative students are sometimes suspended or expelled from school because they are misunderstood. It seems quite plausible then, that society, through ignorance or indifference, stands the chance of losing some of its most beneficially contributing members.

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72 William Hill, "Divergent Youth: What Can A Special School Do For Them?" Continuation Education: A Report of the 1968 Summer Workshops, ed. Robert E. Botts (Sacramento: Continuation Education Association, 1968), p. 41.

Summary and Conclusions from Reviewed Opinions of Experts

In summary, creative behavior, in the opinions of many experts in the area of creativity, seems to be influenced by the following settings: 1) the loose family structure of the creative child, since early childhood, has allowed them great autonomy and freedom for exploration and decision making; 2) many creative children come from homes where there is not a great deal of emphasis upon conformity to social norms; 3) creative children, even when under strong pressures to conform, tend to remain relatively independent; 4) creative children have often been described as rebel-like youngsters who are relatively free of conventional or social restraints, and as having their own set of values and ethical standards.

Authorities in the field of continuation education have described continuation students as hostile, disruptive, non-conforming, anti-social, insubordinate, and rebel-like in their behavior. These authorities have also indicated that many continuation high school students come from homes where there has been a loose family structure with little parental supervision. Expert opinions in the area of continuation education also suggest that many continuation high school students come from homes in which they have been allowed a high degree of autonomy and freedom for exploration and decision making.

In reviewing the opinions of experts in the fields of creativity and continuation education, there seems to be sufficient evidence to indicate that there might indeed be a relationship between the personality traits ascribed to some continuation students and those of creative individuals.

Expert opinions seem to indicate that the same settings of family structure and personality traits influence, in a positive direction, the creative behavior of both the continuation high school student and the creative individual. These same opinions suggest that comprehensive students are more conforming, more apt to do as they are told, and, early in life, are more stifled in their desires to explore and be creative.

In conclusion, this review of the literature seems to indicate that there is sufficient evidence to support the hypothesis that rebel-like or divergent continuation high school students of equal intelligence are more creative than their comprehensive high school intellectual counterparts.

III. RESEARCH IN THE FIELD OF CREATIVITY WHICH DEALS SPECIFICALLY WITH CHARACTERISTICS AND CREATIVE BEHAVIOR OF REBEL-LIKE OR DIVERGENT YOUTH

There is much literature relating to research in the area of creative behavior. Research dealing with the creative behavior of rebel-like or divergent youth, as described in this study, is quite scarce. This lack of research in the area

of creative behavior of rebel-like or divergent youth may be due to two factors: the development of tests for the evaluation of creative behavior is relatively recent, and has drawn relatively limited attention; and most of the research in the area of creative behavior has been limited to educational institutions which have not been specifically developed for the enrollment of rebel-like or divergent youth.[73]

Particularly relevant to the present investigation in its referral to the rebel-like behavior of continuation high school students is a recent study by Robert R. Argo. Focusing on the divergent personality traits of continuation high school students, this investigator used a paper and pencil personality test, the FIRO-B, to study the interpersonal relations of these students. In making a comparison of comprehensive and continuation high school students' performance on the FIRO-B, he found that continuation high school students had a higher index of rebel-like behavior than did the comprehensive high school students studied.[74]

Argo's investigation indicates that continuation high school students scored significantly lower in areas of inclusion, affection, and control. He indicates that the greatest extremes in scores on the FIRO-B test were in the

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[73]E. Paul Torrance, Bibliography: Torrance Tests of Creative Thinking (Athens, Georgia: Georgia Studies of Creative Behavior, June, 1971), pp. 5-41.

[74]Robert R. Argo, "A Comparison of Comprehensive and Continuation High School Students' Performance on the FIRO-B" (unpublished Master's project, California State University, Sacramento, California, 1970), p. 25.

areas of expressed inclusion and wanted inclusion for the comprehensive and continuation high school samples studied. He points out that his data indicates that comprehensive high school students have a greater need for group approval than do continuation high school students.[75]

While studying the effects of need for approval and general anxiety on divergent thinking scores, Neil D. Rosenblum comments on the creative person's negative need for group approval in the statement below:

> ...The highly creative individual has been described as confident in his own ability, likely to resist external pressure and criticism, stimulus-free and likely to disagree with conventional standards of success. The writers regard divergent thinking as a relatively stable composite of complex abilities which are importantly related to, but not equivalent to, creative thinking (cf., Guilford, 1967). It seemed appropriate, therefore, to postulate a negative relationship between need for approval and those aspects of creative ability measured by divergent thinking tests. Ss high on Marlowe and Crowne's Social Desirability Scale (1960) would be expected to score lower on such measures than persons low on the social desirability measure.[76]

Eales reports that continuation schools in the State of California enroll slightly more minority students than do the comprehensive high schools of the state. He points out that 55 per cent of the continuation schools in the state enrolled between one and three per cent more minority students than did the comprehensive schools during the 1971-72 school year. He adds that white students constituted 68 per cent of the total

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[75] Ibid.

[76] Neil D. Rosenblum, "The Effects of Need for Approval and General Anxiety on Divergent Thinking Scores" (paper presented to American Education Research Association, Minnesota, March 2, 1970).

enrollment while students of Spanish surname made up 18 per cent, and 11 per cent of the enrollment was black.[77]

John N. Flanders investigated examples of innovative programs for disadvantaged and minority groups of the Upper Cumberland Project in Tennessee. Programs investigated included a demonstration program in guidance and counseling and one in cultural arts. His study indicates that there was little or no significant difference in creative test scores between the minority groups tested and a control of white students tested. He points out, however, that after introduction to the demonstration program in guidance and counseling and the one in cultural arts, there was a significant improvement in the mean test score for the group participating in the project as compared to the mean test score of the control group.[78]

Selection procedures of comprehensive high schools for the referral of students to continuation high schools throughout the State of California are as varied as the number of schools. Reasons for the selection of students referred to continuation schools are, however, quite similar. Ehlers lists most of the consensual reasons given by comprehensive high school administrators for the referral of students to continuation high schools. Nonconformity, and rebel-like or deviate behavior

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[77]Eales, op. cit., p. 5.

[78]John N. Flanders, "Guidance and The Cultural Arts, School Enrichment Programs, A Model for America" (Project, Upper Cumberland, Livingston, Tennessee, Technical University, Cookeville, Office of Education, [D.H.E.W.], Washington, D.C., 1969), pp. 32-36.

were mentioned more often than other reasons listed in his compendium.[79]

Nichols and Davis compared National Merit Scholarship semifinalists with better than average scores on tests of creativity with an unselected sample of undergraduate students on personality characteristics. The investigators discovered the Merit Scholars to be more intelligent, dominant, forceful, idealistic, rebellious, moody, lazy, witty, and cultured. The Merit Scholars identified themselves as being less interested in the social and athletic dimension.[80]

The dislike for athletics and physical education is voiced by continuation students in an interview with continuation high school students and their principal, Robert E. Botts. Botts points out that the physical education requirement for graduation from California public comprehensive high schools may be the cause of some students voluntarily seeking entrance into continuation schools. These students, he adds, may not like to take showers, or care to conform to the regimentation required of students participating in most physical education programs.[81]

James Regan, in making an evaluative study of continuation high schools, identified several characteristics of the

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[79]Ehlers, op. cit., p. 40.

[80]James J. Gallagher, "Research Summary on the Gifted Child Education" (Springfield, Illinois: State Office of the Superintendent of Public Instruction, 1966), p. 36.

[81]Botts, loc. cit.

typical dropout or potential continuation high school referral. His findings indicate a relationship of personality traits which might possibly be common to both the highly creative person and the continuation high school referral. He points out that these students reject school, they are often discipline problems in the school, and they are generally lonely individuals with some emotional problems.[82]

The commonality of these traits discussed by Regan above have been identified by M. I. Stein in the creative individual. Stein enumerated the characteristics of creative individuals as found in studies of the creative adult. He points out that the creative person has some of the following characteristics:

> ...The creative person is less repressed, less inhibited, less formal, less conventional, Bohemianly unconcerned, radical, low authoritarian values. Little interest in interpersonal relationships, do not want much social interaction, introverted, low on social values, reserved.[83]

He continues:

> ...Other characteristics of the creative person include a tendancy toward emotional instability. He is emotionally unstable, but capable of using his emotional instability effectively; not well adjusted by psychological definition but adjusted in the broader sense of being useful in work.[84]

Don Ferguson took a poll of fifty continuation high school counselors to determine which four adjectives they

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[82] Regan, op. cit., p. 2.

[83] Gallagher, op. cit., p. 46.

[84] Ibid.

felt best described continuation high school students. The four adjectives most mentioned by the counselors included the following:

> ...They are hostile; poorly motivated; rebellious, or rebels; they are nonconformists.[85]

He continues:

> ...These students are rebels. I think this is true. These are students that for various psychological reasons have chosen to rebel rather than to conform in the regular public school. The rebel-like character of continuation high school students is reflected in their hostility toward authority figures. No doubt about it, these are very hostile students. They are people who have been rejected from the normal school activities and are going to a type of school they envision as a second string activity.[86]

Getzels and Jackson related nonconformity, teacher preference, and other traits to "high IQ", and "high creativity". The research project sample was obtained from the University of Chicago Laboratory School. All of the students from sixth grade through the senior year in high school were administered a broad series of measures on intelligence, emotional adjustment, morality, and creativity. The selection of samples resulted in 28 youngsters in the "high IQ" group and 24 in the "high creativity" group, roughly equally distributed by sex. The two groups were then compared on all of the other measures that were collected. Descriptions of some of their results are listed in the following paragraphs.[87]

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[85]Don Ferguson, "Self-Discipline and Self-Understanding," Robert E. Botts (Ed.), Continuation Education: A Report of the 1968 Summer Workshops (Sacramento; California Continuation Education Association, 1968), p. 21.

[86]Ibid.

[87]Getzels and Jackson, op. cit., pp. 1-71.

Some of the results arrived at by Getzels and Jackson indicated, for instance, that teachers showed an apparent preference for the "high IQ" child over the average of the total school population. The rating for the "high creativity" students was not significantly different from the total school population. In addition to this, the "high IQ" group appeared to be composed of social conformists while the "high creativity" group was mostly asocial and not influenced by common cultural values. They also found a close relationship in the "high IQ" group between self-ideal and qualities that they believe the teachers prefer. There was a limited relationship between teacher-approved values and self-values in the "high creativity" group.[88]

James C. Bennett, in discussing the Educationally Unappreciated Youth, relates to studies which indicate that the dropout and the potential dropout is likely to come from a family which is survival oriented. He indicates in his study that these youngsters most often come from families in which there is little or no close supervision. The child, because of the loose supervision and permissive attitudes of the parent in the home, is free to wander and explore on his own. He points out that this non-structured, survival-like roll of the dropout, and the potential dropout is characteristic of those youngsters who make the decision to drop out

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[88] Ibid.

of high school soon after they are confronted with the regulating and conforming policies of the schools, and the compulsory attendance laws of most states. The studies eluded to by Bennett relate to the findings of Getzels and Jackson below.[89]

The Getzels and Jackson study on social and personality traits of high IQ families and high creativity families indicate that in terms of the family background, "the overall impression of the high IQ family is that it is one in which individual divergence is limited and risks minimized, and the overall impression of the high creativity family is that it is one in which individual divergence is permitted and risks are accepted."[90]

A descriptive research study by James Regan identifies continuation students as being average or below average in intelligence.[91] A study directed by James Gallagher related to differences in the attitude and family values of low IQ-high divergent boys and high IQ-low divergent boys gave unexpected results which need further corroboration. This study, however, indicates that "a significant relationship was found with the fathers of the low IQ-high divergent boys

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[89]James C. Bennett, "Educationally Unappreciated Youth--Scope and General Overview of Problems," The Disadvantaged and Potential Dropout, ed. John Curtis Gowan (Springfield: Charles C. Thomas, 1966), p. 21.

[90]Getzels and Jackson, op. cit., pp. 65-76.

[91]Regan, op. cit., p. 18.

significantly lower on achievement inducing than the fathers of the high IQ-low divergent boys."[92]

Anne Anastasi developed correlates of creativity in children from differing levels. Her study indicates that high school students score higher on tests in creativity if they come from homes in which the parents are permissive, and flexible in allowing their youngsters sufficient freedom to explore at least his neighborhood environment.[93] This description of Anastasi's relating to the home environment of creative youngsters is similar to that given by Bennett in his description of the home environment of disadvantaged youngsters.[94]

In her study, Anastasi adds that in homes rating high in the degree of impulsivity and free expression allowed the child, both mother and father are tolerant of impulsive and regressive behavior on the part of the child, and allow him considerable freedom of expression with little or no restrictions. She adds to her study by referring to the greater gains in scores of disadvantaged youngsters on tests of creativity over those of middle-class youngsters. She makes the following observation:

> ...This effect of greater gains in pre and post-teat scores by disadvantaged youngsters over middle-class

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92 Gallagher, loc. cit.

93 Anne Anastasi, "Correlates of Creativity in Children from Two Socioeconomic Levels" (Bronx, New York: Department of Psychology, Center for Urban Education), p. 22.

94 Bennett, op. cit., pp. 21-22.

> youngsters, which has been found by other investigators with disadvantaged youngsters, may well have masked the effect of the creativity training obtained in their everyday living. It is also conceivable that the disadvantaged children had an initial advantage on certain aspects of the creative tasks, since they tend to have an open, uninhibited approach to life and a free-wheeling response style. Thus they would have profited less than the middle-class children from the "disinhibiting" effects of the creativity training. In this connection it is noteworthy that on the nonverbal pretests the disadvantaged children did about as well as the middle-class children or better. Their poorer performance on the verbal pretests may have resulted from the strangeness and unfamiliarity of the tasks and from their deficient verbal skills.[95]

William Hill indicates that the hippie cult or hippie movement has captured the imagination of many continuation high school students. The hippie movement involves experimentation with new ideas and materials such as mind expanding drugs. He points out that this experimentation with the new mind expanding drugs is the students' way of seeking more vital and important experiences. These students, he continues, tend to be more open and accepting of unconventional behavior in themselves and in their peers.[96]

E. C. Schaefer studied the self-concept of creative adolescents and found that they, as was the case of continuation students discussed by Hill above, tended to be more open and accepting of possibly unconventional behavior. Schaefer obtained this openness response after administering the Gough Adjective Check List to 800 high school boys and girls. Among

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[95]Anastasi, loc. cit.

[96]Hill, op. cit., p. 43.

other traits checked by the experimental creative group were nonconformity, dominance, autonomy, aggression, and change. The control groups, on the other hand, obtained significantly higher means in defensiveness, conformity, self-control, order, nurturance, and deference.[97]

Schaefer investigated case studies of exceptionally creative high school girls in an effort to bring into sharper focus the life-history and personality correlates of creative achievement. He conducted case studies on ten high school senior girls selected from an initial sample of 200. The ten girls were selected on the basis of teacher recommendations and scores obtained on tests of creativity. Among the experimental factors which seemed to make a significant contribution to the early development of the girls' creative life style were noncontrolling parents. Parents of the girls were permissive and allowed them to take risks in the exploration of their personal environment.[98]

Schaefer also found that there were a number of other traits associated with the creative person; these included openness to change and impulse expression, aggressiveness, autonomy, and emotional sensitivity. Though the girls

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[97]E. C. Schaefer, "The Self-Concept of Creative Adolescents," The Journal of Psychology, LXXII (1969), pp. 233-242.

[98]E. C. Schaefer, "A Psychological Study of 10 Exceptionally Creative Adolescent Girls," Exceptional Children, XXXVI (1970), pp. 431-441.

indicated a need for high achievement, they did not live up to their own expectations. The girls, Schaefer points out, fantasized quite vividly and were quite good at the game of "conning".[99]

M. A. Wallach and N. Kogan investigated the distinction between intelligence and creativity. The investigators suggest that creativity essentially involves the presence of a playful, permissive task attitude. To test this hypothesis, 151 fifth-grade children were asked to generate five different kinds of associates in a game-like, non-evaluational context. Intelligence tests, and tests in creativity were administered to the children participating in the study. The intelligence and creativity dimensions were studied through observations based on disruptive attention-seeking behavior, social relationships with peers, self-confidence, interest, and attention span for work. Analysis were made for four group: those high in both creativity and intelligence, those high in one and low in the other, and those low in both. The investigators found that pupils scoring high in creativity were more playful and disruptive in classroom situations than were those who scored high on intelligence tests but low on tests of creativity.[100]

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[99] Ibid.

[100] M. A. Wallach and N. Kogan, "A New Look at the Creativity-Intelligence Distinction," Journal of Personality, XXXIII (1965), pp. 348-369.

The findings of Wallach and Kogan may have some relationship to creativity as it relates to continuation high school students. Though their sample was composed of students in grade five, and the continuation students studied are in grades eleven and twelve, there is a commonality of disruptive behavior and attention seeking in both groups. Robert E. Botts, in discussing the profile of a continuation high school, pointedly states that disruptive behavior is one of the reasons for the referral of many comprehensive high school students to continuation high schools.[101]

H. A. Alker and others investigated multiple-choice questions and student characteristics. The characteristics studied were: nonconformity, creativity, ability to recognize ambiguity, preference for complexity, and test-wiseness. This paper also reviewed previous attempts to examine the criticism that multiple-choice aptitude and achievement questions penalize the highly able student and rewards the less able one. The subjects included in this study were 108 undergraduate males. This investigation also presents original research which explored relationships between performance on multiple-choice questions and the characteristics which critics have suggested differentiate students who are rewarded from those who are penalized.[102]

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[101] Ibid.

[102] H. A. Alker et al., "Multiple-Choice Questions and Student Characteristics," Journal of Educational Psychology, LX (1969), pp. 231-243.

In continuing the discussion of Alker's investigation, analyses of the data for the total group of subjects studied and for various subgroups revealed that the results neither supported nor rejected the critics' claims.[103]

Alker's investigation indicates that the nonconforming character trait of continuation high school students discussed by Ehlers[104] would be neither a hindrance nor an aid to them when taking multiple-choice tests. Highly creative individuals and nonconforming ones may be equally affected by these personality traits in their ability to take multiple-choice tests. It appears as though neither nonconformity nor highly creative behavior will benefit test takers in the taking of multiple-choice tests.

Donald Cornett in a speech given to members of the California Continuation Education Association reflected on classroom planning and organization. In this speech, he discusses the erratic motivation of continuation high school students. He commented on the need to provide a stimulus to keep them interested and involved in learning activities pertinent in their development into constructive and productive citizens. He also mentions that many of these students are self-motivated but required guidance along more constructive learning paths since much of their motivational energy

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[103] Ibid.

[104] Ehlers, loc. cit.

is many times misdirected.[105] An investigation relating motivation to creativity has been done. One which may have some bearing concerning motivation and continuation high school students is listed below.

S. C. Ward investigated the rate and uniqueness in children's creative responding. He administered three ideational fluency measures to 34 seven and eight-year-old boys. Response rate and uncommonness were compared with results from published studies using college students as subjects. In agreement with earlier findings, subjects who produced more ideas gave them at a higher rate. Creative children (those having high response fluency) did not differ from uncreative ones either in their proportion of uncommon responses throughout the task or in the rate at which their successive responses became less stereotyped. The possibility was raised that children identified as creative differ from others solely in personality and motivational characteristics, rather than in ability characteristics.[106]

There is a general belief among most researchers in the area of creativity that the creative act is not a function of a single trait or ability, but that it is a phenomenon (or an event) that is probably based on a series of relatively

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[105]Donald Cornett, "Some Reflections on Classroom Planning and Organization" Continuation Education: A Report of the 1968 Summer Workshops, ed. Robert E. Botts (Sacramento: California Continuation Education Association, 1968), p. 49.

[106]S. C. Ward, "Rate and Uniqueness in Children's Creative Responding," Child Development, XL (1969), pp. 870-878.

independent types of variables. S. P. Klein and W. A. Owens, Jr., arrived at this conclusion while investigating the life history and ability correlation of mechanical ingenuity. In this study they examined the predictive validity of certain tests of mechanical ingenuity as well as the concurrent validity of various measures of interest, backgrounds, and personality dimensions thought to be related to scientific creativity. The investigation included 528 engineers who had been enrolled in mechanical engineering curricula at the time of testing but were currently engaged in research, design, or development types of activities.[107]

Klein and Owens, upon completion of their correlation determinations, concluded with the following statements:

> ...Predictive validities of .23 and .35 were obtained with a content-relevant ability measure against a weighted composite criterion made up of patents, publications, etc.; but when scores from this test were placed in a regressive equation along with concurrently validated scales from a life history questionnaire, the correlation between the regression scores and the criterion ranged from .41 to .69. The factorial scales that made the major contributions to this prediction were designated as drive, independence, research orientation, and positive home and educational background.[108]

Klein and Owens developed a concluding statement, listed below, which appears to be pertinent to this study. There are indications in the study that the creative behavior of those

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[107] S. P. Klein and W. A. Owens, Jr., RB 65-18, "Life History and Ability Correlates of Mechanical Ingenuity," Research on Creativity: An Annotated List of Relevant ETS Reports (Princeton, New Jersey: Educational Testing Service, 1970), pp. 21-22.

[108] Ibid.

tested is due to a series of relatively independent variables and limited to a single event, personality trait, or characteristic:

> ...These findings, along with the skewness of the criterion scores, supported the general position that a creative act is not a function of a single trait or ability, but is a phenomenon (or an event) that is probably based on a series of relatively independent types of related variables.[109]

An investigation relating to early predictors of later creative achievements was completed by S. P. Klein and F. R. Evans in 1969. These investigators examined 2337 seventh and eighth-grade students and obtained predictor data in the areas of academic skills, and past creative achievements. The test administered to the students was the Independent Activities Questionnaire. The test was administered to the students after they entered the twelfth grade. The results of the test were used as the criterion data.[110]

Klein and Evans summarize their findings in the following statement:

> ...Correlational analyses indicated: 1) the best predictors of creative achievements were past creative accomplishments; 2) 7th-grade academic skills also correlated significantly with the criteria; 3) the combination of past achievements and academic skills predicted the criteria between .40 and .50; and 4) the particular criterion area (e.g., science vs. art) and the student's sex moderated the magnitude of the foregoing relationships.[111]

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[109] Ibid.

[110] S. P. Klein and F. R. Evans, "Early Predictors of Later Creative Achievements," Paper Presented at the American Psychological Association Meeting, Washington, D. C., 1960.

[111] Ibid.

Barbara H. Kemp relates some of her comments to the work of Klein and Evans above when she characterizes continuation students as being creative, motivated, and proficient in areas where their interests lie. She points out that if they feel a thing has little or no relevance to their needs, as they perceive them, they will consider it useless or a waste of time. She has also indicated in her discussion that many of activities of continuation high school students have many creative aspects to them if viewed objectively and not from an ethical or legal point of view. These creative acts, she continues, may have been occuring early in their lives but were never considered to be creative because they were thought to be unpalitable, undesirable, and possibly bordering on the malignant or criminal type of activity. Educators, she adds, should strive to redirect the malicious types of creative acts of continuation high school students so that they take a more constructive bent.[112]

Ehlers has described continuation high school students as antisocial, hostile, and as nonconformists.[113] According to the criterion of D. A. Rock, F. R. Evans, and S. P. Klein, the prediction of creativity on the part of continuation high school students should be facilitated by their asocial or antisocial behavior. D. A. Rock and others did an investigation

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[112]Kemp, loc. cit.

[113]Ehlers, op. cit., p. 40.

in which they tried predicting multiple criteria of creative achievements with moderator variables. They applied a moderated regression technique on two samples of males and females for each of which there was multiple predictor, moderator, and criterion information. One of the moderators, a modification of the Drews Sociability Scale, indicated that those individuals who had little or no inclination towards social functioning tended to be considerably more predictable than the remainder of the sample or the group taken as a whole. Within the low social groups, girls appeared to be somewhat more predictable than boys on two of the three creative achievement criteria; however, the greatest discrepancy appeared in the writing criterion, where the girls were substantially more predictable. Finally, the low sociability groups were characterized by greater predictive accuracy regardless of whether "tailored" or overall prediction equations were used.[114]

Regan did an item analysis on the I.Q. scores of continuation high school students. His findings indicated that the mean I.Q. score for continuation students included in his study was 96, just slightly lower than average. He

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[114]D. A. Rock, F. R. Evans, and S. P. Klein, "Predicting Multiple Criteria of Creative Achievements With Moderator Variables," Research on Creativity: An Annotated List of Relevant ETS Reports (Princeton, New Jersey: Educational Testing Service, 1970), p. 24.

also found that certain groups of continuation students studied had higher than average I.Q. scores. These included those referred because of use or possession of drugs and narcotics, and those who went to the continuation school on a voluntary basis. These two groups, according to Regan, make up approximately fifty per cent of the continuation high school population.[115]

J. P. Guilford has indicated that in the various groups tested in his study, he found that intelligence is not significantly correlated with creativity.[116] Getzels and Jackson contend that this low correlation between creativity and I.Q. does not mean that there is not a relationship between these two measures. It signifies rather that a certain amount of intelligence is required for creativity. They continue by stating that a high I.Q. is not the most salient characteristic of the highly creative person. They add that unruly and rebellious behavior is not limited to low I.Q. and noncreative individuals.[117] They expand upon this notion in the following statement:

> ...We need to distinguish between independence and unruliness, between individuality and rebelliousness. We have seen that our creative students were quite superior in scholastic achievement. Despite this,

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[115] Regan, loc. cit.

[116] J. P. Guilford, "Creativity: Its Measurement and Development," (An address presented to educators in Sacramento County, Sacramento, California, January 20, 1959), p. 8.

[117] Getzels and Jackson, op. cit., p. 125.

> the teachers showed no special preference for them as students, whereas they did show a special preference for the high I.Q. students of similar scholastic achievement. The creative students may indeed be more difficult to get along with. But it must be realized that their behavior may have its source in independence of thought rather than in malice. Since their values differ from the values of other adolescents, they are likely to view objects and events differently than other students. Their wit may be seen as threatening and perceived as hostility. But it may be an expression only of their own deep struggle to reconcile their image of the world with the more conventional image. And, may not the feeling of threat and the perception of hostility be as much our fault as their intent? In any event, it is necessary to distinguish honest difference from malicious disruption, individuality from rebelliousness, independence of thought from unruliness. If we wish to foster intellectual inventiveness, we may have to risk granting the creative student greater autonomy, and perhaps even to reward behavior that fails to comply with what we are prepared to reward.[118]

Fred M. Amram and David L. Gise investigated creativity training for motivating disadvantaged students. The results they obtained from their study indicate that creativity training should be included in the school curriculum, particularly for socially disadvantaged students. The investigators indicate that among the courses selected for the study is creative problem solving. Results from the study indicate that creativity training gives the underachiever the motivation and skill to solve his own problems by showing him the procedures of problem definition and solution. Sixty-three junior college students, of average ability but with meager cultural backgrounds, completed the six-week session. Results from the

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[118] Ibid.

study indicated that the students were challenged by such ideas and tasks as becoming aware of surroundings, finding idea-spurring questions, listing and modifying attributes, completing a "what if..." series of situations, and other devices for stimulating imagination. The investigators implemented problem projects that the students could pursue after the session. Pre- and post-tests indicated large gains in creative skills and self-concepts, and although it is uncertain whether these were entirely due to this particular study, the investigators indicate that evidence is mounting that creativity training should be included in the school curriculum, particularly for the socially handicapped.[119]

Amram and Gise studied the comparative gains in pre- and post-tests of students not classified as socially disadvantaged, and of students classified as disadvantaged. Their results indicate that both groups did equally well on the post-test. The group of disadvantaged students, however, had a significantly larger gain in their mean scores than did those students not classified as socially disadvantaged.[120]

F. Barron investigated the originality of a selected group of adult normal males as related to their personality and intelligence. When intelligence was used as a variable, the highly intelligent and original subjects were found to be

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[119]Fred M. Amram and David L. Gise, Creativity Training: A Tool for Motivating Disadvantaged Students (Minneapolis: University of Minnesota, 1968), pp. 1-15.

[120]Ibid.

socially effective, personally dominant, and verbally fluent. When intelligence was partialled out, the creative subjects had high levels of drive, feminine interest patterns, and an "openness" to experience. Barron concluded that the role of intelligence in the behavior of creative adults is a regulatory one which controls impulsiveness and permits the creative person to be productive.[121]

Florence L. Rambo investigated pupil characteristics related to creativity. She used as her sample one-hundred and twenty-seven subjects from the regular and special classes of a public junior high school. Her samples were divided into three different levels of intelligence. Generally, the results of the data analyses in this investigation indicated that within each of the three intelligence levels pupils who were high in creativity were not significantly different in personality.[122]

Getzels and Jackson have obtained indications through their studies which show that teachers have a decided preference for conforming students with high-IQ scores over students identified as highly creative. They point out that teachers prefer the high-IQ student over the creative student because the high-IQ child tends to hold a self-image which is consistent with what the student feels the teacher would approve.

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[121] F. Barron, "Originality in Relation to Personality and Intellect," Journal of Personality, XXV (1957), pp. 730-742.

[122] Florence L. Rambo, Pupil Characteristics Related to Creativity (unpublished dissertation, University of Georgia, Athens, Georgia, 1957).

They continue by saying that the creative youngster is more inclined not to conform to the model student image which is most acceptable to the non-creative oriented teacher. The creative youngster, they contend, considers high marks and goals that lead to adult success in life less important than does a member of the high-IQ group. He has a much greater interest in unconventional careers than do his fellow students.[123]

Eales determined that 55 percent of the continuation high schools in the State of California have a Black student body ratio which ranges between one and three percent greater than that of their feeder comprehensive schools.[124] An investigation done by N. V. Fuqua concerning an analysis of the relationships and differences among measures of creative thinking and selected other factors in educable and less educable groups of Negro children seems pertinent to this study. Fuqua studied fourth and sixth grade Negro children. He measured and analyzed the relationship and the differences among measures of creative thinking and other factors, including intelligence. He concluded that 88 percent of the pupils who scored high on the measure of creative thinking

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[123]Philip W. Jackson, "New Dimensions in Creativity," Bulletin of the National Association of Secondary-School Principals (October, 1962), pp. 46, 38-39.

[124]Eales, loc. cit.

would have been missed had the intellectually excellent group been selected exclusively on the basis of intelligence test scores.[125]

In an analysis of creativity in culturally deprived adolescent boys, Neil R. Covington found that there was no relationship between creativity and eight demographic factors which were assessed. Demographic factors assessed included race, birth order, size of family, age, grade, marital status of parents, father's education and mother's education. A significant relationship was found between the white subjects' creativity and friend's expectations. Their creativity was also related to their own level of aspiration. Creativity was not related to level of aspiration in the Negro subgroup, probably because most of the subjects had relatively high levels of aspiration regardless of their level of creativity.[126]

Summary and Conclusions from Reviewed Research and Literature

In summarizing this review of related literature and research, the investigator concluded that there is sufficient evidence to support the hypothesis that rebel-like or divergent continuation high school students of equal intelligence are

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[125]N. V. Fuqua, "An Analysis of the Relationship and Differences Among Measures of Creative Thinking and Selected Other Factors in Educable and Less Educable Groups of Negro Children," (unpublished doctoral dissertation, Wayne University, 1966).

[126]Neil R. Covington, "Creativity in Culturally Deprived Adolescent Boys," (unpublished doctoral dissertation, The Florida State University, June, 1968).

more creative than their comprehensive high school intellectual counterparts.

From the studies reviewed in the area of creativity and rebel-like or divergent behavior, it appears that the social and emotional qualities which characterize the creative person are also present, in varying degrees, in rebel-like and divergent continuation high school students.

Finally, this review of related literature and research has revealed that nothing has been done in the field of creativity which is comparable to this research in which creativity has been related to the rebel-like or divergent behavior of continuation high school students. Therefore, the investigator has concluded that such a study is valid.

The literature and research which was pertinently related to this investigation has been reviewed in Chapter II. This review was undertaken in three specific areas:

1. Comments on the essence and function of the continuation high schools in the State of California and specifically American Legion High School.

2. Opinions of experts in the field of creativity concerning the characteristics and creative behavior of rebel-like or divergent youth.

3. The findings from research in the field of creativity which deals specifically with characteristics and creative behavior of rebel-like or divergent youth.

The research design and the procedure which was used in the present study will be presented in Chapter III.

CHAPTER III

DESCRIPTION OF THE DESIGN AND PROCEDURE OF THE STUDY

A description of the design and the procedures used in the development and regulation of this investigation are presented in detail in this chapter. The description of the design and the procedure used are discussed under five main headings: (1) selection of the sample, (2) selection and administration of the instruments, (3) description of the instruments, (4) research methodology, and (e) statistical procedure.

I. SELECTION OF THE SAMPLE

The samples included in this study were selected from the eleventh and twelfth grades of two separate senior high schools. One of these school, Luther Burbank Senior High School, was randomly selected from a population of five comprehensive senior high schools in the Sacramento City Unified School District. The five senior high schools included the following: C. K. McClatchy Senior High School, Hiram Johnson Senior High School, John F. Kennedy Senior High School, Luther Burbank Senior High School, and Sacramento Senior High School.

The random selection of the comprehensive high school included in the study was done by arranging the names of the five comprehensive senior high schools in alphabetical order

and assigning each of them a number ranging from one to five. The numbers from one through five were written on each of five square bits of paper which were about one-half inch on an edge. The bits of paper were placed into a hat and thoroughly shaken until they were well mixed. An unbiased observer was asked to close his eyes and pick one of the slips of paper from the hat. The number chosen was four, the number designated to Luther Burbank Senior High School.

The other senior high school selected for this investigation was a continuation high school, American Legion High School. American Legion High School is one of two continuation high schools servicing the five, grades 10-12, senior high schools of the district. All students attending American Legion High School are between the ages of sixteen and eighteen years of age. The other continuation school, Lincoln High School, services sixteen through eighteen year old ninth and tenth grade continuation students referred from the five senior high schools, grades 10-12, and the eleven junior high schools, grades 7-9. The Lincoln Continuation High School is located approximately five miles West of American Legion High School. The Lincoln Continuation High School shares a common building facility with Lincoln Opportunity School. The total school enrollment for the Lincoln school is approximately 200 continuation students, and 225 opportunity school students.

Eleventh and twelfth grade sixteen through eighteen year old comprehensive and continuation high school students were selected for the study because they were the most convenient group to work with, and because they were geographically the most readily available. The housing of ninth graders in the eleven junior high schools of the district, and the housing of tenth, eleventh, and twelfth graders in the five senior high schools of the district made it exceedingly awkward to select a random sample of students from the grades 9-12 levels. Therefore, the study was limited to those eleventh and twelfth grade continuation high school students housed in the American Legion High School.

Students selected for the study were not ranked into separate groups by either age or grade level. The sample of eleventh and twelfth grade students from American Legion High School, the continuation high school, were lumped into one group, and with the total population of the school stratified into three ranked IQ levels, Low, Medium, and High, a sample of forty students was randomly selected from each IQ level. This same procedure was followed for the selection of samples from Luther Burbank Senior High School.

No effort was made to distinguish the students by either grade level or age. The designation of a specific grade level of either grades eleven or twelve to continuation high school students is questionable because of their high failure rates

in subjects taken in grades nine and ten. Therefore, no distinction as to grade level or age was made in the random selection of student samples from either the continuation high school or the comprehensive high school participating in the study.

There were approximately 58,908 pupils enrolled in the 76, grades K-12, schools of the Sacramento City Unified School District. Of the total K-12 district enrollment, approximately 6,559 eleventh and twelfth grade students were enrolled in the five comprehensive high schools. The total enrollment of the comprehensive high school randomly selected for the study, Luther Burbank Senior High School, was 2,323. The eleventh and twelfth grade enrollment of Luther Burbank Senior High School was approximately 1,444. The continuation high school sampled, American Legion High School, had an eleventh and twelfth grade enrollment of approximately 320 students. The enrollment of 320 students at American Legion High School was based upon the continuation high school needs of the district, and upon the California State requirements of a "necessary small high school" as defined and regulated by Education Code sections 5553, 17663, and 17664, and the California Administrative Code, Title 5, section 115.[1]

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[1]John W. Voss, Handbook on Continuation Education in California (Sacramento, California: Bureau of Elementary and Secondary Education, California State Department of Education, 1968), p. 84.

The IQ scores of eleventh and twelfth graders participating in the study were used as reference indicators for the comparison of the creativity of students in the two participating high schools. The IQ scores of eleventh and twelfth graders in the comprehensive high school and the continuation high school were stratified into three IQ levels: Low IQ, 75-90; Medium IQ, 91-110; High IQ, 111 and above. The separation of the IQ scores for students in grade twelve was relatively easy since twelfth grade IQ scores were readily available from the district's computer listing of recently taken IQ tests.

All twelfth grade students were given the Lorge-Thorndike Intelligence Test[2] in October of 1972. These test scores were stored, by school, in the memory banks of the district's I.B.M. Model 360 computer. The computer listing of twelfth grade IQ scores for Luther Burbank, the comprehensive high school participating in the study, and American Legion High School, the continuation high school participating in the study, were obtained from the district's coordinator of testing services.

The IQ scores of eleventh graders participating in the study were not as readily available as were those of the twelfth graders participating in the study. District and State mandated IQ tests were given to students in grades six and twelve. Since the computer listing of IQ scores is given

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[2]I. Lorge, B. L. Thorndike, and Elizabeth Hagen, The Lorge-Thorndike Intelligence Tests (Boston: Houghton Mifflin, 1964).

by school, it would have been very difficult to trace the elementary schools from which the eleventh graders were originally derived. IQ scores for the eleventh graders were obtained from the cumulative records of each student from each of the two participating high schools. These scores were made available to the investigator by the registrars of the Luther Burbank, and the American Legion High Schools.

As a result of the stratification of student IQ scores for each of the two schools into three IQ strata, 40 students for each IQ strata were randomly selected from each participating school, using a random start in a table of random numbers.[3]

There were a total of 120 sample students randomly selected from each of the two participating schools. Forty student names were randomly selected from each of three stratified samples of the combined eleventh and twelfth grade populations of each of the two participating schools. The combined eleventh and twelfth grade populations of each school were stratified into three different IQ levels: Low IQ, 75-90; Medium IQ, 91-110; High IQ, 111 and above. The population of each stratified sample is listed in Table 1.

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[3]H. Arkin, and R. R. Colton, Tables for Statisticians (New York: Barnes & Noble, 1950).

TABLE Ia

Sample Distribution

Schools Included In The Study	Total 11th & 12th Gr. Pop. of Each School	Total 11th & 12th Gr. Population Divided and Ranked Into IQ Levels		
		Low IQ 75-90	Medium IQ 91-110	High IQ 111 & Above
Luther Burbank	1,644	349	475	401
American Legion	320	65	189	45

Discrepancies in the sum of the numbers of IQ scores listed in each of the three stratified samples as compared to the total population of each school is due to the deletion of those scores which were below the 75 IQ cutoff. The number of selections from each IQ level was reduced from 40 to 30 because of mortality due to the disqualification of some comprehensive students because of uncertainty relating to their status as either comprehensive or continuation high school students. The opinions of comprehensive high school counselors were obtained concerning the status of the forty students selected for each IQ strata. If one of the forty student's counselors gave any indication that the student might be a candidate for enrollment in the continuation school, the student's name was then deleted from the list of names randomly selected for each of the IQ strata.

The final sample size of thirty students for each IQ strata was selected because of the small size of the continuation school included in the study, 320 students, and because of the difficulty in persuading continuation students to take group tests. These characteristics which might also include the poor attendance of continuation students, produced a total comprehensive high school sample from Luther Burbank Senior High School of 90 students, and a total continuation high school sample from American Legion High School of 90 students.

II. SELECTION AND ADMINISTRATION OF THE INSTRUMENT

The main premise of this study involved the comparison of the creativity of eleventh and twelfth grade continuation high school students stratified into three IQ levels of Low IQ, 75-90; Medium IQ, 91-110; High IQ, 111 and above, with the creativity of similarly stratified comprehensive high school students.

A discussion concerning the selection and administration of the two instruments included in this study is listed below:

The Lorge-Thorndike Intelligence Test

The Lorge-Thorndike Intelligence Test[4] was the test used in the stratification of the composite eleventh and twelfth grade population of each of the two comparative schools into

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[4] I. Lorge, B. L. Thorndike, & Elizabeth Hagen, loc. cit.

three IQ strata of Low, Medium, and High. This test is a State and district mandated test, and is given to all sixth and twelfth graders in the Sacramento City Unified School District. The test was administered to district twelfth graders in October of 1972, and to the present eleventh graders four years ago when they were in the sixth grade.

The Lorge-Thorndike Intelligence Test[5] was administered to the Luther Burbank Senior High School twelfth graders in the school auditorium. The five counselors assigned to the school monitored the test during the 120 minute period that the test was in progress. The two counselors assigned to American Legion High School monitored the testing of the twelfth grade continuation high school students in the school auditorium during the prescribed 120 minute testing period. The tests were collected and corrected by the school counselors at each of the participating high schools. The corredted tests were then sent to the district's coordinator of testing who had the responsibility of compiling and listing student test scores. The district's coordinator of data processing took the responsibility of programming and storing the test data in the memory banks of the district's I.B.M. Model 360 computer.

When they were sixth graders, the eleventh grade students from both schools participating in the study were administered the Lorge-Thorndike Intelligence Test by their sixth grade

teachers and the elementary school principal in their respective school auditoriums or multipurpose rooms. The test scores of the sixth grade students who came from the ten elementary feeder schools were transferred, along with their cumulative records, to each of the three junior high schools which ultimately fed into the Luther Burbank Senior High School. The registrar of Luther Burbank Senior High School was responsible for the filing and storage of student cumulative records at that school.

Eleventh graders referred to American Legion High School were administered the Lorge-Thorndike Intelligence Test when they were sixth graders. There were fifty-seven elementary schools in the Sacramento City Unified School District which fed into eleven junior high schools. These eleven junior high schools ultimately fed into the district's five senior high schools. The five senior high schools were feeder schools to the district's grades 11-12 continuation high school, American Legion High School. The cumulative records which included the student's intelligence test score accompanied him during each of his school transfers. The student's cumulative record and intelligence test score must be transferred to at least two schools before reaching the registrar of American Legion High School. The school registrar of American Legion High School has the ultimate responsibility of filing and storing the

cumulative records and accompanying intelligence test scores for students attending this school.

The Torrance Tests of Creative Thinking

The creativity of comprehensive high school students of three IQ levels was compared with that of continuation high school students from three different IQ levels. Creativity was measured using the Torrance Tests of Creative Thinking (TTCT), Figural Form B.[6] These tests were designed by E. Paul Torrance in 1966 and are a revision of his 1963 edition of the Minnesota Tests of Creative Thinking.[7] There are two versions of the tests, Figural Form A, and Figural Form B. The Figural Form B version of the tests was selected in order to simplify the administration of the test. Instructions for the administration of the two different forms of the test are not the same. Each test must be administered separately. The Figural Form B version of the tests was available through the district testing office.

The test was administered at each of the two participating schools by three counselors. The counselors at each school were assigned thirty students each for a total of ninety at each school. Students were not assigned to counselors on the basis of IQ. The tests were given at each of the two schools during the week of February 25 through March 2, 1973.

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[6] E. Paul Torrance, Torrance Tests of Creative Thinking, Figural Test Booklet B (Princeton: Personnel Press, Inc., 1966).

[7] Ibid., Minnesota Tests of Creative Thinking (Princeton: Personnel Press, Inc., 1963).

Counselors were briefed by the investigator on the directions for the administration of the test as outlined in the booklet, Torrance Test of Creative Thinking, Directions Manual and Scoring Guide, Figural Test Booklet B.[8] The booklet contains directions which were clear and precise, and were easy to follow.

Students were allowed ten minutes for the completion of each of the three activities included in the test. In addition to the thirty minutes required for the taking of the test, fifteen minutes of time was needed for instructions, and the orientation of students to test taking procedures. The completed tests were sent to the Personnel Press Scoring Service in Athens, Georgia where they were corrected by scorers who have been professionally trained to hand score the Torrance Tests of Creative Thinking. The corrected tests were returned to the investigator approximately three weeks after they were sent to the scoring service. In addition to expert scoring of the test, the scoring service provided raw and derived (T scores) scores which were entered on Scoring Worksheets.

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[8]Ibid., Torrance Tests of Creative Thinking, Directions Manual and Scoring Guide, Figural Test Booklet B (Princeton: Personnel Press, Inc., 1966).

III. DESCRIPTION OF THE INSTRUMENTS

The Lorge-Thorndike Intelligence Tests, Multi-Level Edition

The Lorge-Thorndike Intelligence Tests, Multi-Level Edition[9] was used to select students for the three comparative IQ strata for each of the two participating schools. The test was designed for use in grades 3-13. The stated purpose of the test is to identify students who would fall into each of the three comparative IQ categories of Low IQ, 75-90; Medium IQ, 91-110; High IQ, 111 and above. There are seven forms of the test designed for differing grade levels. The two forms used in this study were Form D, a sixth grade test, and Form H, a test for grades 12 and 13. Form D was used in the stratification of eleventh grade students into three comparative IQ groups, and Form H was used in the stratification of 12th grade students into three comparative IQ groups. Three scores are available for all seven forms of the test. These include verbal, nonverbal, and a composite score. Only the composite IQ score was used in this study. The multi-level form of the test contains fifty-two pages. The reliability for the test scores were .83 to .91 for the verbal battery, .80 to .88 nonverbal battery, for different grades. The standard error of measurement for the test was 3.75. The data for the standard error of measurement was based on the odd-even reliabilities and consequently may be slightly underestimated.

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[9] I. Lorge, B. L. Thorndike, & Elizabeth Hagen, op. cit.

The Torrance Tests of Creative Thinking

The Torrance Tests of Creative Thinking were designed to measure four aspects of "creative thinking," Fluency, Flexibility, Originality, and Elaboration. Two scores for each aspect of the test are provided, verbal and figural. The test booklet used in this study is titled Thinking Creatively With Pictures.[10] There are two forms of the test, Figural Form A, and Figural Form B. The Figural Form B version of the tests was used in this study. Figural Form A contains eight pages of tests, while Figural Form B contains seven pages of tests. The tests included in this form are: Picture Construction, Picture Completion, and Circles. In designing these tests, Torrance attempted to recreate as nearly as possible the creative process. A copy of these tests can be found in the University of the Pacific Library, Stockton, California.

The test-retest reliability of these tests has been studied by several investigators. The test-retest reliability of this test was obtained by Torrance in a study of 118 fourth, fifth, and sixth grade children in St. Croix, Wisconsin. Goralski obtained similar results in an investigation of student teachers. The following test-retest reliability scores were obtained: Verbal Fluency .93, Verbal Flexibility .84, Verbal Originality .88, Figural Fluency .71, Figural Flexibility .73, Figural Originality .85, and Figural Elaboration .83.[11]

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[10] E. Paul Torrance, "Thinking Creatively With Pictures," Torrance Tests of Creative Thinking, Figural Test Booklet B (Princeton: Personnel Press, Inc., 1966).

[11] E. Paul Torrance, Torrance Tests of Creative Thinking, Norms-Technical Manual (Princeton: Personnel Press, Inc., 1966).

IV. RESEARCH METHODOLOGY

This investigation represented an ex post facto type of research. This study is classified as ex post facto research because it was not possible to manipulate the independent variable, enrollment and nonenrollment in the continuation high school, and because the subjects came to the study with their divergent behavior ready-made, as it were. There was randomization within but not across the two schools participating in the study.

The ex post facto character of this investigation is in evidence. The investigator started with the dependent variable, creativity, and among the many possible influential independent variables, he selected the divergent behavior of continuation high school students. This study includes relationships which already exist in the individuals studied. No effort was made to manipulate the independent variable, the divergent behavior of continuation high school students.

Students participating in the study were self selected. No effort was made by the investigator to overtly select a certain kind of student for the continuation high school participating in the study or to select a certain kind of student for the comprehensive high school participating in the study. The students who attended the comprehensive high school, and those who attended the continuation high school came, as it were, already assigned to their respective groups.

This design was chosen because it best suited the needs of an ex post facto type of research. The randomization provided the necessary internal controls for history, maturation, selection, testing, instrumentation, regression, and mortality. It might also be pointed out that the schools selected to participate in this study were not selected from among volunteers.

Even though the sampling procedures were laborious and restrictive, every effort was made to provide adequate controls for internal and external validity. The results of this study should be generalizable within the limitations stated in Chapter I.

V. STATISTICAL PROCEDURES

The hypotheses stated in Chapter I were restated in the null form and tested by appropriate statistical tests. The level of significance for rejecting the null hypotheses was set at .05. This level of significance was considered to be adequate by the investigator for this initial study of the comparative differences between the creative behavior of eleventh and twelfth grade continuation and comprehensive high school students.

The particular kind of data collected in this investigation required the use of the Student's t-ratio test to test the null hypotheses.[12] The Torrance Tests in Creativity -

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[12]Audrey Haber and Richard P. Runyon, General Statistics (Menlo Park, California: Addison-Wesley Publishing Company, 1969), pp. 224-235.

Figural B were used in measuring the variables of Fluency, Flexibility, Originality, and Elaboration.

H_{1a}. Eleventh and twelfth grade continuation high school students who rank high in intelligence will score in Fluency significantly different from eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{1b}. Eleventh and twelfth grade continuation high school students who rank medium in intelligence will score in Fluency significantly different from eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{1c}. Eleventh and twelfth grade continuation high school students who rank low in intelligence will score in Fluency significantly different from eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

H_{2a}. Eleventh and twelfth grade continuation high school students who rank high in intelligence will score in Flexibility significantly different from eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{2b}. Eleventh and twelfth grade continuation high school students who rank medium in intelligence will score in Flexibility significantly different from eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{2c}. Eleventh and twelfth grade continuation high school students who rank low in intelligence will score in Flexibility

significantly different from eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

H_{3a}. Eleventh and twelfth grade continuation high school students who rank high in intelligence will score in Originality significantly different from eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{3b}. Eleventh and twelfth grade continuation high school students who rank medium in intelligence will score in Originality significantly different from eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{3c}. Eleventh and twelfth grade continuation high school students who rank low in intelligence will score in Originality significantly different from eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

H_{4a}. Eleventh and twelfth grade continuation high school students who rank high in intelligence will score in Elaboration significantly different from eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{4b}. Eleventh and twelfth grade continuation high school students who rank medium in intelligence will score in Elaboration significantly different from eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{4c}. Eleventh and twelfth grade continuation high school students who rank low in intelligence will score in Elaboration significantly different from eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

The paradigm for this analyses is included below:

	Groups Tested	
IQ Level	Continuation High School Students	Comprehensive High School Students
High IQ (111 & Above)	Dependent	
Medium IQ (91 - 110)	Variable	
Low IQ (75 - 90)		

The dependent variable in the above paradigm includes scores in the area of creativity dealing with Fluency, Flexibility, Originality, and Elaboration.

VI. SUMMARY

Chapter III has discussed the design of the study and presented the procedures used. It has discussed the design and procedures used under five main headings: (a) selection of the sample, (b) selection and administration of the instruments, (c) description of the instruments, (d) research methodology, and (e) statistical procedure. The level of

confidence for accepting the hypotheses was established at the .05 level. A listing of the hypotheses investigated in this study was also included.

The findings of the statistical analysis described in the above discussion were presented in Chapter IV. A brief interpretation and analysis follows each set of data presented.

CHAPTER IV

FINDINGS OF THE STUDY

Chapter III included a description of the design and procedure of the study. A set of relevant hypotheses comparing the creativity of low, medium, and high IQ continuation high school students was formulated for the creative ability factors of Fluency, Flexibility, Originality, and Elaboration. The number of each hypothesis will follow the same system used in the preceding chapter.

This chapter presents the findings of this investigation. The chapter is organized into eight sections. These include the following: (1) findings in Fluency of low, medium, and high IQ students, (2) findings in Flexibility in low, medium, and high IQ students, (3) findings in Originality in low, medium, and high IQ students, (4) findings in Elaboration of low, medium, and high IQ students, (5) findings relating to low IQ students in Fluency, Flexibility, Originality, and Elaboration, (6) findings relating to medium IQ students in Fluency, Flexibility, Originality, and Elaboration, (7) findings relating to high IQ students in Fluency, Flexibility, Originality, and Elaboration, and (8) a summary.

Each section, 1-8, will include a listing of a relevant null hypothesis. The results of the statistical tests employed to test these hypotheses are reported in tabular form. Each section will also include a short evaluation of the tabulated data.

I. FINDINGS IN FLUENCY OF LOW, MEDIUM, AND HIGH IQ STUDENTS

Three hypotheses were stated in Chapter III relating to the creative ability factor of Fluency. These hypotheses are restated in the null form as listed below:

H_{1a}. There will be no significant difference in Fluency between eleventh and twelfth grade continuation high school students who rank high in intelligence and eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{1b}. There will be no significant difference in Fluency between eleventh and twelfth grade continuation high school students who rank medium in intelligence and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{1c}. There will be no significant difference in Fluency between eleventh and twelfth grade continuation high school students who rank low in intelligence and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

Table I indicates that for an N of 30 in each group tested, there is no significant difference between low IQ comprehensive high school students and low IQ continuation high school students with respect to Fluency as it applies to creativity. The statistical data of Table I indicates that the null hypothesis H_{1a} was accepted.

TABLE I

STUDENT'S t-TEST USING RAW SCORES FOR FLUENCY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN HIGH IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND HIGH IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
High IQ (CHS)	14.30	4.14	30	.775	N.S.
High IQ (CtHS)	15.27	5.43	30		

Table II indicates that for an N of 30 for each group tested there is no significant difference between medium IQ comprehensive high school students and medium IQ continuation high school students with respect to Fluency as it applies to creativity. The statistical data of Table II indicates that the null hypothesis H_{1b} was accepted.

TABLE II

STUDENT'S t-TEST USING RAW SCORES FOR FLUENCY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN MEDIUM IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND MEDIUM IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
Medium IQ (CHS)	17.07	8.80	30	.873	N.S.
Medium IQ (CtHS)	15.27	7.07	30		

Table III indicates that for an N of 30 for each group tested there is no significant difference between high IQ comprehensive high school students and high IQ continuation high school students with respect to Fluency as it applies to creativity. The statistical data of Table III indicates that the null hypothesis H_{1c} was accepted.

TABLE III

STUDENT'S t-TEST USING RAW SCORES FOR FLUENCY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN LOW IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND LOW IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
Low IQ (CHS)	14.73	7.00	30	.746	N.S.
Low IQ (CtHS)	13.57	4.93	30		

Table IV summarizes the findings of Tables I, II, and III relating to the creative ability factor of Fluency. Statistics in the table indicate that the mean scores of all the groups tested are clustered together with little deviation. The statistics in the table indicate that all three null hypotheses, H_{1a}, H_{1b}, and H_{1c}, were accepted.

TABLE IV

SUMMARY OF STUDENT'S t-TEST SCORES FOR FLUENCY ON THE TORRANCE TEST OF CREATIVE THINKING FIGURAL--B BETWEEN LOW IQ, MEDIUM IQ, AND HIGH IQ COMPREHENSIVE HIGH SCHOOL AND CONTINUATION HIGH SCHOOL STUDENTS

Ability Level	Mean Scores		Difference	t-Score	P (.05)
	Comprehensive High School	Continuation High School			
Low IQ	14.73	13.56	1.17	.746	N.S.
Medium IQ	17.07	15.27	1.80	.873	N.S.
High IQ	14.30	15.27	-.97	.775	N.S.

II. FINDINGS IN FLEXIBILITY OF LOW, MEDIUM, AND HIGH IQ STUDENTS

Three hypotheses were stated in Chapter III relating to the creative ability factor of Flexibility. These hypotheses are restated in the null form as listed below:

H_{2a}. There will be no significant difference in Flexibility between eleventh and twelfth grade continuation high school students who rank high in intelligence and eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{2b}. There will be no significant difference in Flexibility between eleventh and twelfth grade continuation high school students who rank medium in intelligence and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{2c}. There will be no significant difference in Flexibility between eleventh and twelfth grade continuation high school students who rank low in intelligence and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

Table V indicates that for an N of 30 for each group tested there is no significant difference between high IQ comprehensive high school students and high IQ continuation high school students with respect to Flexibility as it applies to creativity. The statistical data of Table V indicates that the null hypothesis H_{2a} was accepted.

TABLE V

STUDENT'S t-TEST USING RAW SCORES FOR FLEXIBILITY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN HIGH IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND HIGH IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
High IQ (CHS)	11.90	3.36	30	.530	N.S.
High IQ (CtHS)	12.43	4.38	30		

Table VI indicates that for an N of 30 for each group tested there is no significant difference between medium IQ comprehensive high school students and medium IQ continuation

high school students with respect to Flexibility at it applies to creativity. The statistical data of Table VI indicates that the null hypothesis H_{2b} was accepted.

TABLE VI

STUDENT'S t-TEST USING RAW SCORES FOR FLEXIBILITY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN MEDIUM IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND MEDIUM IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
Medium IQ (CHS)	11.97	4.89	30	1.365	N.S.
Medium IQ (CtHS)	10.27	4.76	30		

Though the t-Score obtained in Table VI appears to be relatively high, it is still below the acceptable level of significance for the rejection of the null hypothesis. For twenty-nine degrees of freedom, and a level of significance of .05, the t-Score for a two-tailed test must exceed 2.045 before the null hypothesis can be rejected.

Table VII indicates that for an N of 30 for each group tested there is no significant difference between low IQ comprehensive high school students and low IQ continuation high school students with respect to Flexibility as it applies to creativity. The statistical data of Table VII indicates that the null hypothesis H_{2c} was accepted.

TABLE VII

STUDENT'S t-TEST USING RAW SCORES FOR FLEXIBILITY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN LOW IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND LOW IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
Low IQ (CHS)	11.33	4.67	30	1.049	N.S.
Low IQ (CtHS)	10.23	3.34	30		

Table VIII summarizes the findings of Tables V, VI, and VII relating to the creative ability factor of Flexibility. Statistics in the table indicate that the mean scores of all the groups tested in the comprehensive high school are clustered and close together. The mean scores of the continuation high school students tested are more diversified. The mean score of the high IQ group is relatively greater than the clustered low and medium IQ mean scores. The statistics in the table indicate that all three null hypotheses, H_{2a}, H_{2b}, and H_{2c}, were all accepted at the .05 level of significance.

TABLE VIII

SUMMARY OF STUDENT'S t-TEST SCORES FOR FLEXIBILITY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN LOW IQ, MEDIUM IQ, AND HIGH IQ COMPREHENSIVE HIGH SCHOOL AND CONTINUATION HIGH SCHOOL STUDENTS

Ability Level	Mean Scores		Difference	t-Score	P (.05)
	Comprehensive High School	Continuation High School			
Low IQ	11.33	10.23	1.10	1.049	N.S.
Medium IQ	11.97	10.27	1.70	1.356	N.S.
High IQ	11.90	12.43	-.53	.530	N.S.

III. FINDINGS IN ORIGINALITY OF LOW, MEDIUM, AND HIGH IQ STUDENTS

Three hypotheses were stated in Chapter III relating to the creative ability factor of Originality. These hypotheses are restated in the null form as listed below:

H_{3a}. There will be no significant difference in Originality between eleventh and twelfth grade continuation high school students who rank high in intelligence and eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{3b}. There will be no significant difference in Originality between eleventh and twelfth grade continuation high school students who rank medium in intelligence and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{3c}. There will be no significant difference in Originality between eleventh and twelfth grade continuation high school students who rank low in intelligence and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

Table IX indicates that for an N of 30 for each group tested there is a significant difference between high IQ comprehensive high school students and high IQ continuation high school students with respect to Originality as it applies to creativity. The mean score of the high IQ comprehensive high school group was significantly greater than that of the high IQ continuation high school students. As indicated previously, for twenty-nine degrees of freedom, and a level of significance of .05, the t-Score for a two-tailed test must exceed 2.045 before the null hypothesis can be rejected. The t-Score value of 3.578 listed in Table IX safely exceeds the minimum value of 2.045 required for rejection of the null hypothesis H_{3a}. The high IQ comprehensive high school group tested appeared to be more original in their responses than were the high IQ continuation high school group tested.

TABLE IX

STUDENT'S t-TEST USING RAW SCORES FOR ORIGINALITY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN HIGH IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND HIGH IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
High IQ (CHS)	32.53	11.60	30	3.578	**
High IQ (CtHS)	22.30	10.53	30		

**P < .01

Table X indicates that for an N of 30 for each group tested there is no significant difference between medium IQ comprehensive high school students and medium IQ continuation high school students with respect to Originality as it applied to creativity. The statistical data of Table X indicates that the null hypothesis H_{3b} was accepted.

TABLE X

STUDENT'S t-TEST USING RAW SCORES FOR ORIGINALITY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN MEDIUM IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND MEDIUM IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
Medium IQ (CHS)	29.27	12.60	30	1.733	*N.S.
Medium IQ (CtHS)	23.57	12.87	30		

*N.S., $P < .10$ level of confidence

Table XI indicates that for an N of 30 for each group tested there is no significant difference between low IQ comprehensive high school students and low IQ continuation high school students with respect to Originality as it applies to creativity. The mean score of the low IQ continuation high school students was larger than that of the low IQ comprehensive high school students. Upon further analysis with the Student t-Test, the mean score of the low IQ continuation group was not quite large enough to generate a significant t-Score. The statistical data of Table XI indicates that the null hypothesis H_{3c} was accepted.

TABLE XI

STUDENT'S t-TEST USING RAW SCORES FOR ORIGINALITY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN LOW IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND LOW IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	p (.05)
Low IQ (CHS)	18.93	11.86	30	1.742	*N.S.
Low IQ (CtHS)	24.33	12.16	30		

*N.S., $P < .10$ level of confidence

Table XII summarizes the statistical findings of Tables IX, X, and XI relating to the creative ability factor of Originality. Statistical data relating to the Originality mean scores of high, medium, and low IQ comprehensive high school students tested are much more diversified and spread out than are those of the low, medium, and high IQ continuation high school students tested. The Originality mean scores of the low, medium, and high IQ continuation high school students tested are clustered within a comparatively short range of mean scores. The data in the table indicates that the null hypothesis stating there would be no difference in the Originality scores between low IQ comprehensive high school students, and low IQ continuation high school students was accepted. The null hypothesis no difference between Originality scores of medium IQ comprehensive high school students, and medium IQ continuation high school students was also accepted. Both groups failed at the .05 level of confidence.

Table XII indicates that the high IQ comprehensive high school students and high IQ continuation high school students had Originality mean scores which differed beyond the .01 level of significance. The high IQ comprehensive high school students tested appeared to be more original in their responses than were the high IQ continuation high school students tested.

TABLE XII

SUMMARY OF STUDENT'S t-TEST SCORES FOR ORIGINALITY ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN LOW IQ, MEDIUM IQ, AND HIGH IQ COMPREHENSIVE HIGH SCHOOL AND CONTINUATION HIGH SCHOOL STUDENTS

Ability Level	Mean Scores		Difference	t-Score	P (.05)
	Comprehensive High School	Continuation High School			
Low IQ	18.93	24.33	-5.40	-1.742	*N.S.
Medium IQ	29.27	23.57	5.70	1.733	*N.S.
High IQ	32.53	22.30	10.23	3.578	°°

°°P $<$ .01; *N.S., P $<$ .10

IV. FINDINGS IN ELABORATION OF LOW, MEDIUM, AND HIGH IQ STUDENTS

Three hypotheses were stated in Chapter III relating to the creative ability factor of Elaboration. These hypotheses, listed below, are restated in the null form.

H_{4a}. There will be no significant difference in Elaboration between eleventh and twelfth grade continuation high school students who rank high in intelligence and eleventh and twelfth

grade comprehensive high school students who rank high in intelligence.

H_{4b}. There will be no significant difference in Elaboration between eleventh and twelfth grade continuation high school students who rank medium in intelligence and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{4c}. There will be no significant difference in Elaboration between eleventh and twelfth grade continuation high school students who rank low in intelligence and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

Table XIII indicates that for an N of 30 for each group tested there is a significant difference between high IQ comprehensive high school students and high IQ continuation high school students with respect to Elaboration as it applies to creativity. The difference between the two mean scores was great enough to indicate significance at the .001 level of confidence. For twenty-nine degrees of freedom, and a level of significance of .05, the t-Score for a two-tailed test must exceed 2.045 before the null hypothesis can be rejected. The t-Score of 7.383 was large enough to achieve significance at the .001 level of confidence. The statistical data of Table XIII indicates that the null hypothesis H_{4a} was rejected. The high IQ comprehensive high school students appeared to be more

elaborate in their responses than did the high IQ continuation high school students.

TABLE XIII

STUDENT'S t-TEST USING RAW SCORES FOR ELABORATION ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN HIGH IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND HIGH IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
High IQ (CHS)	94.37	39.16	30	7.383	°°°
High IQ (CtHS)	36.77	17.11	30		

°°°P $<$.001

Table XIV indicates that for an N of 30 for each group tested there is a significant difference between medium IQ comprehensive high school students and medium IQ continuation high school students with respect to Elaboration as it applies to creativity. The difference between the two mean scores was great enough to indicate significance beyond the .001 level. For twenty-nine degrees of freedom, and a level of significance of .001, the t-Score for a two-tailed test must exceed 3.569 before the null hypothesis can be rejected at this level. The level set for this investigation was .05. A t-Score greater than 2.045 is needed to reject the null hypothesis at the .05 level. The t-Score listed in the statistical data of Table XIV indicates that it exceeds the value required for rejection of the null hypothesis. The null hypothesis H_{4b}, as indicated by the statistical data of Table XIV, was, therefore, rejected.

TABLE XIV

STUDENT'S t-TEST USING RAW SCORES FOR ELABORATION ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN MEDIUM IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND MEDIUM IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
Medium IQ (CHS)	90.40	40.94	30	5.656	°°°
Medium IQ (CtHS)	50.65	23.48	30		

°°° $P < .001$

Table XV indicates that for an N of 30 for each group tested there is a significant difference between low IQ comprehensive high school students and low IQ continuation high school students with respect to Elaboration as it applies to creativity. The difference between the two mean scores was great enough to indicate significance beyond the .01 level. For twenty-nine degrees of freedom, and a level of significance of .01, the t-Score for a two-tailed test must exceed 2.617 before the null hypothesis can be rejected at this level. The level set for this investigation was .05. A t-Score greater than 2.045 is needed to reject the null hypothesis at the .05 level. The t-Score listed in the statistical data of Table XV indicates that it exceeds the value required for the rejection of the null hypothesis at the .05 level. The statistical data of Table XV indicates, therefore, that the null hypothesis H_{4c}

was rejected. The low IQ comprehensive high school group tested appeared to be more elaborate in their responses than did the low IQ continuation high school group tested.

TABLE XV

STUDENT'S t-TEST USING RAW SCORES FOR ELABORATION ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN LOW IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND LOW IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Source	Mean Scores	Standard Deviation	N	t-Score	P (.05)
Low IQ (CHS)	64.24	34.39	30	2.831	°
Low IQ (CtHS)	43.70	20.01	30		

° $P < .05$

Table XVI summarizes the statistical findings of Tables XIII, XIV, and XV relating to the creative ability factor of Elaboration. The Elaboration mean scores of the low, medium, and high IQ continuation high school students tested were clustered within a comparatively short range of the mean scores. The Elaboration mean scores of the medium and high IQ comprehensive high school students tested were clustered and relatively close together. The Elaboration mean of the low IQ comprehensive high school students was lower and separated from the Elaboration mean scores of the medium and high IQ comprehensive high school students tested.

Table XVI indicates that the high, medium, and low IQ comprehensive high school students and the high, medium, and low IQ continuation high school students had Elaboration mean scores which differed at the .05 level of significance. The high, medium, and low IQ comprehensive high school students tested appeared to be more elaborate in their responses than did the high, medium, and low IQ continuation high school students tested.

TABLE XVI

SUMMARY OF STUDENT'S t-TEST SCORES FOR ELABORATION ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B BETWEEN LOW IQ, MEDIUM IQ, AND HIGH IQ COMPREHENSIVE HIGH SCHOOL AND CONTINUATION HIGH SCHOOL STUDENTS

Ability Level	Mean Scores		Difference	t-Score	p (.05)
	Comprehensive High School	Continuation High School			
Low IQ	64.24	43.70	20.54	2.831	°
Medium IQ	90.40	50.65	39.75	5.656	°°°
High IQ	94.37	36.77	57.60	7.383	°°°

° $p < .05$
°°° $p < .001$

V. FINDINGS RELATING TO HIGH IQ STUDENTS IN FLUENCY, FLEXIBILITY, ORIGINALITY, AND ELABORATION

Four hypotheses were stated in Chapter III relating to the creative ability of high IQ students in the areas of Fluency,

Flexibility, Originality, and Elaboration. These hypotheses are restated in the null form as listed below:

H_{1a}. There will be no significant difference in Fluency between eleventh and twelfth grade continuation high school students who rank high in intelligence and eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{2a}. There will be no significant difference in Flexibility between eleventh and twelfth grade continuation high school students who rank high in intelligence and eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{3a}. There will be no significant difference in Originality between eleventh and twelfth grade continuation high school students who rank high in intelligence and eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

H_{4a}. There will be no significant difference in Elaboration between eleventh and twelfth grade continuation high school students who rank high in intelligence and eleventh and twelfth grade comprehensive high school students who rank high in intelligence.

Table XVII is a summary of a comparison of the mean score of high IQ comprehensive high school students with the mean score of high IQ continuation high school students in the creative

ability factors of Fluency, Flexibility, Originality, and Elaboration. This table indicates that there is no significant difference, at the .05 level of confidence, in the Fluency and Flexibility of high IQ comprehensive high school students and high IQ continuation high school students. The null hypotheses, H_{1a} and H_{2a}, were both accepted. There is, however, a significant difference in the Originality and Elaboration mean scores of high IQ comprehensive high school students and high IQ continuation high school students. Table XVII indicates that there is a significant difference, beyond the .01 level of confidence, in the Originality of high IQ comprehensive high school students and high IQ continuation high school students. The high IQ comprehensive high school students tested appeared to be more original in their responses than were the high IQ continuation high school students tested.

Table XVII also indicates that there is a significant difference, beyond the .001 level of confidence, in the Elaboration of high IQ comprehensive high school students and high IQ continuation high school students tested. The high IQ comprehensive high school students tested appeared to be more elaborate in their responses than were the high IQ continuation high school students tested.

TABLE XVII

COMPARISON OF PERFORMANCES OF HIGH IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS) WITH HIGH IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS) IN THE CREATIVE ABILITY FACTORS OF FLUENCY, FLEXIBILITY, ORIGINALITY, AND ELABORATION ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B

Measure	(CtHS) High IQ		(CHS) High IQ		t-ratio	P (.05)
	Mean	Standard Deviation	Mean	Standard Deviation		
Fluency	15.27	5.43	14.30	4.14	.7754	N.S.
Flexibility	12.43	4.38	11.90	3.57	.5397	N.S.
Originality	22.30	10.53	32.53	11.60	3.5777	°°
Elaboration	36.77	17.11	94.37	39.16	7.3878	°°°

°° $P < .01$
°°° $P < .001$

VI. FINDINGS RELATING TO MEDIUM IQ STUDENTS IN FLUENCY, FLEXIBILITY, ORIGINALITY, AND ELABORATION

Four hypotheses were stated in Chapter III relating to the creative ability of medium IQ students in the areas of Fluency, Flexibility, Originality, and Elaboration. These hypotheses are restated in the null form as listed below:

H_{1b}. There will be no significant difference in Fluency between eleventh and twelfth grade continuation high school students who rank medium in intelligence and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{2b}. There will be no significant difference in Flexibility between eleventh and twelfth grade continuation high school students who rank medium in intelligence and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{3b}. There will be no significant difference in Originality between eleventh and twelfth grade continuation high school students who rank medium in intelligence and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

H_{4b}. There will be no significant difference in Elaboration between eleventh and twelfth grade continuation high school students who rank medium in intelligence and eleventh and twelfth grade comprehensive high school students who rank medium in intelligence.

Table XVIII is a summary of a comparison of the mean score of medium IQ comprehensive high school students with the mean score of medium IQ continuation high school students in the creative ability factors of Fluency, Flexibility, Originality, and Elaboration. This table indicates that there is no significant difference, at the .05 level of confidence, in Fluency, Flexibility, and Originality of medium IQ comprehensive high school students and medium IQ continuation high school students. The null hypotheses H_{1b}, H_{2b}, and H_{3b} were not rejected.

There is, however, a significant difference in the Elaboration mean scores of medium IQ comprehensive high school students and medium IQ continuation high school students. Table XVIII indicates that there is a significant difference, beyond the .001 level of confidence, in the Elaboration of medium IQ comprehensive high school students and medium IQ continuation high school students. The medium IQ comprehensive high school students tested appeared to be more elaborate in their responses than were the medium IQ continuation high school students tested.

TABLE XVIII

COMPARISON OF PERFORMANCES OF MEDIUM IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS) WITH MEDIUM IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS) IN THE CREATIVE ABILITY FACTORS OF FLUENCY, FLEXIBILITY, ORIGINALITY, AND ELABORATION ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B

Measure	(CtHS) Medium IQ		(CHS) Medium IQ		t-ratio	P (.05)
	Mean	Standard Deviation	Mean	Standard Deviation		
Fluency	15.27	7.07	17.07	8.80	.8736	N.S.
Flexibility	10.27	4.76	11.97	4.89	1.3653	*N.S.
Originality	23.57	12.87	24.27	12.60	1.7334	*N.S.
Elaboration	50.67	28.48	99.40	40.94	5.6557	°°°

°°° $P < .001$; *N.S., $P < .10$

VII. FINDINGS RELATING TO LOW IQ STUDENTS IN FLUENCY, FLEXIBILITY, ORIGINALITY, AND ELABORATION

Four hypotheses were stated in Chapter III relating to the creative ability of low IQ students in the areas of Fluency, Flexibility, Originality, and Elaboration. These hypotheses are restated in the null form as listed below:

H_{1c}. There will be no significant difference in Fluency between eleventh and twelfth grade continuation high school students who rank low in intelligence and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

H_{2c}. There will be no significant difference in Flexibility between eleventh and twelfth grade continuation high school students who rank low in intelligence and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

H_{3c}. There will be no significant difference in Originality between eleventh and twelfth grade continuation high school students who rank low in intelligence and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

H_{4c}. There will be no significant difference in Elaboration between eleventh and twelfth grade continuation high school students who rank low in intelligence and eleventh and twelfth grade comprehensive high school students who rank low in intelligence.

Table XIX is a summary of a comparison of the mean score of low IQ comprehensive high school students with the mean score of low IQ continuation high school students in the creative ability factors of Fluency, Flexibility, Originality, and Elaboration. This table indicates that there is no significant difference, at the .05 level of confidence, in the Fluency, Flexibility, and Originality of low IQ comprehensive high school students and low IQ continuation high school students. The null hypotheses H_{1c}, H_{2c}, and H_{3c} were not rejected.

There is a significant difference, beyond the .20 level of confidence, in the Originality mean scores of the low IQ comprehensive high school students and the low IQ continuation high school students. Since the level of confidence set for this investigation was .05, the null hypothesis H_{3c} must be accepted. The level of confidence obtained, .20, does indicate, however, that a further investigation of this creative ability factor should be considered.

There is also a significant difference in the Elaboration mean scores of low IQ comprehensive high school students and low IQ continuation high school students. Table XIX indicates that there is a significant difference, beyond the .05 level of confidence, in the Elaboration of low IQ comprehensive high school students and low IQ continuation high school students. The low IQ comprehensive high school students tested

appeared to be more elaborate in their responses than were the low IQ continuation high school students tested.

TABLE XIX

COMPARISON OF PERFORMANCES OF LOW IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS) WITH LOW IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS) IN THE CREATIVE ABILITY FACTORS OF FLUENCY, FLEXIBILITY, ORIGINALITY, AND ELABORATION ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B

Measure	(CtHS) Low IQ		(CHS) Low IQ		t-ratio	P (.05)
	Mean	Standard Deviation	Mean	Standard Deviation		
Fluency	13.57	4.93	14.73	7.00	.7461	N.S.
Flexibility	10.23	3.34	11.33	4.67	1.0493	N.S.
Originality	24.33	12.16	18.93	11.86	1.7417	*N.S.
Elaboration	43.70	20.01	64.27	34.39	2.8309	°

° $P < .05$; *N.S., $P < .20$

Table XX is a summary of the comparison of performances of high, medium, and low IQ comprehensive high school students with high, medium, and low IQ continuation high school students in the creative ability factors of Fluency, Flexibility, Originality, and Elaboration on the Torrance Test of Creative Thinking--Figural B. This table indicates that high IQ comprehensive high school students scored significantly higher in the areas of Originality and Elaboration than did continuation high school students tested. It also indicates that medium and low IQ comprehensive high school students scored significantly higher in the creative ability factor of Elaboration than did the continuation high school students tested.

TABLE XX

SUMMARY OF THE COMPARISON OF PERFORMANCES OF HIGH, MEDIUM, AND LOW IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS) WITH HIGH, MEDIUM, AND LOW IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS) IN THE CREATIVE ABILITY FACTORS OF FLUENCY, FLEXIBILITY, ORIGINALITY, AND ELABORATION ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B

	Measure	Continuation High School Mean	Continuation High School Standard Deviation	Comprehensive High School Mean	Comprehensive High School Standard Deviation	t-ratio	P (.05)
High IQ	Fluency	15.27	5.43	14.30	4.14	- .7754	N.S.
	Flexibility	12.45	4.38	11.90	3.57	- .5297	N.S.
	Originality	22.30	10.53	32.53	11.60	3.5777	°°
	Elaboration	36.77	17.11	94.37	39.16	7.3878	°°°
Medium IQ	Fluency	15.27	7.07	17.07	8.80	.8736	N.S.
	Flexibility	10.27	4.76	11.97	4.89	1.3653	(N.S.[a])[b]
	Originality	23.57	12.87	24.27	12.60	1.7334	(N.S.)[c]
	Elaboration	50.67	28.48	99.40	40.94	5.6557	°°°
Low IQ	Fluency	13.57	4.93	14.73	7.00	.7461	N.S.
	Flexibility	10.23	3.34	11.33	4.67	1.0493	N.S.
	Originality	24.33	12.16	18.93	11.86	-1.7417	(N.S.)[d]
	Elaboration	43.70	20.01	64.27	34.39	2.5309	°

a. Scores in parenthesis are not considered statistically significant for the normative comparison of data in this investigation. This data is recorded to alert further investigators of findings which may be suggestive of further research.

b. Not significant for this investigation, $P < .10$, in favor of comprehensive high school students (CHS).

c. Not significant for this investigation, $P < .20$, in favor of comprehensive high school students (CHS).

d. Not significant for this investigation, $P < .20$, in favor of continuation high school students (CtHS).

°, $P < .05$; °°, $P < .01$; °°°, $P < .001$. All significant levels of confidence listed were in favor of (CHS).

Table XXI is a summary related to the data in Table XX, but lists the data in a different order of comparison. This table is a summary of the comparison of performances of high, medium, and low IQ comprehensive high school students with high, medium, and low IQ continuation high school students in the creative ability factors of Fluency, Flexibility, Originality, and Elaboration on the Torrance Test of Creative Thinking--Figural B. The table indicates that high IQ comprehensive high school students scored significantly higher in the creative ability factor of Originality than did the continuation high school students tested. Low, Medium, and high IQ comprehensive high school students scored significantly higher in the creative ability factor of Elaboration than did the continuation high school students tested. There was no significant difference in mean scores obtained by comprehensive and continuation high school students tested in the creative ability factors of Fluency and Flexibility. No significant differences in mean scores were found for low and medium IQ comprehensive and continuation high school students tested in the creative ability factor of Originality.

VIII. SUMMARY

This chapter presented the data in its statistical implications as they relate to this study. The level of confidence set for this investigation was .05. High IQ comprehensive

TABLE XXI

SUMMARY OF STUDENT'S t-TEST USING RAW SCORES FOR FLUENCY SCORES, FLEXIBILITY SCORES, ORIGINALITY SCORES, AND ELABORATION SCORES ON THE TORRANCE TEST OF CREATIVE THINKING--FIGURAL B, BETWEEN LOW, MEDIUM, AND HIGH IQ COMPREHENSIVE HIGH SCHOOL STUDENTS (CHS), AND LOW, MEDIUM, AND HIGH IQ CONTINUATION HIGH SCHOOL STUDENTS (CtHS)

Measure		Mean Scores (CHS)	Mean Scores (CtHS)	Difference	t-ratio	P (.05)
Fluency	Low IQ	14.73	13.56	1.17	.7461	N.S.
	Medium IQ	17.07	15.27	1.80	.8736	N.S.
	High IQ	14.30	15.27	- .97	- .7754	N.S.
Flexibility	Low IQ	11.33	10.23	1.10	1.0493	N.S.
	Medium IQ	11.97	10.27	1.70	1.3653	(N.S.[a])[b]
	High IQ	11.90	12.43	- .53	- .5297	N.S.
Originality	Low IQ	18.93	24.33	-5.40	-1.7417	(N.S.)[c]
	Medium IQ	29.27	23.57	5.70	1.7334	(N.S.)[d]
	High IQ	32.53	22.30	10.23	3.5777	°°
Elaboration	Low IQ	43.70	20.01	23.64	2.5309	°
	Medium IQ	50.67	28.48	22.19	5.6557	°°°
	High IQ	36.77	17.11	19.66	7.3878	°°°

a. Scores in parenthesis are not considered statistically significant for the normative comparison of data in this investigation. This data is recorded to alert future investigators of findings which may be suggestive of further research.
b. Not significant for this investigation, $P < .10$, in favor of (CHS).
c. Not significant for this investigation, $P < .20$, in favor of (CtHS).
d. Not significant for this investigation, $P < .20$, in favor of (CHS).
°, $P < .05$; °°, $P < .01$; °°°, $P < .001$. All significant levels of confidence listed were in favor of (CHS).

high school students scored significantly higher in the creative ability factors of Originality and Elaboration than did continuation high school students tested. Medium and low IQ comprehensive high school students, when compared to medium and low IQ continuation high school students, scored significantly higher in the creative ability factor of Elaboration.

High IQ comprehensive high school students scored significantly higher in the creative ability factor of Originality than did the continuation high school students tested. Low, medium, and high IQ comprehensive high school students scored significantly higher in the creative ability factor of Elaboration than did the continuation high school students tested.

Fluency and Flexibility failed to show a significant difference between low, medium, and high IQ comprehensive high school students tested and low, medium, and high IQ continuation high school students tested.

No significant differences in mean scores were found for low and medium IQ comprehensive high school students tested and low and medium IQ continuation high school students tested.

Chapter V discusses the investigator's interpretation of the findings reported in this chapter. The investigator also offers recommendations for further study.

CHAPTER V

CONCLUSIONS BASED UPON THE INVESTIGATION AND RECOMMENDATIONS FOR FURTHER RESEARCH

It was the purpose of this study to investigate and compare relationships which exist between the tested creative behavior of continuation high school students and their counterparts in a comprehensive high school in Sacramento, California. Each of the two groups tested, comprehensive high school students and continuation high school students, were stratified into three IQ groups, low, medium, and high, with a random sample of 30 students being selected for each IQ category at each of the participating schools. Creativity was measured for the factors of Fluency, Flexibility, Originality, and Elaboration. This study was organized and conducted by using the research design and procedures outlined in Chapter III. The findings reported were based upon the raw score data obtained from student scores on the Torrance Test of Creative Thinking--Figural B, and the Lorge-Thorndike Intelligence Tests, Multi-Level Edition.

This chapter is organized into six major section: in the first four sections, conclucions based upon the investigation are presented relative to data reported in Chapter IV

regarding the four creative ability factors: (a) Fluency, (b) Flexibility, (c) Originality, and (d) Elaboration. The fifth section presents recommendations for further study relating to the factors of creativity, and curriculum and instruction. The sixth, and final, section contains a concluding statement.

The conclusions and recommendations which were obtained through this study are in terms relative to the assumptions and limitations stated in Chapter I.

I. CONCLUSIONS DRAWN FROM THE INVESTIGATION

The following conclusions were drawn as a result of this study. They are outlined under four major headings relating to factors of creative ability. These include: (a) Fluency, (b) Flexibility, (c) Originality, and (d) Elaboration.

Fluency

E. Paul Torrance relates Fluency to the production and association of many ideas in a given period of time.[1] The null hypotheses relating to Fluency, H_{1a}, H_{1b}, and H_{1c}, were not substantiated, indicating that there was no significant difference in Fluency between low, medium, and high IQ eleventh and twelfth grade continuation high school students and low, medium, and high IQ eleventh and twelfth grade comprehensive high school students. The data suggests that the students in

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[1]E. Paul Torrance, Rewarding Creative Behavior (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1965), pp. 298-302.

both the eleventh and twelfth grade continuation high school groups and the eleventh and twelfth grade comprehensive high school groups did not differ from each other in the creative ability factor of Fluency.

The findings also indicate that IQ levels, low, medium, and high, have little bearing upon the ability of continuation high school students to score higher on the creative ability factor of Fluency than would the comprehensive high school students or vice versa. A comparison of the mean scores of low, medium, and high IQ continuation high school students with those of low, medium, and high IQ comprehensive high school students indicates a maximum difference between and within the groups of only three mean score units. All the scores were clustered and very close together. These findings, especially when related to the creative ability factor of Fluency, were in keeping with the following rationale developed by Jacob W. Getzels and Philip W. Jackson:

> ...If the correlations between intelligence test scores and many types of creative performance are only moderate or low, and it is predicted that such correlations will be found, it is because the primary abilities represented in those tests are not all important for creative behavior. It is also because the primary abilities represented in those tests are not all important for creative behavior. It is also because some of the primary abilities important for creative behavior are not represented in the test at all.[2]

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[2]Jacob W. Getzels and Philip W. Jackson, Creativity and Intelligence (New York: John Wiley & Sons, Inc., 1962), p. 6.

This data also indicates that the many varied reasons, truancies, behavior problems, pregnancy, etc., for the referral of comprehensive high school students to the continuation high school have little bearing on the mean scores obtained by these students on the Torrance Test of Creative Thinking on the creative ability factor of Fluency.

Flexibility

Torrance states that "this kind of thinking enables a person to keep out of ruts by jumping readily from one train of thought to another in thinking of new uses for devices or products."[3]

The null hypotheses relating to Flexibility, H_{2a}, H_{2b}, and H_{2c}, were not substantiated, indicating that there was no significant difference in Flexibility between low, medium, and high IQ eleventh and twelfth grade continuation high school students and low, medium, and high IQ eleventh and twelfth grade comprehensive high school students.

The data suggests that the students in both the continuation high school groups and the comprehensive high school groups did not differ from each other in the creative ability factor of Flexibility. The continuation groups were just as flexible in drawing responses as were the comprehensive groups. This would suggest that the continuation high school groups were just as capable of viewing objects as having characteristics of many categories as were the comprehensive high school groups tested.

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[3]Torrance, op. cit., p. 303.

The difference in mean scores in the creative ability factor of Flexibility was only four percentage points between the comprehensive high school groups tested and the continuation high school groups tested. This small difference would indicate that the two groups were very similar in this creative ability factor.

J. P. Guilford, in discussing Traits of Creativity, indicates that the creative ability factor of Flexibility has consistently shown some small relationships to performance in mathematics and in some instance to achievement in physics. It was found, for instance, that there was an average correlation with achievement in mathematics of .33 and the relation to grades in physics to be .23. Among aircraft engineers a score for Flexibility correlated .31 with the criterion of rate of increase in pay. Guilford states that "Quantitative thinking that involves relatively novel problems seems generally to be related to the creative ability factor of Flexibility."[4]

The December 10, 1972 Report of Achievement Test Scores for the Sacramento City Unified School District[5] indicates a significant difference in scores between the achievement test scores of continuation high school students and their comprehensive high school counterparts. These differences in

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[4]J. P. Guilford, "Traits of Creativity," Creativity and Its Cultivation (New York: Harper & Row, 1959), p. 146.

[5]Sacramento City Unified School District, "December 10, 1972 Report of Achievement Test Scores, Sacramento City Unified School District," 1972 Research Bulletins, Sacramento City Unified School District (Sacramento: Sacramento City Unified School District, 1972), p. 40.

achievement test scores which range, in the case of mathematics, in the lower quartile for continuation high school students do not account for their nearly equal showing in the creative ability factor of Fluency. This study indicates no significant difference in the creative ability factor of Flexibility between the continuation high school groups tested and the comprehensive high school groups tested. The poor showing of continuation high school students on the mathematics portion of the Wide Range Achievement Test, as compared to their comprehensive high school peers, indicates some degree of inconsistency in the correlation discussed by Guilford and the results obtained in this investigation.

Kalil I. Gezi indicates that there is research which shows that there is a relationship between creativity and achievement. He relates that Getzels and Jackson found that the achievement of creative students as well as students with high IQ's were superior to the achievement of the school population as a whole. Gezi refers to a study by Yamamoto who found that highly creative students were significantly better in achievement than low creativity students.[6]

The poor showing of continuation high school students on standardized achievement tests is well known among continuation high school educators, and is emphasized by John R. Eales

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[6]Kalil I. Gezi & James E. Myers, "Creativity: Its Meaning and Development," Teaching in American Culture (New York: Holt Rinehart and Winston, Inc., 1968), p. 399.

in his Clip Sheet on Continuation Education.[7] Written tests requiring a high degree of reading comprehension are generally abhored by continuation high school students. It may be that the Torrance Test of Creativity was not as threatening as the Wide Range Achievement Test. Glen H. Elder, in discussing The Schooling of the Outsiders[8], relates to the underachieving nature of the continuation high school students and to their abhorrence of taking written tests. The picture-drawing type of activities listed in the Torrance Test of Creativity may account for the insignificant difference in Flexibility scores obtained by the comprehensive and continuation high school comparative groups.

Originality

Torrance states that "originality involves the production of clever or uncommon responses to specific situations. An example would be writing 'It's time to retire' as a caption for a picture of a sleepy child standing near a worn tire."[9]

The null hypotheses relating to Originality, H_{3a}, and H_{3b}, were not substantiated, indicating that there was no significant difference, beyond the .05 level of confidence, in Originality between low and medium IQ eleventh and twelfth

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[7]John R. Eales, Clip Sheet on Continuation Education (Sacramento: California State Department of Education, Division of Instruction, October, 1972), pp. 5-6.

[8]Glen H. Elder, The Schooling of the Outsiders (Berkeley, California: Bay Area Education Research Service, 1966), pp. 25-40.

[9]Torrance, op. cit., p. 75.

grade continuation high school students and low and medium IQ eleventh and twelfth grade comprehensive high school students.

The data suggests that the students in both the low and medium IQ continuation high school groups tested and the low and medium IQ comprehensive high school groups tested did not differ from each other in the creative ability factor of Originality. This data would suggest that the low and medium IQ continuation students tested were as adroit in the production of clever or uncommon responses to specific situations as were the low and medium IQ comprehensive high school students tested.

The null hypothesis, H_{3c}, was substantiated, indicating that there was a significant difference, beyond the .05 level of significance, in Originality between high IQ eleventh and twelfth grade comprehensive high school students tested and high IQ continuation high school students tested.

The data suggests that the high IQ students in the eleventh and twelfth grade comprehensive high school group scored significantly higher on the creative ability factor of Originality than did the high IQ students in the eleventh and twelfth grade continuation high school group tested. This would suggest that the high IQ comprehensive high school group tested was more productive in the production of clever or uncommon responses to specific situations. Originality is

indicated by scores in which the keyed responses are weighted in proportion to their infrequency of occurrence in the population of examinees. The high IQ eleventh and twelfth grade comprehensive high school students tested had a mean score in the creative ability factor of Originality which ranked close to the upper quartile in the normative population. The mean T-score for the comprehensive high school group tested, as indicated in Appendix E, was 71; whereas, it was 53 for the continuation high school group tested.

Gezi, in discussing the Relationship of Creativity to Intelligence, indicates in his study that a certain level of intelligence is necessary in order for a person to be highly creative. This level, he infers, is an IQ which lies between 115--120. He states that beyond this level intelligence does not seem to make much difference in creativity. He adds that intelligence, as measured by IQ tests, is not a sufficient criterion of creativity. He continues by saying that a person may be creative without being particularly intelligent, and he can be highly intelligent although not creative.[10]

Robert D. Strom, in discussing the education of disadvantaged youth, indicates that many of these youngsters come from homes which are lacking in varied experiences. Few of these students, he indicates, have traveled beyond their own neighborhood. Many, he adds, are addicted to watching many hours of television. They are isolates, or loners, and

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[10]Gezi, loc. cit.

have had little chance to broaden their experiential horizons beyond their own cultural experience. This cultural experience, he adds, is not the kind reflected in many of the standardized tests administered indiscriminately to youths of all races, cultures, and creeds.[11]

The reasoning used by Strom may apply to continuation high school students since, as Eales indicates, many are from disadvantaged homes where there may be only one parent, or where the annual wage is at the subsistence level.[12] The lack of a home environment which is rich in experiences and which allows for many varied activities may be a prime reason why the high IQ continuation high school students scored significantly lower on the creative ability factor of Originality than did the high IQ comprehensive high school students. The isolate nature of the continuation high school student may also affect his ability to excel in the creative ability factor of Originality.

Voss has described continuation high school students as students low in self concept. These students, he adds, have a low acceptance of self and in acceptance of others exhibit high anxiety, impulsiveness, low morale, overdependence, and a marked tendency to accommodate others. These students, he

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[11]Robert D. Strom, "A Realistic Curriculum for the Predictive Dropout," The Disadvantaged and Potential Dropout, ed. John Curtis Gowan, (Springfield, Illinois: Charles C. Thomas, 1966), pp. 293-309.

[12]Eales, loc. cit.

relates, are isolates and tend to have few friends.[13] With this description in mind, it appears as though another block to being creative is inherently present in the continuation high school student's personality.

Lack of a stimulating environment in the home, the isolate nature of the continuation high school student, and his poor self image may all three tend to weigh on the ability of the continuation high school student to at least equal his comprehensive high school counterpart in the creative ability factor of Originality. It appears as though a rebel-like or non-conforming nature, in the case of the continuation high school student, may be coupled with other factors which may hinder, rather than enhance, the ability of the continuation high school student to achieve his creative ability potential in the area of Originality.

Since Originality involves the production of clever or uncommon responses to specific situations, it appears as though an enriched experiential background would allow for a greater number of combinations of ideas from which one could draw in order to come up with uncommon responses. The comparatively richer home life, and a comparatively healthy self image may be reasons why the eleventh and twelfth grade high IQ

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[13]John W. Voss, Handbook on Continuation Education in California (Sacramento: Bureau of Elementary and Secondary Education, California State Department of Education, 1968), p. 27.

comprehensive high school group tested did significantly better on that portion of the test which dealt with the creative ability factor of Originality.

Elaboration

Torrance states that "the Elaboration score reflects the subject's ability to develop, embroider, embellish, carry out, or otherwise elaborate ideas."[14]

The null hypotheses relating to Elaboration, H_{4a}, H_{4b}, and H_{4c}, were substantiated, indicating that there was a significant difference, beyond the .05 level of confidence, in Elaboration between low, medium, and high IQ eleventh and twelfth grade continuation high school students and low, medium, and high IQ eleventh and twelfth grade comprehensive high school students.

The data suggests that the students in the low, medium, and high IQ continuation high school groups tested and the low, medium, and high IQ comprehensive high school groups tested did differ from each other in the creative ability factor of Elaboration. This data would also suggest that the low, medium, and high IQ comprehensive high school students tested were more able to develop, embroider, embellish, carry out, or otherwise elaborate ideas than were the low, medium, and high IQ continuation high school students tested.

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[14]Torrance, loc. cit.

The findings obtained in this investigation tend to support those reported by Torrance, suggesting that delinquents and school dropouts seem to be characterized by low Elaboration scores, although they may have high Fluency, Flexibility, and Originality scores.[15]

In his discussion on the development of the ability to elaborate, Torrance indicates that students who score low on the creative ability factor of Elaboration tend to fall short of their potential achievement because they fail to follow through. These students, he adds, are generally those who have not had the training to follow through on their ideas and work out their full implications. He continues his discussion by inferring that these individuals may fail to reach an important discovery just because they did not press their thinking far enough.[16]

Elder, in his discussion of The Schooling of Outsiders, indicates that continuation high school students typically do not tend to see to completion many of their assigned learning tasks. He ascribes this lack of follow-through to the many failures in class work that the continuation high school student has experienced throughout his public school career. These students, he continues, generally have poor school attendance, and generally have a low regard for academic school work. He adds that continuation high school students

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[15]Torrance, op. cit., pp. 310-311.

[16]Ibid.

generally score low on achievement tests and that they generally abhore the taking of standardized tests.[17]

Strom has indicated in his study that the potential dropout generally has difficulty with abstract reasoning, generalizing, analyzing, and inferring relationships. He adds that the potential dropout has form perception abilities and sensory-motor and spatial relationships which are below normal. Strom continues by stating that the potential dropout shows limitation in his ability to communicate effectively, planning and completing assignments, and sustaining attention and interest. Strom's studies indicate that the potential dropout is likely to be a loner, rejecting or being rejected by his peers. The home of the potential dropout, Strom continues, may reflect cultural patterns different from or incompatible with those of the school, so that parental support of his adjustment to education is not forthcoming.[18]

The data obtained in Chapter IV indicates that the continuation high school does not contain a reservoir of highly creative students. The data suggests that there may be several factors which tend to adversely affect their creative potential. Many continuation high school students appear to come from homes where the completion of a task is not stressed. This may be due, as Strom has indicated, to a lack of proper supervision in the home due to absentee or working parents.[19] The factors of

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[17]Elder, op. cit., pp. 25-78.

[18]Strom, op. cit., p. 295.

[19]Ibid.

negative self image, self isolation, and poor supervision in the home all seem to weigh adversely in the development of Elaboration skills in the low, medium, and high IQ continuation high school student.

II. RECOMMENDATIONS FOR FURTHER STUDY

Factors of Creativity

The findings of this study run counter to those suggested as the main thesis of this study. It was suggested that the rebel-like or nonconforming behavior of continuation high school students was conducive to creative behavior, and that continuation high schools may have more than their share of highly creative students. It is evident from the data collected in this study that more data is needed on the variables which characterize the highly creative individual. Further studies are needed to define more comprehensively those character traits which are held in common by highly creative individuals.

This study suggests that there is little significant difference between continuation and comprehensive high school students in the creative ability factors of Fluency and Flexibility. In the creative ability factor of Originality, there was no significant difference between low and high IQ continuation high school students tested, and low and high IQ comprehensive high school students tested. Medium IQ continuation high school students tested, and medium IQ comprehensive

high school students tested differed significantly in the creative ability factor of Originality. The study indicates that medium IQ comprehensive high school students are more creative than medium IQ continuation high school students.

In terms of the creative factors tested, it appears as though, in those areas in which a significant difference was observed, the comprehensive high school students are generally more creative than the continuation high school students participating in the study.

The findings in Chapter IV suggest that there are three areas in this study which need further clarification in order to further distinguish the creative ability of low, medium, and high IQ continuation high school and low, medium, and high IQ comprehensive high school students. These two areas are the creative ability factors of Flexibility and Originality. The level of confidence obtained when comparing medium IQ continuation high school students and medium IQ comprehensive high school students in the creative ability factor of Flexibility was .20. The level of confidence obtained when comparing low IQ continuation high school students with low IQ comprehensive high school students for the creative ability factor of Originality was .10. A .10 level of confidence was also obtained when comparing medium IQ continuation high school students with medium IQ comprehensive high school students for the creative ability factor of Originality.

There also appears to be a discrepancy in the creative ability factor of Originality. The high IQ comprehensive high school students tested scored significantly higher than did the high IQ continuation high school students tested. The medium IQ comprehensive high school students did not score high enough above the medium IQ continuation high school students to achieve significance at the .05 level, the level of confidence which must be exceeded for this investigation. The .10 level of confidence was, however, achieved in favor of the medium IQ comprehensive high school students. The low IQ continuation high school students, on the other hand, obtained higher scores on the creative ability factor of Originality than did the low IQ comprehensive high school students tested. The difference in mean scores for the two groups tested was not great enough to exceed the .05 level of confidence, the confidence level set for this investigation. The .10 level of confidence was, however, exceeded in favor of the low IQ continuation high school students. It is, therefore, recommended that in future studies concerning the relationship of creativity to low, medium, and high IQ continuation high school students, and low, medium, and high IQ comprehensive high school students that studies related to the creative ability factors of Flexibility and Originality be replicated.

One of the major problems which occurred during the investigation was related to the administration of the Torrance

Test of Creativity Figural---B to eleventh and twelfth grade continuation high school students. Some students were not sure they wanted to take the test. Once they made up their minds to take the test, it seemed apparent that some students may not have worked to capacity. They became discouraged quite easily, and gave up the chore of answering the questions several minutes before the designated time period had expired. It has become apparent to the investigator that the continuation high school students tested could have been better prepared for the test. It might be helpful, in the event that this study is replicated, if the test on creativity were administered as a part of the continuation high school student's daily assignment. Several of the continuation high school students participating in the study were hesitant in taking the test because they were concerned about the completion of work assigned for that day. It might also be advisable for a future investigator administering the test on creativity to continuation high school students to limit the size of their testing groups to ten. Continuation high school students are used to working on small individual basis. Groups of twenty continuation high school students appeared to be too large. When taking the creativity test in groups of twenty, the students appeared to be more hurried and frustrated than when groups of ten were administered the test. The comprehensive

high school group tested did not seem to be disturbed, frustrated, or hurried when being tested in groups of twenty.

Because of the overwhelming number of students in the lower socio-economic strata attending the continuation high school studied, the relationship between factors of creativity and the socio-economic status of continuation high school students and comprehensive high school students should also be explored. Since the schools participating in this study were from an urban setting, it is recommended that a future study include an investigation of the creative ability factors relating to students attending rural comprehensive high schools and rural continuation high schools.

Curriculum and Instruction

Low, medium, and high IQ continuation high school students participating in the investigation all scored significantly lower on the creative ability factor of Elaboration than did the low, medium, and high IQ comprehensive high school students participating in the study. Torrance has indicated that students who score low on the creative ability factor of Elaboration tend to fall short of their potential achievement because they fail to follow through. These students, he adds, are generally those who have not had the training to follow through on their ideas and work out their full implications.[20]

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[20]Torrance, loc. cit.

This analysis of the student with a low Elaboration score indicates that something can be done to teach continuation high school students to follow through and take a task to completion. It is recommended that educators in the area of continuation education consider the development of studies which would help in the discovery of instructional methods and techniques, and curriculum which would help to alleviate the continuation high school student's inability to elaborate at an acceptable level.

Continuation high school educators have been aware of the continuation high school student's lack of following through or his inability, or reluctance, to complete a task once begun. The failure syndrome has followed the continuation high school student throughout most of his public school career. He expects to fail. For this reason, most continuation high schools have stressed success experiences. No F or D grades are given in any subject. A student is allowed to work on his lessons on an individual basis and at his own rate. He is not allowed to progress from one lesson to the next until he has mastered the preceding lesson. Individual learning packages have been developed for various learning ability levels in order that success experiences might be maximized. Though these instructional techniques have been used by many continuation educators, they are not being used universally. It is recommended that future studies include an experimental

research design developed to determine whether this treatment would significantly affect the Elaboration scores of continuation high school students. As mentioned previously, continuation educators have been aware of the tendency for continuation students to shun responsibility and resist the completion of tasks already begun. This investigation is the first in the area of continuation education to indicate, through a scientific treatment, that continuation high school students are less elaborate in the completion of tasks than are their peers in the comprehensive high school.

The data in Chapter IV indicates that low IQ continuation high school students had higher mean scores, significant at the .10 level of confidence, on the creative ability factor of Originality than did their comprehensive high school counterparts. It is recommended that continuation educators capitalize on this trait and use it in the development of a curriculum for low IQ continuation high school students which allows the teacher to be flexible and less rigid in accepting solutions to problems and allow the student several alternative methods for the solution of a problem.

The data in this study clearly indicates that continuation high school students need remediation or training in the creative ability factor of Elaboration. The ability or desire to see a task to completion is paramount to success in the working world. When evaluating curriculum programs for students

in California's continuation education programs, the above significant findings of this study should be considered. Instructional methods and techniques, and the school curriculum should be revised and adjusted in order that the use and effect of these factors might better provide a more meaningful educational environment.

III. CONCLUDING STATEMENT

This investigation indicates that low, medium, and high IQ eleventh and twelfth grade comprehensive high school students and low, medium, and high IQ continuation high school students are more alike than they are different. However, where differences were found, the low, medium, and high IQ comprehensive high school students tested scored higher. Low, medium, and high IQ comprehensive high school students tested scored significantly higher on the creative ability factor of Elaboration than did the continuation high school students tested. Medium IQ comprehensive high school students tested scored higher on the creative ability factor of Originality than did the medium IQ continuation high school students tested. These findings indicate a need for the development of curriculum and instructional methods and techniques which may help to alleviate discrepancies in these areas of creativity for students enrolled in California continuation high schools.

There is a tremendous need for further research in the areas of creativity and continuation education. It is the sincere hope of this investigator that this study will provide the motivation needed to encourage further research in the areas of creativity and continuation education. There is a need for the further delineation of these traits which more clearly identify the highly creative individual. There is also a need to develop a greater understanding of the needs and problems of continuation high school students and how these needs and problems might best be served by continuation educators.

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APPENDICES

APPENDIX A

American Legion High School
3814 Fourth Avenue
Sacramento, CA 95817
455-2651

Lincoln Continuation High School
418 P Street
Sacramento, CA 95814
444-6047

Student referred _____
(Last) (First) (Middle Initial)

Birthdate _____ Grade _____ Sex _____ _____
1 2 3 4 5 6

_____
(Ethnic Code)

Parent or Guardian _____

Home Address _____ Phone _____

PRIMARY EDUCATIONAL GOAL AFTER HIGH SCHOOL

____Employment ____Military Service ____City College

____Business or Vocational School ____Other

REASON FOR REFERRAL

( ) A. Reading
( ) B. Work
( ) C. Health
( ) D. Emotional Problems
( ) E. Behavior Problems
( ) F. Dislikes P. E.
( ) G. Academic Underachiever
( ) H. Other _____

	Above Average	Average	Below Average	Present Schedule Subject	Grade
Academic Achievement					
Attendance					
Mental Ability					
Behavior					

Is this student known to: Juvenile Hall __ C.Y.A. __ PP _____
(Name)

Send with a copy of the counselor's record card to:

_____
(Counselor)

Mr. Russell L. Chimento, Principal
American Legion High School
OR
Mr. George W. Sorenson, Principal
Lincoln Continuation High School

_____
(School)

_____
(Date)

APPENDIX B

THE UNIVERSITY OF GEORGIA
COLLEGE OF EDUCATION
DEPT. OF EDUCATIONAL PSYCHOLOGY
ATHENS, GEORGIA 30601

January 17, 1972

Mr. Russell L. Chimento, Principal
American Legion High School
3814 4th Avenue
Sacramento, California 95817

Dear Mr. Chimento:

I appreciate very much your letter of January 10, 1972, and I am glad to know of your research interest. Your hypotheses are quite intersesting and I think there is a good chance that they will be supported.

Under separate cover I have sent several reprints and mimeographed materials that will answer some of the questions you posed in your letter. The fundamental normative, validity and reliability data are contained in the technical-norms manual. We have a revised manual ready but I am not certain when it will be published. The materials I sent under separate cover present some of the more recent validity studies.

Best wishes for the success of your project.

Sincerely,

E. Paul Torrance

E. Paul Torrance, Head
Educational Psychology Dept.
325 Aderhold Hall

EPT/bb

Encl.: Brochure

APPENDIX C

Letter to Today's Education, LXI (May, 1972), 8:

> "I've just finished reading E. Paul Torrance's article, 'Creative Kids' (January), and find that many of the things he says concerning creative children are in agreement with my hunch that students in continuation high schools are more creative than students in the regular or comprehensive high schools. I am in the process of writing a doctoral dissertation concerning this hunch. My dissertation is based on a study I made to ascertain, through the use of the Torrance Test of Creativity, the incidence of creativity among deviant youths attending continuation high schools."
>
> --Russell L. Chimento, principal, American Legion High School, Sacramento, California.

APPENDIX D

Mean T-Scores on Creative Ability Factors of Fluency, Flexibility, Originality and Elaboration for Low IQ, Medium IQ, and High IQ Comprehensive High School (CHS) Students Tested, and Low IQ, Medium IQ, and High IQ Continuation High School (CtHS) Students Tested

IQ Levels	Mean T-Score							
	Fluency		Flexibility		Originality		Elaboration	
	(CHS)	(CtHS)	(CHS)	(CtHS)	(CHS)	(CtHS)	(CHS)	(CtHS)
Low	35.6	34.1	38.5	35.7	49.3	56.4	48.1	40.4
Medium	39.3	36.4	38.6	36.3	65.5	64.9	61.8	43.9
High	34.8	36.5	38.6	39.9	71.1	53.6	60.0	37.4

APPENDIX E

Raw and T-Scores for High IQ Comprehensive High School Students

Number	Figural Tests							
	Fluency		Flexibility		Originality		Elaboration	
	Score	T Score	Score	T Score	Score	T Score	Score	T Score
1	8	25	7	28	24	57	97	62
2	20	44	15	45	29	65	129	74
3	19	42	19	53	32	70	109	66
4	13	33	10	35	23	55	51	43
5	16	37	10	35	32	70	136	77
6	15	35	12	39	20	50	97	62
7	17	39	16	47	20	50	63	48
8	11	30	7	28	45	92	79	54
9	15	35	13	40	28	64	103	64
10	13	33	11	37	35	75	83	56
11	12	32	10	35	33	72	67	49
12	19	42	13	40	42	87	153	84
13	18	40	17	49	37	79	93	60
14	15	35	14	43	32	80	74	52
15	10	29	9	33	32	70	99	62
16	12	32	9	33	20	50	224	100+
17	11	30	11	37	50	99	78	54
18	8	25	8	30	7	30	97	62
19	11	30	10	35	26	60	49	42
20	6	22	6	25	11	37	119	70
21	20	44	16	47	56	100+	170	91
22	11	30	9	33	36	77	66	49
23	14	34	12	39	49	97	86	57
24	21	45	17	49	41	85	72	52
25	15	35	15	45	46	93	93	60
26	15	35	12	39	38	80	67	49
27	9	27	9	33	38	80	33	35
28	20	44	16	47	17	45	67	49
29	15	35	12	39	34	74	64	48
30	20	44	12	39	43	89	113	68

APPENDIX F

Raw and T-Scores for High IQ Continuation High School Students

Number	Figural Tests							
	Fluency		Flexibility		Originality		Elaboration	
	Score	T Score	Score	T Score	Score	T Score	Score	T Score
1	14	34	6	25	17	45	67	49
2	17	39	16	47	36	77	41	38
3	11	30	10	35	31	69	8	26
4	13	33	10	35	22	54	31	34
5	6	25	5	29	10	32	75	57
6	15	35	13	40	17	45	16	29
7	15	35	13	40	30	67	34	36
8	5	20	5	24	9	34	35	36
9	17	40	13	44	15	38	58	49
10	24	60	19	53	19	49	39	38
11	14	34	12	39	9	34	19	30
12	9	27	7	28	15	43	42	39
13	17	39	14	43	17	45	38	37
14	15	35	12	39	15	43	48	42
15	23	49	18	50	55	100+	49	42
16	10	29	10	35	35	75	44	40
17	25	52	18	50	13	40	20	31
18	10	29	6	25	22	54	19	30
19	17	40	15	48	27	53	25	34
20	20	44	16	47	19	49	40	38
21	14	37	11	40	12	34	19	31
22	11	30	9	33	25	59	25	32
23	13	33	11	37	14	42	14	29
24	7	24	6	25	16	44	17	30
25	22	47	17	49	42	87	28	33
26	16	37	16	47	29	65	68	50
27	18	40	16	47	23	55	53	44
28	19	42	16	47	23	55	51	43
29	26	54	20	55	33	72	43	39
30	15	35	13	40	19	49	37	37

APPENDIX G

Raw and T-Scores for Medium IQ Comprehensive High School Students

Number	Figural Tests							
	Fluency		Flexibility		Originality		Elaboration	
	Score	T Score	Score	T Score	Score	T Score	Score	T Score
1	21	45	16	47	36	77	138	78
2	26	54	20	55	31	69	78	54
3	20	44	13	40	23	55	168	90
4	42	79	19	53	59	100+	85	57
5	14	34	11	37	17	45	82	55
6	12	32	7	28	25	59	78	54
7	21	45	16	47	45	92	166	89
8	14	34	12	39	12	39	78	54
9	15	35	15	45	31	69	107	65
10	12	32	9	33	29	65	75	53
11	12	32	9	33	22	54	81	55
12	4	18	4	22	42	87	52	43
13	10	29	10	35	20	50	80	54
14	16	37	11	37	14	42	94	60
15	10	29	7	28	39	82	110	67
16	21	45	18	50	36	77	77	53
17	18	40	8	30	21	52	135	77
18	20	44	9	33	50	99	238	100+
19	36	69	13	40	17	43	118	70
20	12	32	9	33	13	40	63	48
21	6	22	6	25	34	74	95	61
22	12	32	12	39	47	94	44	40
23	13	33	12	39	37	79	89	58
24	25	52	17	49	17	45	93	60
25	8	25	7	28	25	59	29	34
26	14	34	9	33	37	79	98	62
27	25	52	20	55	34	74	132	76
28	5	20	5	24	13	40	85	57
29	17	39	12	39	12	39	100	63
30	31	60	23	62	40	84	114	68

APPENDIX H

Raw and T-Scores for Medium IQ Continuation High School Students

Number	Figural Tests							
	Fluency		Flexibility		Originality		Elaboration	
	Score	T Score	Score	T Score	Score	T Score	Score	T Score
1	12	34	10	39	22	45	60	50
2	14	34	9	33	15	43	44	40
3	5	24	3	25	15	38	35	39
4	9	27	9	33	27	62	51	43
5	11	30	8	30	23	55	40	38
6	7	24	7	28	17	45	30	34
7	21	45	15	45	54	100	91	59
8	16	37	14	43	16	44	43	39
9	19	42	15	45	28	64	46	41
10	20	44	16	47	25	59	92	59
11	10	29	8	30	15	43	27	33
12	15	35	15	45	15	43	44	40
13	9	27	6	25	14	42	63	48
14	18	40	6	25	19	49	40	38
15	31	60	13	40	30	67	107	65
16	15	35	8	30	21	52	79	54
17	19	42	12	39	22	54	36	37
18	22	47	10	35	15	43	49	42
19	38	70	27	70	56	87	48	44
20	9	27	6	25	38	80	26	33
21	15	35	11	37	15	43	84	56
22	22	47	13	40	57	100	73	52
23	16	37	3	20	15	43	12	28
24	15	35	11	37	37	79	70	51
25	16	37	11	37	18	47	37	37
26	9	27	7	28	10	35	40	38
27	13	33	11	37	11	37	71	51
28	9	27	5	24	25	59	25	32
29	16	37	12	39	13	40	37	37
30	7	24	7	28	19	49	20	31

APPENDIX I

Raw and T-Scores for Low IQ Comprehensive High School Students

Number	Figural Tests							
	Fluency		Flexibility		Originality		Elaboration	
	Score	T Score	Score	T Score	Score	T Score	Score	T Score
1	3	16	3	20	16	44	29	34
2	15	35	12	39	48	25	64	48
3	10	29	9	33	22	54	89	58
4	12	32	10	35	11	37	23	32
5	16	37	10	35	11	37	43	39
6	14	34	10	35	9	34	89	58
7	21	45	19	53	23	55	93	60
8	14	34	13	40	14	42	35	36
9	23	49	17	49	21	52	115	69
10	16	37	13	40	8	32	66	49
11	35	67	7	28	12	39	57	45
12	10	29	10	35	44	90	57	45
13	18	40	13	40	25	59	57	45
14	13	33	12	39	14	42	52	43
15	11	30	10	35	8	32	60	47
16	8	25	7	28	18	47	59	46
17	7	24	7	28	13	40	32	35
18	9	27	8	30	3	24	41	38
19	24	50	16	47	17	45	72	52
20	14	34	13	40	10	35	33	35
21	6	22	6	25	16	44	29	34
22	11	30	4	22	12	39	89	58
23	20	44	19	53	18	47	81	55
24	18	40	16	47	26	60	54	44
25	10	29	9	33	17	45	42	39
26	7	24	7	28	9	34	103	64
27	9	29	8	30	7	30	19	30
28	19	42	12	59	40	84	79	54
29	23	49	18	50	32	70	190	99
30	26	54	22	60	94	90	76	53

APPENDIX J

Raw and T-Scores for Low IQ Continuation High School Students

Number	Figural Tests							
	Fluency		Flexibility		Originality		Elaboration	
	Score	T Score	Score	T Score	Score	T Score	Score	T Score
1	21	45	13	40	41	85	57	45
2	15	35	9	33	11	37	53	44
3	14	34	8	30	21	52	44	40
4	24	50	20	55	42	87	50	43
5	18	40	9	33	37	79	75	53
6	14	34	12	39	21	52	41	38
7	21	47	10	39	24	49	77	58
8	17	39	7	28	40	84	54	44
9	20	44	17	49	54	100	81	55
10	7	27	7	33	17	40	48	44
11	11	30	11	37	35	75	26	33
12	12	32	11	37	36	77	32	35
13	9	27	8	30	17	45	35	36
14	9	27	9	33	9	34	24	32
15	14	37	10	39	26	52	40	41
16	11	30	10	35	9	34	31	34
17	14	34	13	40	25	59	36	37
18	17	39	13	40	36	77	70	51
19	6	22	6	25	24	57	26	33
20	11	30	8	30	19	49	29	34
21	14	34	11	37	22	54	47	41
22	16	37	13	40	25	59	49	42
23	21	47	14	45	36	63	48	44
24	12	32	10	35	20	50	86	57
25	8	25	8	30	10	35	20	31
26	6	22	5	24	5	27	10	27
27	11	30	9	33	17	45	29	34
28	14	34	11	37	12	39	38	37
29	5	24	4	27	9	30	5	25
30	15	35	11	37	30	67	50	43

AUTOBIOGRAPHICAL STATEMENT

AUTOBIOGRAPHICAL STATEMENT

NAME: Russell Louis Chimento

BIRTH: June 15, 1926 at Pueblo, Colorado, U.S.A.

EDUCATION: Elementary, Junior High, and Senior High Schools, Pueblo, Colorado; B.A. Zoology, University of Colorado, 1950; B.S. Chemistry, University of Colorado, 1953; M.S. Chemistry, Arizona State University, 1960; Shell Oil Merit Fellowship Winner, Teaching of Chemistry, Stanford University, 1957; National Science Foundation Ph. D. program in Chemistry, 1963; University of the Pacific, Stockton, Ed. D., 1972.

POSITIONS: Chemist, Colorado Fuel and Iron Corp., Pueblo, Colorado, 1950-51; Instructor of Chemistry, Biology, Physics, Trigonometry, Geometry, and Journalism, Holly Union High School, Holly, Colorado, 1951-54; Instructor of Chemistry and Physics, White Pine Union High School, Ely, Nevada, 1954-58; University of Nevada, Reno, Nevada, Instructor of Chemistry, 1958-59; Traveling Lecturer, University of Oregon, National Science Foundation, Physics and Chemistry, 1959-60; Instructor of Chemistry, Sacramento City College, Sacramento, 1960-65; Department Chairman, Sacramento City College, Chemistry, 1961-65; Program Specialist in Science, K-14, Sacramento City Unified School District, 1965-69; Vice-principal, American Legion High School, Sacramento, 1969-71; Principal, American Legion High School, Sacramento, 1971-73.

ORGANIZATIONAL OFFICES HELD: Chairman, Physical Science Section, Northern Division of the California Junior College Association, 1963-65; Chairman, Sacramento City Science Teachers Association, 1965-68; Director, Sacramento Junior Museum, 1961-68; Chairman, Schools and Colleges Division, Sacramento, American Cancer Society, 1961-68.

MEMBERSHIPS: National Education Association; California Teachers Association; Sacramento City Teachers Association; California Continuation Education Association; Association of California School Administrators; Phi Delta Kappa.