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A STUDY OF THE RELATIONSHIP BETWEEN ANXIETY,
MANIFEST NEEDS, AND CREATIVITY IN
UPWARD BOUND STUDENTS

by

Neal A. Davidson

A thesis submitted in partial fulfillment of the
requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

UTAH STATE UNIVERSITY
Logan, Utah

1968

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Neal A. Davidson

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ABSTRACT

A Study of the Relationship Between Anxiety,
Manifest Needs, and Creativity in
Upward Bound Students

by

Neal A. Davidson, Master of Science

Utah State University, 1967

Major Professor: Dr. Frances Halstrom
Department: Psychology

Previous investigators have indicated that low socio-economic students have difficulty experiencing success on tests heavily loaded with verbal material. Differences in personality characteristics between students of high and low creativity have also been found. The purpose of the present study was to investigate the influence of manifest needs and anxiety on creative thinking.

The Taylor Manifest Anxiety Scale, which determines anxiety level, the Edwards Personal Preference Schedule, which measures manifest needs, and the Torrance Tests of Creative Thinking, which provides an index of creativity were administered to Spanish-American, Anglo-American, Negro, and Navaho high school students, who constituted the 1967 Upward Bound population at Utah State University. The total sample, composed of the four ethnic backgrounds, was administered the Torrance Tests of Creative Thinking. The students were ranked on the basis of their total creativity score, and high and low creativity groups were extracted at the median. The results indicate that Upward Bound students are significantly higher in figural than in verbal creativity. No significant differences

between high and low creativity students were found on anxiety or manifest needs, although a negative trend between anxiety and creativity was suggested.

(52 pages)

STATEMENT OF THESIS PROBLEM

Origin and Nature of the Problem

The ability to produce original and new ideas is as old as mankind itself, but only in the past twenty years has it been viewed as an appropriate area for scientific inquiry. Besides being a problem for academic investigation, the study of creativity has practical implications which relate directly to our present educational system, especially with regard to the ability of lower socio-economic individuals. The majority of creativity studies with school age children have employed as subjects white, middle class, or university populations. This is especially unfortunate in light of two highly related facts: (A) the knowledge that much research in intellectual functioning utilized tests heavily loaded with verbal material, and the known lower socio-economic child's difficulty with language tasks, and (B) the present social pressure being exerted on educational institutions to discover latent intellectual talent. Gowan and Demos (1962) in an extended discussion of educating the ablest have this to say about teaching and creativity:

This educational problem of producing achievement and productivity without sacrificing originality, and creativity is a serious and engaging educational issue, for which there are not immediate and ready answers. American public education must face this issue in the coming decade. (Gowan and Demos, 1962, p. 83)

Objectives

The primary purpose of this study is to differentiate between high and low creativity in low socio-economic high school students on tests

of creative thinking. A secondary purpose of the study involves hypothesized personality differences.

Statement of the hypotheses

The hypotheses of this study are:

1. Upward Bound students will score higher in the figural areas of creativity than on the verbal tasks.

2. High-creative Upward Bound students are more aggressive than those low in creativity.

3. High-creative Upward Bound students are more dominant than those low in creativity.

4. High-creative Upward Bound students are more autonomous than those low in creativity.

5. A negative relationship exists between anxiety and level of creativity.

Delimitations

The delimitations of this study are:

1. Manifest anxiety as measured on the Taylor Manifest Anxiety Scale.

2. Manifest personality characteristics as measured on the Edwards Personal Preference Schedule.

3. Creativity as determined by the scores on the Torrance Tests of Creative Thinking.

4. Lower socio-economic Negro, Navaho, Spanish-American, and Anglo-American students comprising the Upward Bound population with a minimum of one year of high school experience in Arizona, Utah, and New Mexico.

5. Data collected, analyzed, and reported without the "intelligence" variable held constant.

6. The results of this research relate only to the ethnic background of the population employed in this study.

Assumptions

The basic assumptions of this study are:

1. The intellectual functioning of lower socio-economic high school students is not readily discovered from standardized intelligence tests.

2. Personality characteristics associated with creative students could be facilitated in the classroom if they are identified.

3. High anxiety inhibits intellectual functioning, and its identification would serve as an aid to teachers and students in its alleviation.

4. There is a great deal of talent waste in our society by various ethnic and lower socio-economic students, and all public school officials and communities could benefit from the use of figural tests of creativity.

Definition of terms

The following terms are defined according to their use in this study:

1. Upward Bound students are: high school students judged to have college potential but who are unable to use their potential effectively because of economic, cultural, and educational deprivation. The income criterion varies according to the number of persons in a family; for

example, the maximum limit for a family of five would be \$3,500 for non-farm families, and \$2,450 for farm families (Anonymous, 1966).

2. Creativity is: 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 re-testing them; and finally communicating the results (Torrance, 1966).

2a. Creativity operationally defined in this study is: the ability or abilities measured on the paper and pencil Torrance Tests of Creative Thinking and expressed by the subjects' scores on this instrument.

3. Figural creativity is: the ability or abilities measured on the Torrance Tests of Creative Thinking developed by E. Paul Torrance (1966b) and published by the Personnel Press, Inc., containing the following three subtests: Picture Construction Activity, Incomplete Figures Activity, and Repeated Figures Activity.

4. Verbal creativity is: the ability or abilities measured on the Torrance Tests of Creative Thinking developed by E. Paul Torrance (1966c) and published by the Personnel Press, Inc., containing the following five subtests: Ask-and-Guess Activity, Product Improvement Activity, Unusual Uses Activity, and Just Suppose Activity.

5. Anxiety is: an unpleasant emotional state in which a present and continuing strong desire or drive seems likely to miss its goal; a fusion or fear with the anticipation of future evil; marked and continuous fear of low intensity; a feeling of threat, especially of a fearsome threat, without the person's being able to say what he thinks threatens (English and English, 1962).

5a. Anxiety operationally defined in this study is: the general drive level on the paper and pencil Taylor Manifest Anxiety Scale and expressed by the subjects' score on this test.

6. Manifest needs are: those normal personality variables measured on the Edwards Personal Preference Schedule developed by Allen Edwards (1959) and published by the Psychological Corporation.

REVIEW OF LITERATURE

The review of literature includes (1) two approaches to the investigation of creative thinking, (2) the personality characteristics of creative school children, (3) the facilitating and inhibiting effects of anxiety in school children, and (4) intellectual functioning in low socio-economic school children.

Two Approaches to the Investigation of Creative Thinking

The approaches to the problem of measuring creativity have taken various avenues by American educators and psychologists, and until the middle 1950's, it was simply investigated by means of traditional intelligence tests. The early factor analytic studies of Guilford (1950, 1956, and 1959) on the structure of intellect, suggest that primary mental abilities are organized into contents, operations, and products. The classification of operations and its subdivision of convergent and divergent thinking skills are two important factors in creative production. The convergent mode of production involves the generating of solutions to problems by known or predetermined processes. The divergent approach also involves the use of known information, but the individual who employs this mode of production also shows a high level of fluidity and flexibility in the manipulation of new solutions to problems (Wilson, 1965). The above cognitive styles employed by people are discussed by Getzels and Jackson (1962). These investigators report that:

. . . the first mode tends toward retaining the known, learning the predetermined, and conserving what is. The second mode tends toward revising the known, exploring the unknown, and constructing what might be. A person for whom the first mode or process is primary tends toward the nominal or expected. A person for whom the second process is primary tends toward the nominal and speculative. The first favors certainty, the other risk - both processes are found in all persons, but in varying proportions. The issue is not one of better or worse, of more useful or less useful. Both have their place, and both must be recognized for their differences, commonalities, interactions, and distinctive functions in the individual's psychic economy. (Getzels and Jackson, 1962, p. 13-14)

Gowan and Demos (1964) in a review of Guilford's factor analytic study of creativity indicate that his research consisted primarily in the verification and classification of those abilities associated with creative production.

In a history of research conducted at the University of Minnesota, Torrance (1966a) reports on the development of his tests of creativity in terms of Guilford's divergent thinking factors (fluency, flexibility, originality, and elaboration). Torrance, however, in contrast to Guilford, after having developed his tests of creativity, has primarily investigated various characteristics of creative people. He has also tried to answer the questions: "Who are creative individuals?", "What are they like?", and "How do they think and behave?". From the research employing the Torrance Tests of Creative Thinking, it appears that creative youngsters are flexible (Fleming and Weintraub, 1962); original in writing imaginative stories (Yamamoto, 1963); playful (Lieberman, 1965); and often experience intensive stress (Torrance and Dauw, 1965).

Personality Characteristics of Creative

School Children

Although all students who are intellectually able have some creative

ability, the question arises as to why some individuals lack the needed creative processes appropriate to the classroom situation. Recently, with the development of tests of creativity and on the basis of various criteria, numerous attempts have been made to specify the personality characteristics of individuals identified as creative. Hammer (1961) reports on an extended investigation of the personalities of 18 gifted adolescent artists. The researcher administered the following four projective instruments: Rorschach, Thematic Apperception Test, Unpleasant Concept Test, and the House-Tree-Person Projective Drawings. The conclusions culled from this study indicate that artistically creative individuals cannot be specifically categorized in terms of personality characteristics, but rather there appears to be a high general trend in their depth of feelings, personal and original responses to stimuli, and detachment from others. In another report, Torrance and Dauw (1966) characterized the creative person as experimental and intuitive, as opposed to the less creative individual who is passive and hostile. Results from the Runner Studies of Attitude Patterns administered to the above high creative group also indicate significantly higher scores on the resistance to social pressure scale when compared with those low in creativity.

Other findings from the work at Minnesota seem to indicate that creative children tend to score high in the direction of the opposite sex on MMPI Scales, enjoy working alone, are classified as "self-starters," appreciate humor, and have difficulty in the delay of emotional satisfaction (Torrance, 1966a).

In a review of the Utah 1955, 1957, and 1959 Reports on the Research Conference of Creative Scientific Talent by Calvin Taylor (1963),

evidence is presented that there are a number of motivational aspects associated with the highly creative person. Some of his motivational needs are: a need for independence of action, mastery of a problem, constructive work, toy with new ideas, recognition, and intellectual challenges. In an earlier article, Taylor (1962) lists the following personality characteristics associated with creative persons:

. . . (they) are more devoted to autonomy, more self-sufficient, more independent in judgment (contrary to group agreement, if needed, to be an accurate judge), more open to the irrational in themselves, more stable, and more capable of taking greater risks in the hope for greater gains, more feminine in interests and characteristics (especially in awareness of one's impulses), more dominant and self-assertive, more complex as a person, more self-accepting, more resourceful and adventurous, more radical (bohemian), more controlling of their own behavior by self-concept, and possibly more emotionally sensitive and more introverted but bold. (Taylor, 1962, p. 182)

Facilitating and Inhibiting Effects of Anxiety in School Children

Johnson and Medinnus (1965) discuss the various psychological theories of anxiety, and indicate that anxiety arises for a number of reasons. For Freud, anxiety was primarily the result of the child's fear of losing his mother; for Rank, the result of separation; Sullivan, the fear of disapproval; Adler, the feelings of inferiority; Horney, the conflict between hostile and dependency feelings toward parents; and for Mowrer, anxiety arises as a conditioned reaction to pain.

In contrast, Spence (1948, 1958) holds that anxiety is an acquired drive which activates an organism into action. Consequently, anxiety should facilitate performance and learning. Under the Spence and State University of Iowa Theory, anxiety will also strengthen each of the habits in an individual's hierarchy along with his response tendencies.

An investigation by Levitt (1967) of the effects of anxiety, indicates that anxiety facilitates simple learning tasks (when the correct response initially ranks high in the habit hierarchy) and inhibits complex learning tasks (a situation in which there are a number of competing response tendencies).

A child's tendency to experience a general and chronic state of anxiety, as opposed to fear and its concomitant objective focus, appears to have a facilitating effect upon the acquisition of a "simple" eyelid conditioning task (Taylor, 1951). Castaneda (1961) administered the Children's Manifest Anxiety Scale to fifth grade children and extracted the high and low anxiety groups on the basis of the highest and lowest 10 percent of the anxiety scores. All subjects then completed a timed lamp-button motor task with the results indicating significantly higher scores for the high anxiety group. Anxiety has also been found to facilitate more interfering task-irrelevant responses on a verbal concept formation problem (Lipman and Griffith, 1960), and a simple non-verbal paired association task (Teese and Furith, 1962).

Recent research findings on the detrimental effects of anxiety indicate that a negative relationship exists between children's anxiety and self-concept (Horowitz, 1962); sociometric status (Hill, 1963); insecurity in interpersonal relations (Johnson and Medinnus, 1965); and curiosity (Penny, 1965). Two broad categories of observable classroom behavior associated with high anxiety in children are described by Johnson and Medinnus (1965). One type of behavior is rigid and stereotyped as the result of the child's avoiding threatening situations, while the second type is manifested in uneasy, restless, hyperactive, distractable, and nervous behavior.

Ruebush (1963) in an historical review of anxiety research, reports only two studies dealing with creativity, indicating a negative relationship between anxiety and scores on tests of creativity. From the above review of literature and the review presented by the author, there appears to be little research into the problem of the effects of anxiety on creative thinking.

Intellectual Functioning in Low Socio-
Economic School Children

Differences in the intellectual functioning of various socio-economic groups are obvious. Coleman and Ward (1955), and Haggard (1954) investigated social status and intelligence while eliminating the problem of error of measurement. These researchers found that traditional intelligence tests still favor the more verbal middle class student. In a report on intelligence and its development, Ausubel (1965) suggests that verbal intelligence tests are inappropriate for the culturally deprived because these children have low test-taking motivation and skills, resist speed and pressure, and have inadequate reading skills and vocabularies.

Smith (1965), in an investigation of creativity and social class, suggests that the socio-economic background of youngsters is significantly related to verbal creative production when compared with those children of higher status. The results of this study were explained in terms of differences in child-rearing practices and parent-child relationships between the two classes. In an early related study, Kohn (1963) examined the verbal behavior of middle and lower class families, and reports that middle class parents encourage their children to become skilled in the

verbal processes. In contrast, parents of lower class children emphasize the development of motor ability because of their occupational circumstances and interests. Reissman (1962), in an intensive investigation of the culturally deprived child, suggests that creative talent is being lost because of their lack of self-respect. The self-evaluative tendencies of children according to race and socio-economic status were examined by Wylie (1963). She pointed out a significant underestimation of mental ability by Negro children when compared with white children, and that children of lower socio-economic levels think less of their mental ability than children of upper levels.

From the studies reviewed, it appears that (1) highly creative students have different personality characteristics than those low in creativity, (2) high levels of anxiety facilitate simple conditioning, (3) high levels of anxiety in children have a disruptive effect on their performance in complex learning tasks, and (4) culturally deprived children have difficulty in the verbal portion of tests of creativity and intelligence.

METHOD

Subjects

Twenty-five male high school students with a mean age of 17 years 8 months and twenty-five female high school students with a mean age of 17 years 6 months served as the subjects (Ss) in this study. These Ss comprised the Upward Bound Program the summer of 1967 at Utah State University. The Ss included four Spanish-Americans, fifteen Navahos, twenty-four Anglo-Americans, and seven Negroes, all from generally low socio-economic sections of Arizona, New Mexico, and Utah. The Ss represented students from five different high schools, one federally controlled school, and one state corrective institution.

Measuring Instruments

In order to investigate the hypotheses raised in this study, several types of measuring instruments were employed. Two of these instruments measured personality characteristics of the students, and one was utilized in order to determine their level of creative thinking.

The Edwards Personal Preference Schedule (EPPS)

The EPPS was designed by Allen Edwards (1959) to assess 15 normal manifest needs as proposed by H. A. Murray. It is one of the most thoroughly tested and ambitious attempts to control the problem of socially desirable responses, by means of the forced choice technique, in a personality inventory for adolescents (Anastasi, 1961). (See Appendix A.) This instrument also provides a single test consistency score based upon

a comparison of the number of identical choices made in two sets of the same 15 items. Edwards (1959) presents split-half reliability coefficients for each variable in the college freshman standardization sample from .60 to .87 and test-retest reliability coefficients over a one-week interval from .74 to .88.

The Taylor Manifest Anxiety Scale (TMAS)

This 50 item paper and pencil anxiety inventory was developed by Janet Taylor (1953) in accordance with Spence's theory of general drive, i.e., anxiety tends to increase the habit strength of many incorrect response tendencies. The test presents two choices for each item, and yields a single anxiety score. (See Appendix B.) Inspection of the items in the inventory indicates that it measures a predisposition to anxiety, not an immediate state as found in specific test anxiety questionnaires. Taylor (1953) reports test-retest reliability coefficients of the TMAS as .89 for three weeks, .82 for five months, and .81 over an interval of nine to seventeen months for college freshmen.

Torrance Tests of Creative Thinking

The final major instruments used in this study were the figural and verbal forms A of the Torrance Tests of Creative Thinking. The non-verbal battery includes the following three tasks: Picture Completion, in which a colored oval shape is presented and directions stipulate drawing a picture that no one else will think of, while using the shape as a basis for construction; Incomplete Pictures, in which ten incomplete figures are presented as a basis for creative drawings; and the Lines Test, in which the Ss are requested to react to 30 pairs of vertical lines by using each pair as a nucleus for an original idea (Torrance,

1966b). The verbal battery includes the following seven tasks: Ask-and-Guess--the Ss are instructed to write all of the questions they can think of in response to a sketched character gazing into water; Guessing Causes--the Ss are requested to list all of the causes of the action in the preceding picture; Guessing Consequences--the Ss are directed to list the possible results of the pictured stimuli; Product Improvement--the Examiner displays a small stuffed elephant and the Ss are requested to list the most unusual ways of making it more fun to play with for children; Unusual Uses of Cardboard Boxes--the Ss write questions about aspects of cardboard boxes which people usually do not think about; and Just Suppose--the Ss are presented an improbable situation--that clouds had strings attached to them which hung down to earth--and asked to think and write down the consequences in the provided space in the test booklet (Torrance, 1966c). The author of this battery presents test-retest reliability coefficients with fifth grade students ranging from .71 to .80 over a three month period for the figural tests, and .93 to .79 for the verbal section.

Numerous inter- and intrascorer reliabilities have been conducted using the same forms of the Torrance Tests of Creative Thinking. Torrance (1966a) cites intrascorer data on a series of studies conducted in 1965 with unselected classroom teachers. The coefficients of correlation between third grade teachers ranged from a low of .66 for verbal originality to a high of .98 for verbal fluency, with most of the correlations ranging in the .90's. These data provide evidence that high levels of intrascorer reliability can be obtained with untrained scorers. To determine scorer reliability in the present study, product-moment coefficients of correlation were conducted between two scorers of the

Torrance Tests of Creative Thinking, Figural and Verbal Form A. Table 1 presents correlations ranging from a high of .99 for verbal fluency to a low of .86 for figural elaboration, with all correlations being significant at the .01 level.

Table 1. Product-moment coefficients of correlations between two scorers of the Torrance Tests of Creative Thinking, Figural Form A and Verbal Form A.

Creativity score	Coefficient of correlation
Verbal fluency	.99**
Verbal flexibility	.94**
Verbal originality	.88**
Figural flexibility	.99**
Figural fluency	.96**
Figural originality	.89**
Figural elaboration	.86**

**Significant at .01 level.

Procedure

In May of 1967, the Torrance Tests of Creative Thinking were administered by the experimenter to one half of the Ss. The remaining Ss were given the Torrance Tests in July of 1967. Instructions and scoring procedures followed the recommendations of the test manual in all cases. The figural results were scored for fluency, flexibility, originality, and elaboration, and the verbal results were scored for fluency, flexibility, and originality. All scores were converted into t scores and the sum of the standardized subtest scores, called total creativity, was used as a single index of creative thinking. To identify high and low creative Ss, the total sample was ranked with a

cutoff, established at the median, and a *t* test, significant at the .01 level was employed. To establish the degree of interscorer reliability, 15 verbal and 15 figural Torrance Tests of Creative Thinking were administered to a group of 30 high school seniors by a doctoral student in education, and the 30 protocols were individually scored by this examiner and the author. The interscorer reliabilities, presented in Table 1, were accepted as sufficiently high for the purpose of this study.

Forty-six Ss (four Ss were dropped from the program at this time) were simultaneously administered the Taylor Manifest Anxiety Scale with the instructions read by a single E, and also printed on the form so that the Ss could read them while E spoke. The TMAS inventories were individually scored and the raw data was standardized to facilitate a comparison between anxiety scores and other test results.

To assess the personality characteristics of the Ss, the Edwards Personal Preference Schedule was administered under the same conditions as the former. Instructions and scoring followed the recommendations of the test manual and the 15 measured manifest needs were also converted into *t* scores.

The *t* test, used to test mean differences between figural and verbal creativity, included the computational formula (Ferguson, 1966, p. 170):

$$t = \frac{\Sigma D}{\sqrt{[N\Sigma D^2 - (\Sigma D)^2]/(N-1)}}$$

The relationship between creativity and level of anxiety was established by means of the Pearson Product-Moment Correlation (Garrett, 1965, p. 143):

$$r = \frac{N\Sigma XY - \Sigma X \cdot \Sigma Y}{\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2]}}$$

In order to test the hypotheses concerning differences between the high

creativity and low creativity groups on dominance, aggression, and autonomy, a t test was used with the following formula (Ferguson, 1966, p. 168:

$$s^2 = \frac{\frac{N_1}{\Sigma X^2} - \frac{(\Sigma X)^2}{N_1} + \frac{N_2}{\Sigma X^2} - \frac{(\Sigma X)^2}{N_2}}{N_1 + N_2 - 2}$$

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{s^2/N_1 + s^2/N_2}}$$

RESULTS

The three major problems under investigation in the present research include the differences between verbal and figural creative ability, the manifest needs of highly creative students, and the relationship between level of anxiety and creative production. All of the presented data is related to the question of creative functioning in lower socio-economic high school students of various ethnic backgrounds.

The first hypothesis of the present study predicted a significant difference between verbal and figural creativity in Upward Bound students. This hypothesis is supported by the results. (See Table 2.) The mean figural score for creativity was 180.53, and 134.38 for verbal creativity. The computed t value of 5.80 was significant at the .001 level.

Table 2. Comparison of verbal and figural creativity for Upward Bound Students on the Torrance Tests of Creative Thinking

	Mean figural score	Mean verbal score	df	t	p
Torrance Tests of Creative Thinking	180.53	134.38	48	5.8	<.001

The second, third and fourth hypotheses, predicting a difference in aggression, dominance, and autonomy between high and low creativity Upward Bound students was not confirmed. (See Table 3.)

Table 3. Comparison of high creativity and low creativity Upward Bound students on three Edwards Personal Preference Schedule Subtests.

	High creativity mean score	Low creativity mean score	df	t	p
Dominance	48.5	42.0	46	.853	p=>.05*
Aggression	53.9	52.4	46	.657	p=>.05*
Autonomy	47.3	45.8	46	.587	p=>.05*

*Not significant at the .05 level.

As shown on Table 3, on the Edwards Personal Preference Schedule subtests of dominance, aggression, and autonomy, the mean scores for the high creativity group were 48.5, 53.9, and 47.3 respectively, and 42.0, 52.4, and 45.8 for the group low in creativity. Differences on these three dependent variables did not reach the .05 level of significance, suggesting that these two groups perform similarly on the particular personality inventory under investigation.

Finally, a Pearson Product-Moment coefficient of correlation of $-.065$ between the Torrance Tests of Creative Thinking and the Taylor Manifest Anxiety scores, was not significant at the .05 level. Nevertheless, it lends some support to the fifth hypothesis that creative ability varies inversely with level of anxiety. The explanation of the negative relationship supporting the fifth hypothesis will be discussed in the chapter to follow.

DISCUSSION

Although the low negative relationship between creativity and anxiety found in this investigation is assumed to be due to the lack of increased interference of habit strength, there are two other possibilities which must be taken into account. (A) Perhaps the Ss were not performing at their highest level on the tests of creativity and therefore the scores are not an accurate reflection of their creative ability. This possibility is greatly increased by the fact that the Examiner continually had to quiet disruptive and often uninterested Ss during test administration. Achievement motivation has been shown to be related to social values, child-training practices, social class, ethnic and religious background (Goslin, 1966, p. 142). The individual who finds himself in a situation with little perceived chance of success or advancement may have little motivation to produce. It is likely that the Ss not only lacked the verbal abilities required by the verbal portion of the Torrance Tests of Creative Thinking, but also lacked the impetus to take advantage of those resources they possessed. This is evidenced by one individual in the low creativity group who rose during test administration and exclaimed "Who needs this, I can't do it," and proceeded to lay his pencil down and initiate conversation with a peer. (B) It may be that the Taylor test is not an adequate measure of anxiety. A survey of anxiety research by Levitt (1967) indicates that the inventory approach to the measurement of anxiety is inadequate, and in search for an ultimate criterion, experimenters must begin stressing empirical physiological indices. The preliminary data

presented in the preceding chapter concerning the non-significant negative relationship between anxiety and creativity would seem to indicate that a more sophisticated measure of anxiety is required for an empirical investigation of its effect upon creative production.

The results of the *t* test between verbal and figural creativity means, indicating that Upward Bound students as a group show greater figural than verbal creativity, is in accord with what might be expected in a low socio-economic group, heterogeneous in composition, such as the one employed in this study.

These data are consistent with the results presented by Smith (1965) in an investigation of the relationship between creativity and social class. In the Smith study, 359 Negro and 244 Caucasian fifth grade children from low and middle socio-economic sections of a large metropolitan city were matched for intelligence and compared on Guilford's nine creativity test variables. Briefly, he presents evidence that the lower socio-economic child shows greater creative superiority in non-verbal skills, whereas the middle class child shows greater verbal creativity. No significant differences between ethnic background and creativity were found.

The results of the present study may be contrasted with those reported by Irvine (1967), who found no significant differences between verbal and figural creativity in middle class high school students. One explanation for the present data is seen in the differences in values between lower and middle socio-economic parents.

From an investigation of social class values by Kohn (1963) it appears that language skills are more important to middle class parents who encourage their children to become proficient in this area. In

contrast, lower class parents reinforce skill in motor activities. The results were explained in terms of the parents' vocational aspirations for their children. Dockwell's (1964) research suggests that lower class children are slower in verbal development than middle class children, in fact this researcher found that lower class high school children were just in the process of developing verbal skills which middle class children had obtained before entering school.

The results of the present study lend support to the hypothesis that Upward Bound students exhibit higher figural than verbal creativity, at least when not matched for chronological age or intelligence.

Up to this point the writer has been concerned primarily with data which support the stated hypotheses. However, the results between the high and low creativity group means on dominance, aggression, and autonomy are more perplexing. The results of this research do not support Taylor's (1962) contention that students high in creativity exhibit greater dominance, aggression, and autonomy than those low in creativity. There is evidence that parents of lower socio-economic children discourage those personality characteristics often associated with creative thinking. An early study on the family patterns of Spanish-Americans by Jones (1948) indicates that children from this culture are highly controlled by the eldest male wage earner in the family. From an early age, these children learn to conform to strict non-aggressive rules and regulations, and perhaps the measure of personality characteristics used in the present study merely presented another situation in which manifest needs were not expressed. Several other underlying factors should be taken into consideration when interpreting the observed discrepancies in need patterns between the present study and the Taylor

(1962) data. First there is the important fact that the Ss might have obtained scores on the EPPS which do not correspond with manifest behavior. Atkinson and Litwin (1960) investigated the validity of the EPPS with performance in an experimental task (ring-toss game) and two other purported measures of achievement motivation, and found no significant correlations between the EPPS in achievement and the experimental task. They concluded that more research is needed with those constructs actually measured by the EPPS.

From a factor analytic study of the items comprising each of the fifteen EPPS scales by Levonian, Comrey, Levy, and Procter (1959), there appears to be a discrepancy between what the EPPS is designed to measure and the actual item factorial content. A second important consideration is that of response distortion. Dicken (1959) studied the effect of role playing on simulated EPPS patterns of order, dominance, and change with college freshmen. The results suggest that the EPPS is not impervious to the faking of a "good impression." These conclusions are also consistent with an earlier study by Borislow (1958).

A third factor to be considered is the minimizing of social desirability as an uncontrolled variable in the measurement of manifest needs. Diers (1965, p. 103-104), in a study of social desirability in three subcultures concludes, "loggers, fishermen, and delinquents may have different ideas about what behavior is socially desirable." As a result of her investigation, she suggests more research on social desirability within social classes, in order to eliminate the problem of controlling the tendency for individuals to respond to personality inventories in a socially desirable manner.

Finally, the results of the present study must be evaluated in terms of the sample utilized, and generalizations made from this study must be restricted to individuals similar to those constituting the groups employed in this research.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

A group of 25 adolescent boys and 25 adolescent girls from low socio-economic families, comprising the Project Upward Bound population at Utah State University were administered the Torrance Tests of Creative Thinking. On the basis of the median total creativity score, two groups were extracted. The high creativity group consisted of those Ss above the median, while the low creativity group consisted of those below the median. Both groups were also administered the Taylor Manifest Anxiety Scale along with the EPPS. The hypotheses tested were as follows:

1. Upward Bound students will score higher in the figural areas of creativity than on the verbal tasks.

2. High-creative Upward Bound students are more aggressive than those low in creativity.

3. High-creative Upward Bound students are more dominant than those low in creativity.

4. High-creative Upward Bound students are more autonomous than those low in creativity.

5. A negative relationship exists between anxiety and level of creativity.

The results supported hypothesis 1, but hypotheses 2, 3, 4, and 5 were not confirmed.

Conclusions

The findings were as follows:

1. Upward Bound students manifested significantly greater figural than verbal creativity on the Torrance Tests of Creative Thinking.
2. There are no significant differences between high and low creative Upward Bound Students on the manifest needs of dominance, aggression, and autonomy as measured by the EPPS. The above findings were explained in terms of the construct validity and problem of response distortion on the EPPS, along with the family influence on personality characteristics.
3. There is no significant negative correlation between anxiety and creativity in Upward Bound students, although there is a tendency in the stated direction.

Recommendations

In light of the present findings the following recommendations are proposed:

1. Conduct a replication study with a similar sample of 50 in Upward Bound Projects and control groups not enrolled in such activity in order to increase the generalization of the present findings.
2. Improve methods of motivating students taking a creativity test. This research should include the effect of various properties of reinforcement upon the creative process.
3. Investigate the effect of a specially designed program in facilitating creative thought in an Upward Bound Project limited to an eight week summer session on a university campus.

4. Conduct further studies on the relationship between anxiety and creativity employing physiological indices of anxiety.

5. Extend the sample to include an adequate representation of Negroes, Spanish-Americans, Navahos, and Anglo-Americans in an investigation of ethnic background and creativity.

6. Determine the level of creativity being nurtured in the public school systems on the basis of philosophies of boards of education, administration, and staff.

7. Study the implication of manifest needs and their relationship with fluency, flexibility, originality, and elaboration.

8. Determine the effects of teacher vs. student centered teaching on the level of student creative production.

9. Conduct follow-up studies with Upward Bound populations as subjects in the areas of job placement and success, dropout rate in vocational training and college, and success in military training.

10. Urge the dissemination of information on cultural differences in figural and verbal creative production.

11. Encourage a series of meetings between all Upward Bound directors where new Project approaches could be discussed, facilitated and implemented.

12. Determine the level of prejudice that exists in an Upward Bound population and its effect upon intellectual effort.

13. Conduct further studies with similar Upward Bound populations and control groups in determining various methods of facilitating creativity in a three month summer program.

14. Continue to share research information connected with impoverished children and young people while emphasizing the need for diverse

methods of improving the presentation of verbal material.

15. Conduct further studies on the relationship between manifest needs and creativity employing controlled behavioral situations as measures of manifest needs.

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APPENDIXES

Appendix AThe Manifest Needs Associated With Each of 15 EdwardsPersonal Preference Schedule Variables

The manifest needs associated with each of 15 Edwards Personal Preference Schedule variables described in the words of the author are:

1. ach Achievement: To do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognized authority, to accomplish something of great significance, to do a difficult job well, to solve difficult problems and puzzles, to be able to do things better than others, to write a great novel or play.
2. def Deference: To get suggestions from others, to find out what others think, to follow instructions and do what is expected, to praise others, to tell others that they have done a good job, to accept the leadership of others, to read about great men, to conform to custom and avoid the unconventional, to let others make decisions.
3. ord Order: To have written work neat and organized, to make plans before starting on a difficult task, to have things organized, to keep things neat and orderly, to make advance plans when taking a trip, to organize details of work, to keep letters and files according to some system, to have meals organized and a definite time for eating, to have things arranged so that they run smoothly without change.
4. exh Exhibition: To say witty and clever things, to tell amusing jokes and stories, to talk about personal adventures and experiences, to have others notice and comment upon one's appearance, to say things just to see what effect it will have on others, to talk about personal achievements, to be the center of attention, to use words that others do not know the meaning of, to ask questions others cannot answer.
5. Aut Autonomy: To be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, to feel free to do what one wants, to do things that are unconventional, to avoid situations where one is expected to conform, to do things without regard to what others may think, to criticize those in positions of authority, to avoid responsibilities and obligations.
6. Aff Affiliation: To be loyal to friends, to participate in friendly groups, to do things for friends, to form new friendships, to make as many friends as possible, to share things with friends, to do things with friends rather than alone, to form strong attachments, to write letters to friends.

7. int Intraception: To analyze one's motives and feelings, to observe others, to understand how others feel about problems, to put one's self in another's place, to judge people by why they do things rather than by what they do, to analyze the motives of others, to predict how others will act.
8. suc Succorance: To have others provide help when in trouble, to seek encouragement from others, to have others be kindly, to have others be sympathetic and understanding about personal problems, to receive a great deal of affection from others, to have others do favors cheerfully, to be helped by others when depressed, to have others feel sorry when one is sick, to have a fuss made over one when hurt.
9. dom Dominance: To argue for one's point of view, to be a leader in groups to which one belongs, to be regarded by others as a leader, to be elected or appointed chairman of committees, to make group decisions, to settle arguments and disputes between others, to persuade and influence others to do what one wants, to supervise and direct the actions of others, to tell others how to do their jobs.
10. aba Abasement: To feel guilty when one does something wrong, to accept blame when things do not go right, to feel that personal pain and misery suffered does more good than harm, to feel better when giving in and avoiding a fight than when having one's own way, to feel the need for confession of errors, to feel depressed by inability to handle situations, to feel timid in the presence of superiors, to feel inferior to others in most respects.
11. nur Nurturance: To help friends when they are in trouble, to assist others less fortunate, to treat others with kindness and sympathy, to forgive others, to do small favors for others, to be generous with others, to sympathize with others who are hurt or sick, to show a great deal of affection toward others, to have others confide in one about personal problems.
12. chg Change: To do new and different things, to travel, to meet new people, to experience novelty and change in daily routine, to experiment and try new things, to eat in new and different places, to try new and different jobs, to move about the country and live in different places, to participate in new fads and fashions.
13. end Endurance: To keep at a job until it is finished, to complete any job undertaken, to work hard at a task, to keep at a puzzle or problem until it is solved, to work at a single job before taking on others, to stay up late working in order to get a job done, to put in long hours of work without distraction, to stick at a problem even though it may seem as if no progress is being made, to avoid being interrupted while at work.

14. het Heterosexuality: To go out with members of the opposite sex, to engage in social activities with the opposite sex, to be in love with someone of the opposite sex, to kiss those of the opposite sex, to be regarded as physically attractive by those of the opposite sex, to participate in discussions about sex, to read books and plays involving sex, to tell jokes involving sex, to become sexually excited.
15. agg Aggression: To attack contrary points of view, to tell others what one thinks about them, to criticize others publicly, to make fun of others, to tell others off when disagreeing with them, to get revenge for insults, to become angry, to blame others when things go wrong, to read newspaper accounts of violence.

Appendix B

The Taylor Manifest Anxiety Scale

and Instructions

INSTRUCTIONS: "Read each item carefully. Put a circle around the word 'true' if you think the statement is true about you. Put a circle around the word 'false' if you think the statement is false about you."

- | | | |
|---|------|-------|
| 1. I do not tire quickly. | true | false |
| 2. I am often sick to my stomach. | true | false |
| 3. I am about as nervous as other people. | true | false |
| 4. I have very few headaches. | true | false |
| 5. I work under a great deal of strain. | true | false |
| 6. I cannot keep my mind on one thing. | true | false |
| 7. I worry over money and business. | true | false |
| 8. I frequently notice my hand shakes when I try
to do something. | true | false |
| 9. I blush as often as others. | true | false |
| 10. I have diarrhea ("the runs") once a month or more. | true | false |
| 11. I worry quite a bit over possible troubles. | true | false |
| 12. I practically never blush. | true | false |
| 13. I am often afraid that I am going to blush. | true | false |
| 14. I have nightmares every few nights. | true | false |
| 15. My hands and feet are usually warm enough. | true | false |
| 16. I sweat very easily even on cool days. | true | false |
| 17. When embarrassed I often break out in a sweat
which is very annoying. | true | false |
| 18. I do not often notice my heart pounding and I
am seldom short of breath. | true | false |
| 19. I feel hungry almost all the time. | true | false |
| 20. Often my bowels don't move for several days at
a time. | true | false |
| 21. I have a great deal of stomach trouble. | true | false |
| 22. At times I lose sleep over worry. | true | false |
| 23. My sleep is restless and disturbed. | true | false |
| 24. I often dream about things I don't like to tell
other people. | true | false |
| 25. I am easily embarrassed. | true | false |
| 26. My feelings are hurt easier than most people. | true | false |
| 27. I often find myself worrying about something. | true | false |
| 28. I wish I could be as happy as others. | true | false |
| 29. I am usually calm and not easily upset. | true | false |
| 30. I cry easily. | true | false |
| 31. I feel anxious about something or someone
almost all of the time. | true | false |
| 32. I am happy most of the time. | true | false |
| 33. I makes me nervous to have to wait. | true | false |
| 34. At times I am so restless that I cannot sit in
a chair for very long. | true | false |
| 35. Sometimes I become so excited that I find it
hard to get to sleep. | true | false |

- | | | |
|--|------|-------|
| 36. I have often felt that I faced so many difficulties I could not overcome them. | true | false |
| 37. At times I have been worried beyond reason about something that really did not matter. | true | false |
| 38. I do not have as many fears as my friends. | true | false |
| 39. I have been afraid of things or people that I know could not hurt me. | true | false |
| 40. I certainly feel useless at times. | true | false |
| 41. I find it hard to keep my mind on a task or job. | true | false |
| 42. I am more self-conscious than most people. | true | false |
| 43. I am the kind of person who takes things hard. | true | false |
| 44. I am a very nervous person. | true | false |
| 45. Life is often a strain for me. | true | false |
| 46. At times I think that I am no good at all. | true | false |
| 47. I am not at all confident of myself. | true | false |
| 48. At times I feel that I am going to crack up. | true | false |
| 49. I don't like to face a difficulty or make an important decision. | true | false |
| 50. I am very confident of myself. | true | false |

Appendix C

Table 4. T scores on the Torrance Tests of Creative Thinking

Subjects	Figural				Total figural	Verbal			Total verbal
	flu	flex	orig	elab		flu	flex	orig	
S1	3	3	5	35	46	45	50	40	135
S2	45	55	45	35	180	45	30	40	115
S3	35	45	35	30	145	35	20	35	90
S4	20	25	30	35	110	45	45	45	135
S5	25	30	40	40	135	40	55	45	140
S6	40	40	45	50	175	75	80	75	230
S7	40	40	45	35	160	55	60	45	160
S8	30	40	30	35	135	50	30	35	115
S9	35	35	35	40	145	40	35	40	115
S10	50	45	45	40	180	40	50	45	135
S11	30	35	35	40	140	40	45	45	130
S12	35	45	45	40	165	35	40	40	115
S13	45	55	55	50	205	70	75	60	205
S14	40	50	50	50	190	45	55	40	140
S15	30	40	45	45	160	55	70	65	190
S16	35	50	40	50	175	30	35	35	100
S17	20	30	25	35	110	35	40	35	110
S18	25	30	35	35	125	40	50	45	135
S19	35	45	40	30	150	45	55	45	145
S20	35	40	50	45	160	40	35	40	115
S21	30	40	40	35	145	40	60	45	145

Table 4. Continued

Subjects	Figural				Total figural	Verbal			Total verbal
	flu	flex	orig	elab		flu	flex	orig	
S22	25	35	25	30	115	30	30	35	95
S23	50	50	65	70	235	55	50	45	150
S24	45	50	50	50	195	65	75	55	195
S25	50	50	45	80	225	50	65	50	165
S26	50	60	55	60	225	35	45	40	120
S27	55	65	60	60	240	35	45	40	120
S28	35	35	40	50	160	40	45	40	125
S29	60	50	55	50	215	35	40	40	115
S30	55	60	80	55	250	35	35	40	110
S31	55	70	75	60	260	35	40	40	115
S32	50	60	60	80	250	40	50	40	130
S33	55	60	70	75	235	55	60	50	165
S34	40	50	50	50	190	55	65	60	180
S35	60	50	70	55	235	40	50	40	130
S36	50	60	65	50	225	30	30	25	85
S37	45	50	70	65	230	40	50	40	130
S38	45	50	65	60	220	40	40	40	120
S39	35	40	50	60	185	30	35	40	105
S40	30	40	50	60	180	35	40	35	110
S41	55	65	70	70	260	45	75	40	160
S42	50	55	50	50	205	40	50	40	130
S43	40	40	45	45	170	40	50	45	135
S44	65	70	70	55	260	65	65	50	180

Table 4. Continued

Subjects	Figural				Total figural	Verbal			Total verbal
	flu	flex	orig	elab		flu	flex	orig	
S45	30	35	30	40	135	50	40	45	135
S46	35	35	30	40	135	45	45	40	130
S47	30	40	50	45	165	40	40	45	125
S48	35	35	35	40	145	45	55	45	145
S49	35	35	50	40	160	35	35	40	110
S50	30	40	45	35	150	40	45	30	115

Appendix D

Table 5. T scores on the Edwards Personal Preference Schedule

Subjects	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
S1	34	52	38	49	47	64	54	53	57	70	58	57	51	32	35
S2	46	55	31	32	60	59	38	59	39	62	46	38	43	45	40
S3	45	54	75	25	38	64	47	53	34	62	51	52	68	25	53
S4	52	60	61	44	36	54	51	65	34	52	60	43	62	25	53
S5	50	54	68	38	56	44	51	44	43	54	41	52	55	51	44
S6	62	35	45	52	42	56	47	47	47	54	43	52	58	40	66
S7	45	52	54	63	61	49	47	44	34	68	56	58	35	38	51
S8	45	30	45	27	45	51	43	56	52	68	58	39	58	55	66
S9	57	35	63	55	45	56	49	51	52	44	56	41	56	34	57
S10	52	49	61	55	49	61	45	56	28	44	49	50	68	33	53
S11	47	35	52	52	42	44	39	62	65	54	58	45	45	53	49
S12	47	44	56	41	47	56	60	58	41	52	56	37	43	49	68
S13	43	60	49	46	49	59	66	44	56	68	58	48	37	25	47
S14	36	47	49	60	67	55	57	53	37	70	44	51	32	54	40
S15	47	49	59	36	59	37	60	28	43	66	54	48	62	46	51
S16	48	36	61	46	38	71	48	59	41	37	64	59	45	45	50
S17	53	36	59	57	42	43	40	57	43	60	50	49	51	45	57
S18	22	47	45	60	51	59	54	55	43	60	73	47	39	36	61
S19	50	54	59	46	63	51	43	44	50	52	49	48	53	36	51
S20	52	60	47	52	54	56	37	42	58	58	54	54	56	23	53
S21	48	44	59	23	40	57	57	51	45	52	62	57	66	34	46
S22	36	52	52	72	47	50	40	46	45	68	58	49	49	45	46
S23	50	54	40	44	38	34	45	40	63	68	40	52	62	57	55
S24	64	57	45	49	42	59	56	62	54	60	60	33	39	34	42
S25	64	49	63	52	38	34	51	65	45	46	38	48	64	36	57

Table 5. Continued

Subjects	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
S26	41	63	63	23	38	59	36	51	39	68	64	53	71	32	42
S27	51	49	54	55	54	52	44	59	47	43	62	40	53	45	44
S28	53	63	47	55	49	50	40	57	37	50	46	45	58	45	59
S29	53	36	29	52	69	45	36	55	59	39	46	57	47	58	70
S30	59	41	68	49	45	37	51	51	34	62	58	33	62	34	55
S31	53	41	47	46	49	55	48	65	37	62	54	64	60	0	53
S32	39	69	54	43	29	55	43	53	43	68	56	62	70	20	57
S33	58	55	40	72	51	50	40	53	47	37	50	53	41	58	53
S34	57	44	59	55	33	39	51	49	63	56	24	37	49	68	62
S35	40	68	54	49	47	69	43	40	45	50	54	54	53	38	57
S36	48	66	56	46	45	55	42	53	47	56	37	49	51	43	59
S37	58	61	47	35	58	48	54	63	37	64	54	43	58	22	53
S38	48	52	61	55	42	59	46	48	51	56	50	47	56	31	53
S39	41	44	45	55	33	50	40	53	37	66	54	55	53	58	59
S40	51	58	59	56	45	59	44	55	18	60	67	51	58	29	57
S41	55	49	59	41	45	56	45	44	52	48	49	45	49	51	60
S42	34	55	54	56	45	45	52	51	47	64	58	45	54	27	66
S43	39	44	43	49	40	48	46	53	45	64	60	55	49	49	64
S44	38	54	36	52	47	44	54	47	43	46	51	64	60	57	53
S45	35	38	59	41	49	51	45	67	45	58	51	62	49	46	47
S46	55	46	38	55	47	37	45	44	56	50	50	66	37	75	47
S47	44	44	49	68	38	62	42	44	39	62	46	64	60	45	50
S48	53	55	38	52	56	66	38	57	41	56	48	49	47	54	46
S49	46	63	52	32	42	50	54	46	47	58	54	53	47	47	55
S50	40	44	45	30	61	59	49	44	32	62	56	72	58	29	64

VITA

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Master of Science

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