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ABSTRACT

Reported are second year data from an on-going project concerned with identification and facilitation of verbal talent in early adolescence. Parent and teacher nominations of junior high students and verbal scores on the Scholastic Aptitude Test (SAT-V) are described as primary assessment tools. Overall the enrichment sample is described as bright, socially perceptive, and potentially creative with the boys characterized as introverted, theoretically oriented, and socially reserved and the girls extraverted, action-oriented, and socially outgoing. Mathematically and verbally gifted youngsters are compared. Examined are features of a summer enrichment program including a creative writing course (requiring outside reading, writing assignments, and a seminar-workshop in the poetry, fiction, and drama genres), a social science course (in first-year college level anthropology), and evaluation procedures (including tests of improvement in convergent and divergent thinking). Such project activities as the following are described: dissemination of information, personal, educational, and college course counseling sessions, a student newsletter, a six-month followup survey of students' educational situations, and a study of the relationship between precocity in formal operations and intelligence. Project accomplishments are summarized and future goals outlined. (LC)

Study of Verbally Gifted Youth

Second Annual Report to the Spencer Foundation

1 September 1973 - 1 September 1974

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We are also grateful to Emily Toth who very competently organized, conducted, and then reported on the writing seminar.

Once again we are particularly grateful to Sandra Bond whose value to the project is inestimable.

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Introduction

This document comprises the second annual report of the Johns Hopkins Study of Verbally Gifted Youth, a project sponsored by the Spencer Foundation of Chicago. As originally formulated the project is concerned with the identification and facilitation of verbal (as contrasted with quantitative) talent in early adolescence. This entails problems of definition as well as implementation--i.e., there are both conceptual and methodological problems at stake here. The project is also concerned with evaluating its selection and facilitation procedures, and attempting to upgrade these processes accordingly. Finally, and perhaps most importantly, the project seeks a broader conceptualization and understanding of human intelligence than that provided by the viewpoints prevalent in contemporary psychology.

This second year's work was conceived of as a replication of the findings of the first year. Consequently the format of the present report will closely parallel that of the first year. Section I describes the methods used this year to identify verbal talent; it also offers a characterization of verbal giftedness as found in our various samples. Section II contains the most detailed comparison we can now make of mathematically and verbally gifted youngsters. Section III presents a discussion of our summer writing and social science programs--our primary enrichment procedures--

along with an evaluation of their results. When combined with the data from last year's summer programs, it is possible to form a reasonably clear notion of our relative success at encouraging verbal talent.

Section IV describes some of our other activities in addition to those of selection and facilitation of verbal talent; i.e., efforts to promulgate our findings, to support verbal giftedness on a personal basis, to implement our facilitation methods in the public schools, and to expand our theoretical understanding of verbal giftedness. These aspects of our multi-faceted operation do not lend themselves to simple summarization and must therefore be discussed piecemeal.

Section V is a summing up of what we have and have not discovered about the study of verbal giftedness thus far. It is a state of the art statement as concerns our project. Section VI sets forth our goals and aspirations for next year and beyond. The content and function of the Appendix are self-explanatory.

I. The Assessment of Verbal Giftedness

The assessment procedures for this year were intended to replicate those of last year. Consequently, we relied primarily on the verbal portion of the Scholastic Aptitude Test (SAT-V) as a selection device. Beginning in the Fall of 1973, parents and teachers from all over Maryland were requested, by mail, by newspaper advertisements, and by radio commercials, to give us the names of 12- or 13-year-old children who had scored at or above the 98th percentile on a standardized measure of verbal achievement. Nominated students were invited to take part in our "Verbal Talent Search" by attending a testing session either at Johns Hopkins University in Baltimore, or American University in Washington, D. C., on February 9, 1974. At these two centers, 422 students were tested. At the testing session all students completed the Remote Associates Test (RAT), the Guilford Consequences Test, a biographical questionnaire, and the verbal portion of the Scholastic Aptitude Test (SAT).

Students who desired to join our Talent Search but did not qualify on the basis of test scores were invited to submit a sample of their writing. In all, 84 students submitted qualifying writing samples in lieu of a test score.

The purpose of the SAT testing and collection of writing samples was to choose students for a summer enrichment program. Thus there were two alternative paths to our summer program--by receiving a high score on a competitive test, or by submitting a written product that we judged to reflect an unusual degree of writing skill.

From this initial screening, the following students (called "Verbal Winners") were invited to return to Hopkins on April 6, 1974, for further testing: 30 7th grade boys and girls with SAT-V scores above 500; 21 8th grade girls with SAT-V scores above 570; 16 8th grade boys with scores above 550; and 9 9th graders with scores above 570. Of the 50 students who came on April 6, 24 returned to take part in our summer enrichment program and will be referred to as our 1974 Enrichment Group.[1] An additional group of 86 students, designated "bright normals," were invited to return on April 13, and were given the same tests as the April 6 group. The tests for these sessions included the Terman Concept Mastery Test. the Barron-Welsh Art Scale, the Chapin Social Insight Test, the California Psychological Inventory, and the Myers-Briggs Type Indicator.

Combining these scores with those obtained last year we can now begin to characterize verbal giftedness as defined by SAT-V. Table 1 summarizes our SAT data in terms of the relevant groups. There are three items to be noted about Table 1. First, the scores for the total Talent Search samples in both years are quite similar; moreover, these 7th and 8th graders received SAT-V scores comparable to the average SAT-V score for all college-bound juniors and seniors tested with the SAT in 1972-73. The verbal scores ranged from 250 to 720 , with an overall mean of 443. Once again, then, students taking part in our Talent Search were on the whole a very select group. Second, Table 1 again indicates that there is a large jump in SAT-V scores between the 7th and the 8th grades, although these differences were not quite as pronounced in 1974 as they were last year. Finally, the SAT scores

[1] Four additional students were selected for the Enrichment Group who were not part of the initial screening. Thus the total involved in the Enrichment Group was 28.

for the Enrichment sample were not as high as for the 1973 group (because the 1974 group contained 7th graders and bright normals, whereas the 1973 group contained only 8th grade verbal winners); nonetheless, their scores would place the group in the upper 16 percent of all college-bound high school juniors and seniors taking SAT-V last year. Thus, although the mean score from 1974 Enrichment sample is not quite as high as that of of the 1973 group, our final sample contains some unusually able youngsters as defined by a very well standardized measure of verbal achievement.

Table 2 and Table 3 contain demographic and biographical data obtained from our background questionnaire. Once again, education and occupational levels were coded on a five point scale; liking for school was a self-report rating based on a four point scale. The values in these tables are very close to those obtained by the 1973 sample and suggest that these students came from relatively small, well-educated, upper-middle class families; in terms of their occupational aspirations relative to their parents', these students appear upwardly mobile. Almost 30% of the group attend private or parochial schools, a further reflection of the relative affluence of their parents. The Remote Associates Test (RAT) is designed to assess a talent considered fundamental to creative thinking. The group averages appearing in Table 2 are surprisingly high, on a par with University of Maryland undergraduates.

Norms for the Guilford Consequences Test have not been developed, thus the values in Table 2 are not readily amenable to interpretation--although we can guess that consistent with the students' performance on other measures these scores are probably rather high.

Students participating in the 1974 Talent Search also completed a biographical inventory. A summary of their responses provides a general description of their interests and activities. Most of these students are involved in a number of hobbies and activities outside of school, and almost all spend a good deal of their free time reading. Most report reading over 30 books per year. Half of the students have some kind of art or writing hobby, and about one third have scientific hobbies. Although boys and girls report equal numbers of hobbies, girls are significantly more involved in literary, and boys in scientific, hobbies.

Most of these students play musical instruments, and have taken part in dramatic productions. However, they tend not to be involved in such activities as visiting art museums or attending concerts and plays. To ~~the extent~~ that they do these sorts of things at all, it is the girls who do it.

Overall the students appear to have active imaginations. For example, three-quarters report a tendency to daydream, and almost all claim to have vivid memories. Most report their earliest recollections of childhood are from age 3 or younger. Fewer than half, however, had imaginary companions when younger. Assessed in these terms, the girls have a significantly greater degree of imagination.

Finally, most report having a number of close friends in school, friends who are the same age as the students. Generally speaking then, the typical student taking part in our Verbal Talent Search is active, with a wide range of interests, musically talented, imaginative and sociable.

Table 4 contains correlations, comparable to those presented in our first report, which show the relationship between SAT-V, social status variables for parents, RAT and Guilford Consequences scores. For the girls, SAT-V continues to be correlated with father's education and occupational level. Consistent with last year's findings, SAT-V for boys is not significantly associated with parental status.

RAT scores and SAT-V scores both depend in part upon vocabulary. On the other hand, the Consequences Test--a measure of divergent thinking--is uncorrelated with SAT-V and obviously provides an assessment of verbal performance that is independent of the SAT. Although not unexpected, this finding provides a clue to possible future alternative selection strategies.

Briefly summarizing the foregoing, when a well-known university uses the public media to advertise a "Talent Search," it principally attracts bright, advantaged, upper-middle class, ambitious, and upwardly mobile boys and girls whose parents seem alert for possible educational opportunities for their children.

The foregoing discussion provides a description of the students initially applying to our "Talent Search." In what follows we present a more detailed portrait of the 1974 enrichment group which, in SAT terms, was obviously "verbally gifted." Table 5 contains most of the relevant information, based on a full battery of psychological measures. In general the scores are slightly lower than those for the 1973 group (due to the presence of 7th graders and 3 "bright normals") but parallel the earlier group's scores rather closely. Overall the scores are impressively high. On the Terman Concept Mastery Test, for example, an average score of 56.3 equals the average score for Air Force Captains as reported in the Terman Manual. An average score on the Remote Associates Test of

15.6, is on a par with UCLA freshmen as reported in the RAT Manual. The enrichment group's score of 21.2 on the Chapin Social Insight Test, a measure designed to assess interpersonal and social acuity, is also equal to the mean score for college freshmen. In terms of their cognitive abilities, students chosen for our enrichment sample can be described as having a well-defined ability to think abstractly, to relate ideas that are remote in ordinary semantic space (i.e., to form unusual and potentially creative associations), and to formulate socially insightful solutions to interpersonal dilemmas (demonstrating thereby a precocious level of social acuity). As we noted last year, verbal giftedness as defined by SAT-V is associated with abstract reasoning capacity, original mentation, and perceptive social judgment.

The personality correlates of verbal giftedness can be described in terms of the California Psychological Inventory (CPI), the Myers-Briggs Type Indicator, Holland's Self-Directed Search, and the Barron-Welsh Art Scale. Here again the results closely parallel those of last year. Compared to the normal adult population these youngsters appear to be slightly more socially effective than the adults. In particular they score noticeably higher than adults on scales for Self-Acceptance, Achievement via Independence, and Flexibility. This indicates an unusual level of self-confidence, spontaneity, independence, and, possibly, self-indulgence. When the enrichment sample is compared with a sample of youngsters their own age, however, they present a picture of unusual personal soundness, social effectiveness, and maturity of interests. On every scale except Communality (a validity key) the enrichment group

scores about one and a half standard deviations above an average eighth grade sample. They are, consequently, substantially more socially poised, mature, ambitious, intellectually motivated, and self-confident than their less gifted peers.

The CPI describes how an individual appears to those others with whom they interact; the Myers-Briggs Type Indicator on the other hand, characterizes people in terms of how they use their minds. As with last year's sample, the boys in the 1974 enrichment group are Introverted, Intuitive, Thinking, Perceivers (INTP's). Such persons are interested in principles rather than things, ideas rather than people and situations. They tend to be intellectually decisive but socially shy and detached. They excel at mathematics, philosophy, and psychology. As teachers they are more interested in ideas than students; as researchers they are more interested in solutions than applications. The girls in the 1974 enrichment sample are Extraverted, Intuitive, Feeling, Perceivers (ENFP's). Such women are enthusiastic innovators, with a good deal of imagination, confidence, and impulsive energy. They are interested in people and are good at manipulating them. In the absence of self-discipline, however, these persons tend to squander their ability and energy on ill-advised and irrelevant tasks. At their best they may be inspired teachers, scientists, or artists.

The results for Holland's Self-Directed Search suggest that there are clear sex differences, that the boys have primarily Investigative interests, whereas the girls are primarily Artistic in their orientation.

The boys, as a consequence, are academically oriented, socially withdrawn, analytic, critical, rational, curious, and interpersonally reserved. The girls tend to be original, intuitive, spontaneous, and prefer unstructured, open-textured problems and environments. They also tend to be socially outgoing and interested in people.

The creative potential of the 1974 enrichment sample can be estimated by means of the Barron-Welsh Art Scale, and by a CPI-based creativity regression equation. The Barron-Welsh Art Scale, a measure of preference for complexity in visual designs, has been shown repeatedly to correlate with demonstrated creativity in adult life. The average score of 22.1 for our youthful sample is substantially higher than the average score for adults (15.1 for men, 18.1 for women) in general, suggesting that these youngsters may in fact have some creative potential. Further evidence for this proposition came from the CPI, in terms of a regression equation developed to predict creativity in architects. On this equation the mean score for highly creative architects was 11.7. The mean score for our 1974 enrichment group was 13.1; for the girls the score was 14.1, the figure for the boys was 12.0.

The foregoing can be summarized as follows. Overall the enrichment sample is bright, socially perceptive, and potentially creative. There are also important sex differences associated with verbal giftedness. The boys in our enrichment sample are introverted, theoretically oriented, socially reserved--almost a junior stereotype of the abstract academic. The girls, however, are extraverted, action-oriented, and socially outgoing--they seem to be enthusiastic innovators, but perhaps

fickle and impulsive. It is clear then that an assessment strategy that relies exclusively on a standardized measure of verbal achievement (i.e., SAT-V) produces a characteristic type of student, described above.

In Section III we will return to the SAT and evaluate it as a selection device. In the next section (Section II), however, we discuss the question of how and in what ways verbal giftedness differs from mathematical precocity.

II. A Comparison of Mathematical and Verbal Giftedness

A major goal of this project is to attempt to give some further insight into the nature of human intelligence, to generate a richer and more differentiated description of intellectual talent than that which is currently available in the standard psychological literature. One possible strategy is to compare students who are, in SAT terms, mathematically gifted with a verbally gifted sample. We made a provisional attempt to do this last year, an attempt that was unsatisfactory because the samples were too small.

Mathematical giftedness is defined here as receiving a score on the mathematics section of the SAT of 640 or better. These students, 30 12- or 13-year-old boys, were all designated as Mathematical Talent Search winners by Professor Julian Stanley in his Study of Mathematically and Scientifically Precocious Youth; he has kindly made these data available to us in order that we might make the following comparisons.

Verbal giftedness is here defined as an SAT-V score of 550 or above for 8th graders, 500 or above for 7th graders; the verbal group contains 30 12- or 13-year-old boys who took part in our Verbal Talent Search, who received the scores designated above; all were considered Verbal Talent Search winners. Thus the analyses presented in this section compare a group of boys who were self-selected for a mathematics competition and who are characterized by very high scores on a standardized measures of mathematical achievement with a group of boys who were self-

selected on a competitive verbal test and who are characterized by very high scores on a standardized measure of verbal achievement. In terms of standarized test performance these two groups seem like junior versions of C. P. Snow's two cultures, i.e., scientists versus humanists.

The two groups were compared in terms of our standard test battery--an array of the most powerful and best developed assessment devices currently available. The results of these comparisons are presented in Tables 6 and 7, and the findings are both decisive and unexpected. With five exceptions, there are no differences in the two groups--in terms of a multi-dimensional appraisal of their personalities, they couldn't be more statistically similar. The differences that appear in Tables 6 and 7 are not very enlightening. The groups differ in terms of SAT-M and SAT-V, but of course these differences are artifacts of the selection process. They also differ with regard to the Terman Concept Mastery Test, but this difference is also artifactual, a function of the strong positive correlation between SAT-V and the Terman. The difference that appears for the Barron-Welsh Art Scale suggests that the young mathematicians prefer designs that are organized, symmetrical, and simple; the verbal winners on the other hand prefer designs that are unfinished, asymmetrical, and complex. Results for Holland's Self-Directed Search reveal that the groups also differ with regard to overt and expressed vocational preference. This, however, was evident at the outset.

There are two obvious ways in which these findings can be interpreted. One could argue first that these students are simply too young, that their personalities haven't become fully articulated, that differences which would appear in adulthood haven't had sufficient time to become

manifest. The fact is, however, that the measures employed here have yielded significant results with these students in other comparisons; therefore, if any important differences exist between these two groups (beyond the verbal and mathematics subscales of the SAT), they should have appeared.

The second interpretation that can be placed on these findings is that the psychological processes that promote or facilitate the development of verbal as opposed to quantitative talents are simply not reflected in conventional assessment devices. One might speculate further that these processes are not well reflected in current psychological theory nor well understood by us. Whatever the explanation of these findings, they seem to lead to two conclusions. First, mathematically and verbally talented youngsters seem psychologically very similar with the single exception of mathematical and verbal achievement scores. Second, comparisons of this sort are probably not a productive and fruitful means of analyzing the nature and structure of human intelligence. We feel, consequently, that we should gather no more data pertinent to this particular type of comparison.

III. THE SUMMER ENRICHMENT PROGRAM

In the summer of 1973, three special courses--Writing, Introduction to the Social Sciences, and Productive Problem Solving--were offered to a select group of 31 students. That summer program demonstrated that a number of junior high school students were willing and able to do college level work. It was not clear, however, how those successful students could be distinguished from their less successful age-mates. The small number of students that we could accommodate in the three courses rendered the data inconclusive. Therefore, based upon a desire to replicate the 1973 experiment for research purposes and a commitment to serve the students identified in the 1974 Talent Search, we again offered, in the summer of 1974, two special college level courses--Creative Writing and Introduction to Social Science.

All students who attended the April 6 testing session were given a written description of the two courses and an invitation to participate in the one of their choice.

Announcement of Summer Program, 1974

> The Project for Verbally Gifted Youth is offering a summer program for a selected group of students. The two principal objectives of the summer program are: (1) to prepare students for advanced or college level work, and (2) to encourage students to develop their own special abilities through independent work and study. Two courses will be conducted, primarily as seminars rather than as lecture courses. Neither course is an actual prerequisite to any specific college course, but both will emphasize advanced learning and study techniques and will require full participation by all students in the preparation of course work and in class discussions. Both will be conducted at a college level in respect to course content and expected level of performance in the class assignments and periodic quizzes.

(Announcement of Summer Program, 1974, continued)

The Courses

Introduction to the Social Sciences. Modern man lives in an era of major social change. The social sciences provide one vantage point from which he may try to understand and control his situation. This course will explore some of the concepts basic to anthropology, psychology, and sociology as they relate to the contemporary human condition. We will be particularly concerned with man as both a creator of culture and a product of it. Students will be expected to do assigned readings for each class as well as prepare two independent papers during the course. One will involve library research on an important issue in social science, while the other will require the student to apply a social science analysis to a real-life situation with which he is familiar.

Writing Seminar. Writing is a means by which one human being's experience can be transmitted to others. All writing, whether 'creative' or 'technical' requires the selection of content and the selection of form from among a variety of alternatives. In this course we will read from a number of different authors and discuss some of the basic dimensions of each selection. Students will be asked to write for each class meeting and we will discuss their written work at each session. At least one complete work (poem, short story, essay, novella) will be required from each student and this work, like the weekly assignments, will be evaluated in detail by the instructor.

The two students in the April 6th recall group who had participated in the 1973 summer program were excluded from this invitation. Three students who were being tested that day as part of a random recall group of lower scorers were invited by oversight. Fourteen students signed up for the Creative Writing course, including one of the random recall students and one 6th grade student who was identified on the basis of creative writing that he had submitted to the project previously. Fourteen students enrolled in the Social Science course, including the two other random recall students and one student identified through the Mathematical Talent Search of the Study of Mathematically and Scien-

tifically Precocious Youth (SMSPY). The random retall students were personally contacted to explain how difficult the courses might be. However, since all three expressed a desire to do the work, they were accepted.

As indicated above, the 1974 summer program had both service and research objectives. It was designed to provide a group of very bright students with a challenging intellectual experience. Second, it was to afford each student the opportunity to interact with other equally bright students. Third, it was to help each student learn more about the extent of his or her abilities and aid in the planning of future academic acceleration or enrichment.

The research considerations centered on the problem of selection. The results of the 1973 program were suggestive but ambiguous. To the question: Can high SAT-Verbal junior high school students do college level work?, the answer was: Yes, some can. What kinds of students do the best? It is not clear and appears to be different for males and females, with personality and creativity measures being more predictive for the former and intelligence scores for the latter.

In addition, we wished to investigate the facilitative effects of such a course on intellectual performance. Finally, we were continuing with our development of prototype courses to be used with exceptionally intelligent students.

The following sections present reports on the design, conduct, and outcomes of the individual courses. The reports are based on

those written by the individuals who designed and conducted the courses. Both instructors have had experience working with students at the high school and college undergraduate levels. The instructor of the writing course has recently completed requirements for the Ph.D. in Humanities and had also served as the instructor of the 1973 summer writing course. The instructor of the Social Science course is a graduate student in Psychology and a research assistant for the Study of Verbally Gifted Youth.

A. Creative Writing Course - Summer, 1974

Invitations to take part in a creative writing course were sent to members of the April 6th recall test session and to seven students whose written work (submitted to the Talent Search in lieu of school test scores) had been judged outstanding.[1] Twelve students enrolled in the writing course and two others were also accepted--one sixth grade student whose extensive writing career was already known to the Project, and one member of the February group whose scores were below those required for recall testing, but who had expressed a strong interest in the course.

The major objective of the writing course was to provide an opportunity for practice and training in creative writing and critical reading for those members of the group who indicated a strong interest in developing their writing ability. The course was a demanding one, requiring considerable outside reading, regular weekly writing assignments, and a three-hour long weekly seminar-workshop session. In contrast to the course offered the previous summer, no attempt was made to train these students in the more practical aspects of college-level writing skills, such as outlining, summarizing, or preparing reports, and no time was devoted to the rules of English composition or grammar.

The instructor, Ms. Emily Toth, an advanced graduate student in The Johns Hopkins Department of Humanities, has taught both college and secondary school courses in writing and also taught the writing

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[1] See the letter of invitation reprinted on page 14 of this report.

course offered by the Study of Verbally Gifted Youth in the summer of 1973. She designed the course, conducted it and supplied the final evaluations of student performance. The following course description is adapted from her report, and the section--Instructor's Evaluation--represents her conclusions and recommendations.

Objectives

The objectives for the summer course were these:

1. To prepare students for advanced or college level work in creative writing.
2. To encourage students to develop their own special abilities through independent work and study.
3. To practice writing in three genres: poetry, fiction, and drama.
4. To provide useful criticism from both teacher and peers in an informal, workshop atmosphere.
5. To familiarize students with some of the great works of literature in these three genres.

Format

The course consisted of eight meetings, seven of them three hours long, with a ten-minute break after an hour and a half. The class met from 9-12 A.M., from June 18 - August 6. There were 14 students, 11 girls and 3 boys. The last class lasted an hour and a half and was followed by testing.

Each class consisted of discussion of student writings (read

aloud for criticism), and often included discussion of great works read outside class and exercises in writing and liberating the imagination. The course is described more specifically below. Several books were used and other materials were xeroxed from a variety of sources. The books were:

Permanent Theatre: Great Farces (Robert Saffron, Editor)

Six Centuries of Great Poetry (Robert Warren & Albert Erskines, Editors)

Black Voices (Abraham Chapman, Editor)

Maupassant--Selected Short Stories

Class Conduct, Readings, and Writings

For session one, the students received an assignment two weeks before the first class:

> The first class will be devoted to discussion of poetry and to demonstration of poetic form. All students are asked to prepare for the first meeting by completing the following assignment:
>
> 1) Find two poems--one which you like and one which you dislike. Bring a copy of each to class. (Be sure you know the difference between poetry and prose)
>
> 2) Be prepared to explain why you chose each poem.
>
> 3) Bring to the class a sample of your own creative writing. It may be a poem, short story, ballad, etc.

On June 18th, after introductions, the class talked about writers and their habits, and then about poetry as a genre. Specifically the peculiar qualities of poetry, such as simile, metaphor, onomatopoeia, and oxymoron were discussed, applied to such modern poems as "You deserve a break today/ So get up and get away/ To McDonald's." In

order to forestall self-consciousness in the students about reading their work, the instructor gave them a poem she wrote at the age of nine for analysis: "As forlorn the year passes/ The little men go/ To see their poor captain/ His crew and his foe."

The students' favorite and least-liked poems were discussed and read aloud to arrive at some criteria for a good poem: it should make sense; it should not be singsong; it should contain sensible comparisons; it may rhyme or not rhyme. Examples of different kinds of poetry were handed out: two sets of rock lyrics, "Elusive Butterfly" and "Wild Thing," and several examples of blues, including "St. Louis Blues," and the criteria were used to determine which of the two rock poems was superior. Finally a narrative ballad, "Barbara Allen," was discussed both as a story and as a poem, and the question was raised, "How would the story appear from a point of view other than Barbara's?"

Assignments for Second Class:

Writing: Write one example of a blues poem.

Write a ballad or paragraph telling the story of "Barbara Allen" from a different character's point of view.

Reading: Ballads in Six Centuries of Great Poetry, and "Danny Deever"

Poems in Black Voices: "Incident," "Southern Cop," "The Young Ones," "The Ballad of Joe Meek," "Children's Rhymes," "We Real Cool," "The Emancipation of George Hector"

Second Class

After listening to a tape of "Barbara Allen" sung by Joan Baez, the students discussed whether the written ballad or the sung version (with somewhat different words) was superior. Student versions of the "Barbara Allen" story from other points of view were read aloud. In this and all other classes, the instructor asked the students to put pseudonyms on their work: some of them were quite creative, such as "El Magnifico," "LaVerne the Toad," "Sue Doe Nimn," and "The Masked Peanut." Some changed their pseudonyms from week to week, so the weekly participants included such personages as "Abe Lincoln," "Ann Boleyn," and "Polly Unsaturate." Each student put his/her real name on a card along with the pseudonym; the papers were collected and shuffled and passed out so that each student got someone else's paper for reading aloud. After awhile, they learned to recognize each other's writings, but seemed to enjoy concocting pseudonyms as a game; at first, it was useful for avoiding self-consciousness when one's work was criticized.

Once the papers were handed out, several students would read theirs: students who volunteered because the papers they received were especially clever or interesting; or students who were called on because they were the quiet ones of the class. With each paper read, the class talked about what they liked and what could be improved. This procedure was followed at each session.

After the discussion of "Barbara Allen" papers, the class talked about poetic form (blank verse and free verse), about the difficulties

encountered in writing ballads and blues, about other poetic devices: metaphors as objective correlatives, colors and animals as images.

Finally the class began listing poems in imitation of Carl Sandburg's "Arithmetic," read them aloud as they were half-completed, and other students made suggestions for the writers.

Assignments for Third Class:

Writing: Write your own listing poem about any subject.

Write a modern poem--any style, any subject.

Reading: In Black Voices: "The Song of the Smoke," "For My People," "Harvest Song," "Kid Stuff"

In DeMaupassant, "A Duel"

Ferlinghetti, "I Am Waiting," #6, #22 (xeroxes from Coney Island of the Mind)

Sandburg, "Arithmetic"

Merriam, "How to Eat a Poem"; Guiterman, "Ancient History"; Paul Dehn, nursery rhymes; and Ezra Pound, "Meditatio"

Third Class

The instructor began the third class by returning the students' papers, and talking about their strengths and weaknesses as a whole; possible problems with meter and form, the uses of adopting a persona outside oneself.

The assigned poems were discussed in terms of what the students liked and why. In general--and this was true with drama and fiction as well as poetry--the students were more articulate in their writing

than in their speaking: i.e., they could write with great imagination and fine technique, but they had difficulty explaining what they had done.

Then some of the students' quite varied and spirited modern poems were read. While the discussion was at times hilarious, it was also useful in pointing out that a poem can be about anything, in any style, and that censorship is surely inappropriate.

After looking at examples of some children's poems (Kenneth Koch's Wishes, Lies, and Dreams), the class tried one of Koch's exercises: the making of a collaborative poem. The first person on each paper writes one line of a poem, setting thereby the subject and tone. Then that person passes her/his paper on to the next person, who adds a second line, and so on. The results were odd, nonsensical, and delightful. This was one of the most popular and successful exercises in the course, and the class obviously enjoyed reading the final productions and figuring out who produced which line (and, sometimes, why).

In the last part of the class, the discussion turned to 1) whether poems could be made into short stories; 2) deMaupassant's story, "A Duel": primarily the comparisons of national character, as a form of shorthand identification of individuals; 3) the use of the 5 w's and h--who, what, when, where, why, and how--to set the stage at the start of the story; and 4) a comparison of deMaupassant's story with one from the Village Voice's "making a long story short" contest, in which stories are written to be 150 words long, no more and no less.

Assignments for Fourth Class

Writing: Write a haiku poem.

Write a story "making a long story short" (about 150 words).

Write the first few paragraphs of a longer short story, establishing the 5 w's and h and having in mind the plot of the whole story.

Reading: Kate Chopin's "Story of an Hour"

deMaupassant, "An Old Man," "My Uncle Jules"

Black Voices, "To Da-duh, In Memoriam," "Neighbors"

haiku poems

Fourth Class

Papers were returned from the previous class, with suggestions, e.g., more concrete images, arrangement of listing poems to create a progression. In some cases, the students were asked to revise their poems.

For the discussion of haiku poems, the instructor presented a haiku by an acquaintance: "Oh well/ What the hell/ Who cares for me Nobody/ Unrequited love." The students were quick to grasp that it was not really a haiku, since it did not meet the criteria of the haiku poems they'd read: e.g., suggestion of mood, inclusion of seasons and natural phenomena.

Abandoning poetry for the short story form, the class turned to Chopin's "Story of an Hour," discussing the story's construction, the 5 w's and h, the clues which predict the ending, the use of

seasons as objective correlatives, and the subtle shifts in tone.

Some of the "making a long story short" stories were read. Most had intuitively grasped the central technique in such a story: a trick ending. Very few had more than two characters in their stories. These works again demonstrated how easily the students were able to employ a new style or form. With their longer short stories, each person read the first line of a paper and the class selected from the first lines which stories they would be most interested in hearing. The stories included one about a dog named Bulgaria; one about a man named Robert Mansfield, who awoke with a craving for pickles a la mode and was relieved to learn that he was not pregnant; one about a girl taking a train trip in the Old West; and one with a man who'd just awakened in a "drunk tank."

Assignments for Fifth Class

Writing: Revision of poems

Finish long short story--about six pages

Write a 3-page character sketch (along the lines of deMaupassant's "An Old Man," "My Uncle Jules" and Marshall's "To Da-duh, In Memoriam"--also suggested: Reader's Digest's "The Most Unforgettable Character I Ever Met")

Write a paragraph describing yourself, so that someone who had to meet you at a train station would recognize you.

Reading: Descriptions of characters by famous authors

Black Voices, "Autobiography of Malcolm X"

Fifth Class

This class began with a discussion of the excerpt from Malcolm X's autobiography: the genesis of Malcolm's name, his life, his eventual fate, the unanswered questions, and how from the cover picture on his autobiography his physical appearance might be described.

Then the class read aloud their character sketches, considering what a character sketch should contain: physical description, gestures, actions, words. One student had created a character named Hildegarde Mudge, an enormously fat woman. The instructor pointed out how some names characterize: Hildegarde and Bertha are "fat names"; Gertrude is an "old name." One character sketch contained stereotypes about Italians, and the class discussed the functions of racial/ethnic stereotypes.

In the next exercise, the class looked at a picture of W. C. Fields, and considered which of his aliases was the best definition of himself: Mahatma Kane Jeeves, Whitey Dukenfeld, Charles Bogle, Chester Snavely. They also considered what one can learn by looking at any person.

Some of the students' self-descriptions were read, and the students were to raise their hands as soon as they recognized the person described. There was little difficulty with this, or with changing the description as if a Martian were the audience, or with changing the description to make it into a police report. Finally,

some of the students' long short stories were read, especially ones requested from the beginnings read the previous week.

Assignment for Sixth Class

Writing: Take character sketch, change it into a first-person monologue (soliloquy), about 1 page in length

Write a 3-page slapstick skit, including descriptions of actors and actresses, stage directions

Reading: The Importance of Being Earnest (in Great Farces)

Strindberg, The Stronger

Israel Shenker, "Women's Liberation and Language"

Israel Shenker, "Parents"

Sixth Class

Discussion question: Which genre is most difficult to write--poem, short story, or play? Nearly all saw the play or short story as more difficult, because a plot had to be constructed; the play was usually considered most difficult of all, since nearly everything had to be conveyed in dialogue.

The origin of drama as a genre was considered: its affinities with such forms of lyric as haiku; the separation of one actor from the chorus, to make protagonist and antagonist; special aspects of drama, such as stage business, upstaging, props, blocking. These last were applied to the plays read for class, and considered special staging problems: animals, killings, food, and blood. For part of this time the instructor lectured (for probably the only time in the course),

in order to give the students an idea of what a college literature course would be like.

The class compared The Stronger and The Importance of Being Earnest as plays; there was unanimous agreement that Earnest is a more entertaining play and one which would be more exciting as a performance. The distinctions between comedy and tragedy were drawn, some of the students' monologues read, and props and stage business which would be needed for the performance of each were suggested.

The students' short plays (skits) were taken up and all the casts of characters were read. The class then selected which skits they would most like to hear. The best plays were comedies; serious plays tend to require more maturity in the author, lest they degenerate into clichés.

Finally, there was a class reading of Gogol's Inspector General, to examine play construction. Despite an explanation of patronyms, the students had difficulty with the Russian names, but they threw themselves into the play with enthusiasm and read it well. Since the instructor cast the play by lot (writing all cast names on cards, and putting the cards in a paper bag to be selected), some odd combinations occurred: the Mayor was a girl, the Sergeant's Wife a boy. The students were amused at such turnabouts.

Assignment for Seventh Class

Writing: Write a one-act play, about 10 pages in length

Reading: Finish The Inspector General

Read The Rocking Horse

Seventh Class

The class began discussing the problems in writing drama: it is easy to find dramatic materials, such as disasters, but much more difficult to sustain a dramatic situation. Also stressed was the importance of including necessary props in the text, along with necessary scenery and any necessary characteristics (such as obesity or mustaches) in cast members.

Most of the period was spent with the students reading each other's plays, in order to select the best ones for performance the following week. They also wrote comments and suggestions on each other's plays, and a little time was allowed for the play authors to make any last-minute corrections. The students then voted for the best plays, to be performed the following week. Four were chosen: (1) The Child Heiress, by Flora Chu; (2) Willie, My Son, by Patricia Hurley; (3) The Poem, by L. Christopher Sharp; and (4) A Day with Seventh Grade, '74, by Leah Weinstein.

Assignments for Eighth Class

Choose the best work you did this summer (poem, story, or play). Write one paragraph explaining why you consider that work the best.

Eight Class

The last class was held for only an hour and a half, and consisted of performance of the chosen student plays. Casting was done again by lot, and two students were in charge of sound effects. Since one play had a cast of thousands, everyone got to play at least three parts during the course of the class. Only one conflict occurred: one boy

had two parts in the same scene: two girls who were drawing lines connecting each other's freckles. The boy, however, rose to the occasion and gamely connected his own freckles as best he could. The class was followed by testing and a picnic.

Marking Papers

Since the most important way of learning to write is to write continually, the instructor tried to avoid any kind of evaluation which might stunt creativity and imagination. Thus the comments on papers were minimal--suggestions, perhaps, of additional images in poems, or of more coherent action in plays--with a lot of well-deserved praise for a job well-done. Since the writings were of different kinds, it would be difficult to chart a straight-line development, but it was helpful for the students to be writing for a specific audience, their peers, and to receive discussion of their work not only from the instructor but from their classmates.

Student Evaluation of Course

Before the last session, each student received an evaluation form to fill out. (A copy is appended.) The students felt the best aspects of the course were the informality, the opportunity to practice different writing styles, and the possibility of seeing what others had written. There was no general agreement on the worst aspect, although some students suggested that they were sometimes more inspired than they were at other times. Nor was there general agreement on what to add to the course, although both more discussion and more reading were

suggested. Several would subtract the study of ballads. There was little agreement on the favorite writing assignment, but the play was least-liked. Their favorite readings were from Black Voices, and The Importance of Being Earnest; they liked least the ballads and The Inspector General. Most would not like to have a grade in the course, and most would keep the same time arrangement, but perhaps begin the class later, since many had to travel a long way to Hopkins.

Asked to compare this class with their regular English classes in school, most reported that their regular classes place too much stress on grammar. They like the opportunity to write more, to meet interesting and intelligent peers, and to read better materials.

Some sample comments: "This course isn't boring at the least, and English in school is boring. If a kid's parents, relatives, brothers, or sisters all say 'ain't,' no matter what Robert's English book says, he'll grow up saying 'ain't'."--"In my regular English class we don't do much creative writing. Most is descriptive writing and reports. When we read something, we have to answer so many questions that I'd rather not read. This course moved faster. I got a chance to write and to read interesting stories."--"There was a lot more homework (writing) but the discussions in class were more interesting than in English. I liked this class better (except for all the plays) because it was only creative writing, not grammar and all that junk."

The students expected to continue writing on their own.

Instructor's Evaluation

I very much enjoyed teaching this course--more so than last summer, since it was clearly for creative writing. The enthusiasm and energy of the students became contagious; I found myself eager to write poems, after years of graduate school conditioning toward expository prose only. The students are not old enough to be blasé, but are old enough to have excellent vocabularies and imaginations, and it was delightful to share in their work.

There are some suggestions that might be considered if this course is repeated. The text, Six Centuries of Great Poetry, was too traditional for the kinds of poetry the students wanted to write: a recommended substitution would be Reflections on a Gift of Watermelon Pickle, from which much of the xeroxed material was taken. Perhaps an anthology of short stories would be better than deMaupassant, since some of his stories are rather sophisticated for young teen-agers. Black Voices and Great Farces, however, were generally favored, especially the former.

Although the students disagreed in their evaluation of the course, several shorter sessions would be better than one long one once a week. There would be more time in between for writing and revision and for thinking about the course.

Comparison of 1973 and 1974 Writing Courses

In several respects, the 1974 course was an improvement over that of the previous year. Our decision (based on the 1973 student comments and reactions) to concentrate on creative writing, rather than to try

to combine both creative writing and technical writing in the same short course was a good one. The students were uniformly enthusiastic and motivated to do the work assigned since, in effect, it was their work, shaped and guided by the instructor.

The 1974 course met for three hours, whereas the 1973 course met for only two hours. Our main concern was whether students of this age could maintain their attention and effort over such a long, only briefly interrupted period. There is no question that they could and did. The variety of activities offered by the instructor and the students' own intense involvement in the subject matter made the time pass without boredom or fatigue. We do not wish to suggest that all of these students no longer had any need for the kinds of skills taught in junior high school English courses or that they might at this time enter college with the required skills in English composition or adequate knowledge of explicitly formulated grammatical rules or of prescriptive grammar. It should be noted, however, that for these exceptional students, the reading and composition classes in their own schools were less than inspiring. For those of them who do have a serious interest in and commitment to writing, a course such as the one offered by the Study of Verbally Gifted Youth offers an appropriate and welcome challenge.

SUMMER CREATIVE WRITING COURSE - 1974

Evaluation

PLEASE DO NOT SIGN YOUR NAME.

1. What was the best aspect of this course?

2. What was the worst aspect of this course?

3. What would you add to this course?

4. What would you subtract from this course?

5. Which writing assignment did you like best?

6. Which writing assignment did you like least?

7. Which reading assignment did you like best?

8. Which reading assignment did you like least?

9. Do you prefer plays, poems, or short stories

   for reading_____?

   for writing_____?

10. Do you expect to continue writing on your own?

11. How does this course compare with your regular English classes in school?

12. If transportation could be arranged, would you prefer having this class meet more than once a week, with shorter meetings (for instance, twice a week for 1-1/2 hours each time)?

    What time arrangement do you think would be best?

13. Would you like to receive a grade in this course?

14. Please write any other suggestions, comments, questions, etc.

B. Social Science Course - Summer, 1974

Introduction

A social science course was designed to introduce students to the general perspective and subject matter of the social sciences. Anthropology was used as the medium through which this general orientation could be presented. The course considered the nature of man as a product of nature and as a social creature. It was conducted at a level of difficulty appropriate to bright first-year college students. The course centered on four books representing a spectrum of opinions and specializations in Anthropology. Physical Anthropology was included, as were theoretical and descriptive accounts of Culture and cultures. The course was conducted in the fashion of a seminar. Ideas were discussed freely, but there was also an attempt to force an examination of assumptions and evidence. The application of these ideas to contemporary American life was also stressed.

This report is presented in five parts: The objectives of the course; the general approach and format; description of each class including response of students and reactions of the instructor; the students' evaluations of the course; and the instructor's evaluation and conclusions.

Objectives for Students

1. To develop and enhance each student's strategy of inquiry.
2. To learn to express ideas and state facts clearly and effectively, both orally and on paper.

3. To learn to analyze and answer others' arguments.
4. To distinguish between well-supported and unsupported arguments.
5. To learn academic skills required of college students, e.g., writing a research paper.
6. To learn some general concepts of the Social Sciences.
7. To understand the type of approach used by social scientists.
8. To discuss and come to understand the place of man in nature and the potentials, consistencies, and patterns of human behavior.
9. To apply concepts and methods of Social Science to the world around us.

These are formidable objectives which could not reasonably be accomplished in an eight week period. They are long-range goals toward which the social science course was to be a first major step. Students were expected to show improvement on objectives 1, 2, 3, 4, and 5; to demonstrate that they had acquired the skill and knowledge expected of a first term college student on objectives 5, 6, and 7; and to manifest the desire and some facility to apply those skills described in objectives 8 and 9. Even with the objectives thus qualified, they are nevertheless quite rigorous for junior high school students.

General Approach and Format

Covington (1970) discussed three basic approaches to teaching: emphasis on content to teach content (traditional); use of special techniques to teach content (learning to learn); and the use of con-

tent to teach techniques (learning to think). In the present course, the content of Anthropology was largely intended to be a medium through which to demonstrate the styles of thinking employed in social science. Learning to think was as important, if not more important, than learning specified ideas and concepts. Nevertheless, the organization of the course revolved around subject areas, not techniques or processes. This was in response to two considerations. First, the course material seemed intrinsically interesting to adolescents while the bare techniqes seemed less so. Second, as Berger (1963) aptly warned, "In science as in love a concentration on technique is quite likely to lead to impotence" (p. 13).

The instructor attempted to function as a group leader rather than as authority. He initiated many--though by no means all--topics, kept discussion on target, and facilitated the participation of all class members. He attempted to model desirable behavior, e.g., asking questions, challenging statements, presenting evidence; he also tried to reward diverse contributions, to encourage each individual, and to help each express himself or herself more explicitly and convincingly. The strategy was to generate an atmosphere of freedom to express ideas while at the same time helping the class to develop high academic standards. This was considerably aided by the formation of personal relationships among students and between each student and the instructor.

The course consisted of eight meetings, each three hours long. The class met once a week. There were 14 students: five girls and nine boys.

There was no set format for classes although all featured group discussions. The amount of direction supplied by the instructor varied from week to week. Fairly long reading assignments were given for each class. Generally, written assignments were also required, although on two occasions there were in-class quizzes.

Four texts were used. The Human Revolution, a series of lectures to high school teachers by Ashley Montagu, served as an introduction to Physical Anthropology. Culture in Process by Alan Beals and George and Louise Spindler served as a basic text in Cultural Anthropology. It was supplemented by Encounter with Anthropology, a collection of papers by Robin Fox, most of which were ethnographies that had previously appeared in professional journals. Finally, there was Five Families, an ethnography of poverty in Mexico by Oscar Lewis. The four books approached man and culture from a variety of perspectives; each had some obvious strengths and weaknesses. Thus they served as a fine introduction to the subject and as excellent springboards for discussion.

The subjects for each meeting were as follows:

Week 1: Introduction; Use of a research library; Evolution

2: Evolution

3: Introduction to Cultural Anthropology and methods of science

4: Fundamental concepts in Anthropology, e.g., culture, system, environment, tradition

5: The family and cultural transmission

6: Ritual and control of behavior

7: Cultural stability and change

8: Culture change; Debate on individual freedom versus societal regulations.

Description of Classes

As each meeting is discussed, the strengths and weaknesses demonstrated by the students will be noted. In many cases, however, "weaknesses" would be a poor choice of words. The students generally performed on a level well beyond junior high school. As was discussed above, the standards that were set were extraordinarily high, and it was not expected that these students--as bright as they are--could achieve such a level at this time.

Class #1. The students had been asked to read the first half of The Human Revolution, discuss in writing those of Montagu's ideas that were particularly exciting or questionable and be prepared to follow up those ideas in class.

The majority of the class time, however, was concerned with introductory matters. Personal introductions were followed by discussion of the mechanics of the course. Next, the instructor reviewed the SQ3R[1] technique of reading in the belief that, properly used, it would multiply the benefits the students could derive from the assigned readings. A short discussion of the resources of a research library was followed by a trip to the Hopkins library. This was in anticipation of the

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[1] SQ3R is a systematic approach to reading designed to enhance both comprehension and retention. SQ3R indicates the five step process--survey, question, read, recite, review.

research paper that all students would be required to write. The class concluded with some objections to Montagu raised by one of the students and discussed by the others.

The students appeared quite eager. They were impatient, however, with SQ3R; some had heard it before, and most seemed to reject anything that reminded them of their regular junior high school classes. They appeared excited by the possibilities presented by a good research library, but it is interesting to note that none of the papers turned in at the end of the term showed any use of such resources as journals, abstracts, or Current Contents. The class discussion was very spirited. The students demonstrated that they read a great deal and understand what they read.

Class #2. For the second class the students read the remainder of Human Revolution and the introduction and conclusion to Encounter with Anthropology. Homework had been to compare and contrast the authors' views on evolution and the nature of man. The students opened a general discussion and in a rambling, free-wheeling fashion covered a number of the major points the instructor had intended to raise. About half the class was very active in the exchange. A couple of students contributed little or nothing.

There was a significant problem. The most vocal members tended to be speakers only, not listeners. Their purpose seemed to be to score points over an adversary rather than to learn through discussion. Conversation sometimes bordered on the chaotic.

The second two hours of the class involved a small-group assignment: Two statements written by psychologists dealing with the nature

of man[2] were presented and the following task assigned to the groups:

> These two statements reflect different conceptions of the nature of man. Of course, other positions are also possible. Using these quotations, the assigned readings, and your own observations of the world around you as a starting point, try to develop a coherent opinion of your own and present evidence to support it. In addition, consider the implications of your position for social policy, e.g., education, law. Does your position agree or disagree with the point of view held by society at large? With that of your parents and family? With your religion?
>
> You will work in groups of 4 - 5 for approximately 45 minutes after which you will have 15 minutes to individually write an essay dealing with the issues raised above. After that, we will have a general discussion.

The discussion that took place in these smaller groups seemed more orderly but still exciting. Most individuals were able to develop some type of defensible position. On the other hand, few handled the question of implications of their position in any depth.

Class #3. The reading assignment for the third class consisted of a chapter in Culture in Process and three chapters in Encounter with Anthropology that dealt with and demonstrated the practice of Anthropology, i.e., the collection of ethnographies. The written assignment was based on a task in CIP: "Through interviews and observations of a patterned activity--such as playing a game, attending a lecture, or getting up in the morning--formulate a set of rules which would enable someone else to carry out the activity in an acceptable manner. Find a way to test your rules."

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[2] A passage from Civilization and Its Discontents, by Sigmund Freud, which portrayed "man as a savage beast to whom consideration towards his own kind is alien," and a passage by Robert Hogan, which made the point "that man is fundamentally a social animal" were the two statements used.

This assignment was different from the preceding two. It called for analysis of an actual situation rather than analysis of ideas in a book. Generally speaking, this assignment was met with favor by the students but was poorly done. Few showed much sophistication or insight.

Because of the runaway discussions of the previous week, the instructor began the class with an analogy. How is this class like a dam? (If their flood of ideas can be restrained and allowed to flow in a controlled fashion, they can generate power and also develop a reservoir of good ideas from which they can draw.) This approach had two beneficial results. First, they were intrigued by the question and used a great deal of imagination in suggesting possible solutions. Second, when the instructor's reasoning was presented to them, they responded to the need for more orderly discussion.

Although a specific outline of topics to be covered had been prepared, in the general discussion concerning the homework most of the important points were considered. However, during the discussion, many students did not seem to attend carefully to all that was being said. They did not appear to be learning from one another. In addition, the free style of discussion prevented material from being presented in an orderly fashion. Note-taking--even if they were so inclined and they were not--would have been difficult.

The style and extent of participation of individual classmembers was consistent with previous weeks. Four were quite vocal while another three participated frequently. All had remarks of very high

caliber. Five participated less often and with less sophistication. Two talked only in response to direct questions.

Class #4. The homework assignment consisted of three chapters in CIP and two in EWA. There was no written assignment as they were expected to begin work on their term papers. An in-class, open-book quiz involved answering one of the following three questions:

> Chapter 3. In what ways can this class be considered a cultural system? In what ways is such a label inappropriate? What would be an accurate label or description for this class in anthropological terms?
>
> Chapter 4. The culture of the United States is due in large part to the adaptations made by the European settlers and their descendants to the vastness and richness of the North American continent. Explain in detail, using examples, why you agree or disagree with this statement.
>
> Chapter 5. If correct and incorrect behavior is defined by the cultural system, how is it possible to be a unique and creative individual and at the same time to exhibit the behavior characteristic of a particular cultural system? Explain in detail.

Each question was responded to by four or five students. Those that answered #2 generally did poorly--they missed the concept of interaction between the cultural tradition and the environment. Some students also had difficulty with the first question. The several defining characteristics of a cultural system were presented by the text author in a somewhat disorganized fashion. A good answer required--among other things--careful reading of the homework assignment. The last question pertained directly to one section of the text. Those who answered it (those who did all the assigned reading?) did well.

Generally the class showed the same pattern of interaction as in the previous weeks. The restrictions on conversation did not prove to be stultifying. Students were still eager to participate, but did not run roughshod over each other. Most of the students seemed to be interested in occasional supplementary explanations that the instructor gave when appropriate. They would probably respond well in a college lecture situation as long as they were given time to discuss and ask questions. At least one of the brightest students, however, withdrew and assumed a look of boredom on such occasions.

As before, little material in the sense of prepared notes was covered. The class became involved in extended discussions on particular topics. The discussions were useful when all the students did all the reading, and it appeared that most of them did do most of the reading. Nevertheless, all members of the class, even non-participants, appeared to enjoy the class. A three-hour class did not seem to be excessively long for involved students of this age; some even complained that it was too short.

Class #5. The assignment for the fifth class centered on family and kinship patterns. Three chapters each in CIP and EWA were assigned. After doing the readings, students were to talk with adults, in particular their parents, concerning the marriage rules in their subcultures. They were to prepare a written account discussing all the important variables as pointed out in the readings. It was suggested that they devise a chart or diagram of the search procedures. In general, the quality of these products was poor.

There appeared to be little carryover between what they read in the texts and what they observed around them.

The class work took over where the homework left off. The class began with a discussion of the use of flowcharts in computer programming and their application to social science. The task then assigned to each of three small groups was to devise a flowchart representation of the marital search procedures practiced by some group in our society.

They enjoyed the challenge for the most part but they seemed to have little idea of how to work efficiently towards the solution of such a problem. The assignment did get them to consider the many variables involved. They did not, however, show much appreciation of subtleties such as order of importance of variables, feedback loops, or other complex interrelationships.

Almost the whole class period was spent in the small groups. Nevertheless it seemed that more work with flow charts and systems would have been desirable. The previous week had dealt with topics such as systems, culture, and environments. A single, comprehensive lesson spread over two (or more) weeks would probably have been more satisfactory. The students demonstrated again and again their wide range of book knowledge and their quick intelligence, but their thinking could generally be described as single rather than multidimensional. Moreover, their learning seemed compartmentalized. Therefore, a flexible structure that would aid them in the recognition and understanding of the sutble and pervasive interrelationships of man, nature, and culture is of singular importance.

Class #6. The readings for this week centered on three chapters

in CIP dealing with symbols, rituals and the control of behavior and a chapter in EWA emphasizing the role of the culture in determining the stresses placed on individuals and in providing means of coping with the stresses. For written homework, students were to prepare a two page outline of their term paper. Ten of 14 students did so. There was also an in-class, open-book quiz as follows:

> Answer one question.
>
> 1. Political campaigns can easily be considered ritual activities. Consider this one aspect: candidates for president subject themselves to a grueling campaign schedule that requires them to speak to small groups of people in cities and towns across the United States. Clearly this is not the most efficient (or safest) means of communicating to large numbers of people. Speaking as an anthropologist, discuss the question: Why does the American political system include the "whistle-stop" ritual?
>
> 2. Describe some methods of social control. What are some advantages and disadvantages of these methods?

Almost all students chose the first question. Several responses were excellent. Only a few students proved unable to understand the basic point of the question: What are the implicit functions of the ritual? It is interesting to note that it was generally the same students who performed best orally who also submitted the best written work, although there were exceptions.

The remainder of the class was conducted in a different style from the preceding classes--i.e., lecture-discussion rather than seminar. The instructor employed lecture notes on stress (frustration, conflict, pressure, etc.) originally prepared for a college course in mental hygiene. The class seemed very receptive to the idea of studying behavior from a psychological rather than an anthropological point of view. Many students also seemed willing to experiment with the tone

of the class by shifting temporarily to a lecture format.

The subject matter was for once presented in an organized fashion, and there were still some excellent discussions resulting from points made or questions raised. Unfortunately, the class lacked the sparkle of earlier sessions. The optimal mix of organization and spontaneity was still elusive.

Class #7. Term papers were due at the seventh meeting. Therefore, no other written work was given and the reading assignment was to be spread over two weeks. It included three chapters in CIP and four chapters in EWA dealing with culture change. In addition three of five chapters of Five Families were also assigned.

Since papers were due, it was expected that few of the students would have completed the readings. Therefore, class discussion was structured around a series of questions, for example:

> Is man's evolution as a cultural animal complete?
> What is fundamentally wrong about functional explanations of society?
> What kind of culture is being transmitted in the United States today, and who is transmitting it?
> Using the House Judiciary Committee hearings as a case study, discuss the role of institutions and laws with respect to individual freedom of behavior.

On the first two questions there was excellent discussion. Several students assumed strong positions and were in turn vigorously questioned by the others. The pattern was consistent with previous weeks in that several students displayed very sophisticated reasoning, a few showed little, and a couple did not participate at all.

On the remaining questions the exchange was less satisfactory. They did not recognize, for example, that conflicting cultural messages

could be transmitted by peers, parents, media, etc. In discussing change and stability in American life they seemed tied to a time span of the past 20-30 years.

After class a small group of the brightest students discussed the debate topic for the final week of class. The proposal--Resolved: Every culture is unique and must be judged on its own terms, not according to standards proposed by members of any other culture--was overwhelmingly rejected. They considered it non-debatable; they said one side was obviously the correct one, and no evidence other than opinion could be used to support either position. They proposed instead--Resolved: An increased emphasis on personal freedom would be detrimental to the well-being of American Society.

Class #8. A 1-1/2 hour debate was held on the topic stated above. The three debaters on each team included most of the brightest students in the class. They made interesting--and in a few cases very persuasive--opening speeches, but some tended to get bogged down in irrelevancies. They all relied on logical argument; few facts or authorities were cited and anthropological evidence was seldom employed. In rebuttal and questions from the floor the emphasis remained the same--logical arguments based upon general knowledge. It did not seem to represent their best efforts but did seem somewhat characteristic of how they approached such issues.

The remainder of the class was used for administration of post-tests.

Students' Evaluations

At the seventh meeting, each student received an evaluation form to complete. It included 26 questions on the subject matter, organization, and operation of the course. Twelve students returned the forms on the last day of class. All but two of them reported that they enjoyed the course, and most cited the class discussions as the best aspect of the course. Additionally, they enjoyed the other students in the course.

There was little agreement, however, concerning topic areas or assignments that they liked the most. Nor did they agree concerning the books which were assigned. What one student found exciting, another found dull and repetitious. The exception was Five Families, which all students rated highly.

Most students had not expected the course to be concerned primarily with Anthropology. Although they reacted favorably to the subject, many suggested that more sociology and psychology be included in the course. Most also recommended that the course be longer. Students seemed to average 4 - 7 hours per week preparing for the class and several felt this was too much. Most students agreed that the work load for the course would be too much if offered during the school year.

All students considered the course an improvement over their usual social studies curriculum. One student said it was, "Harder, more challenging, more interesting, more educational. I'm really tired of Social Studies and English classes that put me to sleep because the teacher has to plan for everybody. This was a refreshing

break from the monotony of easy classes."

Eleven of the 12 students expressed interest in other non-credit courses if we were to offer them. Their first choices included: Psychology, Political Science, Writing, Literature, History, and Science.

Instructor's Evaluation

It is difficult to give an adequate description of these students. The summary of the class meetings tended to stress those ways in which they failed to meet a very high set of standards. If the reader bears in mind that these students were 13 and 14 years old, their precocity stands out sharply. As the instructor, I was greatly impressed by how highly verbal they were. Their vocabularies were excellent; most were widely-read. In their writing they displayed an ability to express themselves on paper well beyond their grade level. I was amazed to learn how short a time was required for most of them to complete their homework assignments. I did get the impression, however, that when they read they devoured books with seemingly little time spent on reflection.

As a group, their strengths were extraordinarily broad background knowledge and an ability to summarize ideas found in a text. Their weaknesses were in the applications of sophisticated reasoning to the complexities of everyday life.

The subject matter of the course proved very interesting to them. Although there was written feedback on all assignments, no grades were given. Few assignments were left undone, and no one missed class without a prior excuse. These were highly motivated, self-motivated students.

They told many times of their boredom in school, but there were never any complaints about the length of our three hour class other than its brevity.

All of these were very able students. Some of them were so capable as to be clearly out of place even in an excellent junior high school. In many cases, a high level of interpersonal maturity accompanied their academic precocity. It is unfortunate, therefore, that a number of students submitted written work that did not represent their best efforts, but was merely good enough to warrant high grades in a junior high class.

The term papers that were written for this course covered a wide range of topics from acculturation of the Japanese in America to the psychology of sports to the social implications of science and technology. What was most interesting about them, however, is that if submitted in a regular introductory college course, most would probably not be recognized as different from the average.

There is clearly a need for courses such as this one and for students such as these to be identified and facilitated. Several changes, however, could be recommended. A more detailed list of objectives is desirable. Moreover, there should be specific objectives for each class, i.e., skills to be emphasized and intellectual tools to be developed. These students are quite bright and thrive in an unstructured class environment. Most could hold their own with students much older, but they need more if they are to : 1) benefit to the fullest extent from advanced course work, and 2) work at a level commensurate with their

ability. The present course was designed to help them develop such tools through osmosis. Although I would not want the course to become technique-centered for the reasons discussed in the introduction, I do think the curriculum should be explicitly designed with specific skills in mind for each lesson.

C. Evaluation of Enrichment Procedures

After two years of experience at trying to select verbally gifted youngsters and to facilitate their intellectual development it is now appropriate (and statistically feasible) to evaluate our efforts along these lines. The evaluation takes two forms. First, we will examine how well our selection strategy--our means for identifying verbally gifted youngsters--has worked. Second, we will evaluate our facilitation procedures--i.e., determine whether our summer programs produced any beneficial effects, and, if so, what they were.

As has been repeatedly mentioned, we have relied exclusively on SAT-V as a selection strategy for two years. This is equivalent to defining verbal giftedness as the ability to do well on standardized measures of verbal intelligence. Although such a definition can be defended, we have found it increasingly difficult to do so. Close contact with the students in our two enrichment programs has convinced us that, in spite of their uniformly high scores on SAT-V, these students were not uniformly talented. A few were obviously gifted and impressively so; the majority seemed to be no more than preadolescents with large vocabularies; the remainder were uniformly unimpressive. To put the point as directly as possible, we have not been very happy with the kinds of students we have identified using SAT-V by itself.

At the end of the summer program in 1973, and again in 1974, the enrichment program staff assigned ratings to all the students based on the promise they manifested during the summer program. These ratings were a complex, global assessment of each student's motivation, self-

discipline, originality, intellectual maturity, and potential for doing substantive and important work in literature or the social sciences. Within each year the inter-rater agreement was excellent; for the 1973 sample, for example, it was .71. An estimate of the validity of these ratings can be derived from the 1974 sample, where each student wrote an essay at the beginning and the end of the course. These essays were rank-ordered for their quality, and the inter-judge correlation for these rank-orderings was .59. The rated quality of the students' work correlated .70 with staff ratings for promise. Although one judge participated in the two sets of ratings, the essay ratings were done blind, and the correlation of .70 tends to validate both.

Staff ratings for promise represent the best index of verbal giftedness presently available to us. By correlating our standard test battery with these ratings we can determine the sort of youngster who seems most likely: (1) to demonstrate intellectual promise of a verbal nature and (2) to profit from an enrichment program such as that sponsored by our Spencer project over the last two years. Table 8 presents the results of such an analysis, separately by sex.

Three things may be noted in Table 8. First, selection for participation in the summer program was based on SAT-Verbal. Therefore, no correlation was expected between that variable and performance in the course, and none was found. Second, there was no correlation with age. Although there was only a little variation in age, it was expected that it might prove to be an important factor because of the students' youth. Finally, the correlations are low and generally non-significant. However, there is a trend for social judgment as measured by the Chapin to be predictive for the boys. The girls' performance on the other hand is most predictable on the basis of a verbal aptitude

measure, the Concept Mastery Test. Because of the small N, it is difficult to make a more definite statement concerning the types of students who perform best in our enrichment classes. The suggestion of sex-differences is tantalizing, but unproven. In addition, there is some confounding due to the two courses that were offered. Boys and girls were not distributed equally between the two classes; more boys were in social science and more girls in creative writing. At present, we are not able to distinguish between the influence of sex and the influence of the courses. According to our best evidence, however, boys who do well in the summer program are socially insightful and prefer to deal with complexity, in addition to being very intelligent. Among the girls, it appears to be the most intelligent who perform best.

The second question to be taken up in this section concerns an evaluation of our summer enrichment program per se; i.e., is that any evidence that a program such as this actually makes a difference? The methodology for such an evaluation is straightforward; it consists of comparing students' scores before and after the enrichment course. The more difficult question concerns what scores to compare. It seemed to us that such enrichment programs might produce changes of three types: (a) changes in students' attitudes toward school; (b) changes in convergent thinking; and (c) changes in divergent thinking.

Attitudes toward school were conceptualized in a multi-dimensional fashion, as varying along at least three dimensions--liking, perceived utility, and perceived accessibility. Here we ask do students like school, do they see education as useful, and do they see it as attainable? Attitudes toward school were assessed with a semantic differential developed earlier to evaluate the

effects of a tutorial program on a group of inner-city, disadvantaged youngsters; in this earlier analysis the semantic differential yielded positive and interesting results.

Convergent thinking (the ability to discover a known solution to a problem) was assessed with Terman's Concept Mastery Test (CMT), a well-standardized measure of vocabulary and reasoning ability. Divergent thinking (the ability to generate new solutions to problems--presumably an important component of creative problem solving) was assessed using two versions of Guilford's Consequences Test (Consequences), and the Remote Associates Test (RAT).

The 1973 enrichment program was the same as the 1974 program with one important exception. The 1973 program included a programmed course in creative problem solving, developed by Professor Richard Crutchfield and his associates at the University of California at Berkeley. Thus, by comparing the 1973 group with the 1974 group we can also determine whether the Crutchfield procedures added anything to our enrichment package.

Since our analyses require combining the pre- and post-test scores of the two groups, comparing these pre- and post-test scores with one another, then comparing the two groups, the first question concerns the comparability of the pre-test scores for the 1973 and 1974 groups. Table 9 presents the results of this comparison. As indicated, there are no significant differences between the two groups in terms of their pre-test scores, although the 1974 group scored consistently below the 1973 sample on all three cognitive measures--this reflects our decision to include in the 1974 sample two seventh graders and three students who scored below our SAT-V cut-off point.

Table 10 compares the 1973 sample with the 1974 group in terms of their change scores. As seen in Table 10, scores for the 1973 group changed significantly

on the RAT and Consequences measures (indices of divergent thinking) relative to the 1974 group, whereas scores on the CMT and semantic differential did not. The primary difference between these two groups is the fact that the 1973 group completed Crutchfield's course in creative problem solving; consequently, these results suggest that the Crutchfield procedure is an effective and useful enrichment resource.

Table 11 presents a comparison of the pre- and post-tests for the 1974 enrichment group. As Table 11 indicates scores on the CMT increased significantly as they had in 1973, but there were no significant changes on any of the other measures. This finding must be viewed with caution since the same form of the CMT was used at both testings and the improvement in test performance may be partially due to the effects of practice.

Bearing the above qualifications in mind, the results of this evaluation are interesting and interpretable, and can be summarized in terms of three points. First, enrichment programs for relatively advantaged youngsters such as these leave their attitudes toward school relatively unchanged. Second, there is evidence to suggest that these programs of straight academic enrichment raise scores on measures of convergent thinking--in this case, measures of vocabulary. Third, programs of academic enrichment, supplemented by training in creative problem-solving can raise scores on measures of divergent thinking as well.

IV. Other Activities

The following briefly describes some of the other activities of this project over the past year. These descriptions proceed in seriatim because they tend to be unrelated.

A. EPA Symposium

In April, 1974, the Study of Verbally Gifted Youth sponsored a symposium at the Annual Meeting of the Eastern Psychological Association. This symposium served two major goals of our project. First, it was a good training experience for our graduate students, all of whom presented papers, and second, it served to disseminate information concerning the project.

Stephen Daurio presented a paper describing an initial evaluation of our enrichment program.

Peter McGinn discussed the problem of defining and identifying verbal giftedness, making use of all the data we had gathered up to that point.

Mary Viernstein's paper outlined her study of achievement motivation in very talented youngsters, a paper which has subsequently been submitted for publication.

Roger Webb described his study of the transition from concrete to formal operations in very bright 6- to 11-year-olds.

Because of scheduling difficulties at the level of the convention management, attendance at the symposium was somewhat disappointing. Nonetheless, the session itself was rich in content, professional in execution, and a credit to the Spencer Foundation. The several papers are available on request from the SVGY project office.

B. November Recall Meetings

As part of the Project's concern with facilitating verbal talent, educational counseling activities began following the 1973 summer session. We invited 48 students with SAT-V scores of 560 or more to meetings on November 1st and 3rd, 1973, so that we could get to know them better, discuss with them their progress in school, describe several opportunities for enrichment and acceleration, and get their reactions to school, to our program as a whole, and to our specific suggestions. About 30 students and 12 parents participated in these meetings.

There seemed to be general dissatisfaction on the part of both the students and parents concerning their school programs. However, there were mixed feelings about academic acceleration as well as varied responses to our proposals regarding enrichment activities. At the meetings of November 1st and 3rd, five possibilities were discussed:

1. Independent Library Research: Each student received a pass from The Johns Hopkins University's Eisenhower Library and was encouraged to utilize the library's extensive resources. Weekend seminars on using the library were proposed contingent upon sufficient interest.
2. Apprenticeships: For those students with a particularly strong interest in a certain area we offered to arrange a working relationship with professors or graduate students in that area, for example, urban planning or study of the city.
3. Acceleration: The educational advantages of grade skipping were discussed. For example, we pointed out that an 8th grader might profit from skipping 9th grade and going immediately into senior

high school where a wider range of course offerings are available. Also, acceleration within certain areas of study was discussed.

4. College Courses: We talked about local area colleges offering stimulating and worthwhile courses which the students could select according to their interests and abilities. The Project staff offered to advise students regarding their suitability for college courses and to help arrange admission for them. We encouraged individual initiative in this particular area.

5. Specific Arrangements with Teachers: Students were encouraged to suggest to their teachers independent work in addition to or instead of regular class curricula.

C. Student Newsletter

Initially established in order to reach those students who could not attend our November meetings, the Student Newsletter has become the primary medium of communication among Project staff and program participants. Through the Newsletter we share with the students information on various programs and projects that are designed for creative or gifted adolescents. In addition, we encourage students to write us about their ideas on various aspects of the program at Hopkins, on their educational situation, extra-curricular activities, and so forth.

Here are a few examples on the types of "newsworthy" items that the Newsletter carries. One issue described for the 1973 program participants the test contents and preliminary results, including names of winners, of the Second Verbal Talent Search. The same issue announced that the Office

of Special Events at Johns Hopkins included the students on their mailing list. As a response to one or two parents' and students' requests a summer issue of the Newsletter was devoted to a reading list containing numerous entertaining, challenging, and informative references. A number of the books included in the list had been recommended to the student audience by other students themselves; the Newsletter made those suggestions and recommendations available to a larger group.

Each issue of the Student Newsletter also carries news items from our "Alumni Notes" file. Included are such topics as college courses taken, special awards or prizes received, unusual activities, special projects, and various other experiences about which the students inform us.

D. Six-Month Follow-Up

In addition to the November recall meetings we conducted a six-month follow-up of 128 verbally precocious students scoring 530 or greater on the verbal SAT. The questionnaire survey assessed students' educational situations, any recent changes in those programs, and any plans for educational change in the near future. The follow-up served a twofold purpose: first, it was an integral part of the 1973 summer program evaluation; second, we encouraged students to give some thought to their particular educational objectives, problems, and interests.

As an assessment technique of the summer program, the follow-up survey yielded quite interesting findings. Results from the 68% responding showed significant differences between the students who qualified for the summer group and those who were 10 to 40 points lower. Those qualifying for the summer program were more likely to change schools for educational reasons, had taken more college courses and planned to take

more college courses, had skipped the past year in school more often, and anticipated early admission to college more frequently than those scoring just below our SAT-V cutoff point. Obviously the groups differed in SAT scores, and we do not know to what extent the SAT score might predict these group differences; but 10 to 40 points on the SAT-V in this range reflect a difference of only one to four SAT test questions, and the highest within group correlation of the SAT with any of the other measures was only .10. These results suggested that something other than SAT scores probably accounted for the observed group differences. The differences may be attributed in part to the effect of the invitation to participate in the summer program, which was extended to the most qualified students on the basis of a cutting-off score (SAT-V ≥ 570).

The follow-up study yielded a second interesting result. When the group who qualified for the summer program was divided into those who actually attended and those who did not, only two measures differentiated these groups--number of college courses taken and anticipated early admission to college--but the differences favored the group who did not attend the summer program. We speculated that this was due to the fact that many of those who did not attend were already engaged in some type of alternative educational activity.

Finally, responses to our follow-up questionnaire suggested that a number of students might be interested in taking college courses in certain preferred areas of study. In addition, two girls who participated in the 1973 summer program each reported earned grades of "A" in an introductory psychology course offered by The Johns Hopkins University Evening College. Therefore due to student interest in and successful experience with college courses for program participants, the Project staff initiated individualized college course counseling activities.

E. College Course Counseling

In early April we sent letters to the 1973 summer program participants specifically to announce that we advised students to consider taking college courses in the summer. Students were informed that summer school officials at Loyola College, Towson State College, and The Johns Hopkins University had indicated willingness to accept them as summer students for appropriate courses. Since many of these students already had earned SAT-V scores that equal or exceed those of the average college freshmen, we stressed interest and a strong willingness to work as two essential criteria for college course participation under our auspices. Our Project was also committed to follow the student's progress in each college course.

Since April, 1974, we have continued to encourage our most verbally talented students to consider taking college courses while still in high school. The procedure for counseling students who wish to enroll in such courses stresses self-initiative--this is one gauge of the student's motivation and genuine interest in a certain course or area. We discuss with the candidate his course choice to be sure that he knows what he wants and is suitably qualified in terms of pre-requisites. If release-time is involved we arrange for this with the student's school counselor; if the course instructor's permission is required a Project Associate accompanies the student for this purpose. Finally, a letter of recommendation stating that the student concerned is under the auspices of the Project is filed with the local college admissions office. The student is solely responsible for his academic performance in class.

To date we have had five of the 1973 program participants take seven college courses: Introduction to Psychology (2), Freshman

Composition (2), American Literature (1), Elements of Writing (1), and Introduction to Computer Science (1). We are pleased with the successful (average grade = B+) performance of this small group and are quite optimistic about the future success of program participants who enroll in college courses. The August issue of the Student Newsletter encouraged the 1974 enrichment group to write to local colleges requesting college course information; one member of the 1974 group is already enrolled in an introductory college course this fall. Finally, a number of students have contacted us about specific courses they plan to enroll in during the spring semester, 1975.

F. A Study of Precocity and Formal Operations

In another project, the Study of Verbally Gifted Youth undertook an investigation of the nature of cognitive processing in gifted children between 6 and 11 years. Working within a Piagetian theoretical framework, Dr. Webb hypothesized that intelligence, defined by very high IQ scores, implied precocity in cognitive development. The results from an experiment reported in the 1973 annual report supported this hypothesis, clearly indicating that very bright elementary school age children are able to reason about concrete operational problems with precocious aptitude commensurate with their superior IQ.

Whether or not this precocity generalizes across Piagetian stages was the next issue of concern. Results from the 1973 study indicated a low rate of precocity in formal operations among bright 10-year-olds. In other words, although gifted 6- to 11-year-olds demonstrated superior ability in solving conservation tasks (concrete operational problems), when faced with problems requiring formal operations to solve, these same

youngsters showed no precocity. Preliminary results from a second study (see Appendix A) replicate this finding among an equivalent sample of gifted children.

The relationship between precocity in formal operations and intelligence raises a second interesting question: Is there any association between intellectual giftedness and quality of moral reasoning? Webb and his associates systematically studied this question and preliminary results indicate that the moral judgments of very bright 11- to 13-year-olds closely resemble those of similar aged children of average intelligence. Intellectual giftedness seems not to be associated with a superior capacity for moral reasoning. This impression is based on a first glance at data that have not been completely scored; analysis and results will be reported at a later time.

V. Summary

A. Accomplishments

After two years of work the Study of Verbally Gifted Youth has made some progress in analyzing the nature of verbal precocity. This progress can be summarized in terms of 10 accomplishments that, taken together, represent the nature of our contribution thus far.

1. We can characterize verbal giftedness as defined by high scores on SAT-V. Verbally gifted boys are introspective, analytic, socially perceptive, with much more self-confidence and social poise than less talented youngsters of the same age. The same findings hold for verbally gifted girls except that they tend to be more extraverted, sociable, and outgoing than equally talented boys. These students seem to confirm the old adage about good things going together--they are brighter, more ambitious, more creative, and better adjusted by far than their age-mates.

2. Seventh and eighth graders with very high scores on SAT-V are capable of doing college level work in the social sciences. Such students have performed satisfactorily in courses we have run, and in courses taught at other colleges. This does not mean, however, that we would recommend radical acceleration for these students. As a group they steadfastly express substantial ambivalence when questioned about their desire to be advanced in school at a pace more rapid than their age-mates.

3. On the other hand, high SAT-V students seem thoroughly to enjoy the chance to interact with equally talented students their own age; this sort of experience strikes us as optimal for the intellectual development of high SAT-V youngsters and as an important contribution to their social adjustment as well.

4. Work by Dr. Webb over the past two years suggests that, in terms of the ontogenesis of intelligence, enrichment programs such as the ones we have put on would not be suitable for students much younger than 12. The capacity to perform formal operations seems to emerge around 11 or 12, and high IQ scores apparently confer no advantage in the developmental process.

5. Students with high scores for SAT-V seem remarkably similar to students with high scores for SAT-M, with only few exceptions. Relative to high SAT-M students, those high on SAT-V choose more Social as opposed to Investigative careers, and seem to prefer complex and unfinished designs. Generally speaking, math-verbal comparisons such as those we have conducted seem not to be a very powerful analytic strategy for understanding human intelligence, and we will probably terminate this line of research.

6. We have established a limited counseling and referral program through which we advise concerned parents and their children about the sorts of opportunities available to them for enriched educational experiences. We have also established contact with other agencies involved in the education of the gifted and with whom we serve as mutual sources of information and referral.

7. We now feel that high SAT-V scores are a necessary but insufficient predictor of accomplishment in the social sciences. A more complete analysis of the nature of verbal giftedness will have to take into account talents and dispositions beyond those reflected on SAT-V, e.g., social acuity and insight, motivational and personality variables.

8. Generally speaking, performance in our writing course seems most predictable from vocabulary scores. Performance in our social science

course, however, seems more a function of social insight and the capacity to think in an original and unusual fashion. This suggests that the determinants of gifted verbal performance are rather different in literature and in the social sciences--at least in the 12-14 year age range.

9. We now have data suggesting that, other things being equal, the higher the status of the parents (defined in terms of education and occupation), the lower the aspiration level of the child. Students showing the most potential upward mobility come from relatively low status families compared with our total population. These trends have obvious implications for understanding the puzzling phenomenon of highly able youth dropping out and not fulfilling their promise. We also see the outlines of an interesting theory of achievement motivation where the emphasis is on parental models rather than discrete and specifiable sets of child-training practices. Specifically, achievement motivation in our very bright students seems to be a function of exposure to dynamic and ambitious adult models.

10. Finally, it appears that enrichment programs designed for the verbally gifted may lead to certain qualifiable outcomes: vocabulary scores increase and, with the proper training, so do scores on measures of divergent thinking such as the Guilford Consequences Test and the Remote Associates Test. There are almost surely non-quantifiable results of these programs as well. This year, for example, we inadvertently invited a student whom we had classified as "bright normal" to join our summer enrichment program. The boy's mother reported that his school performance improved immediately, presumably as a function of having been

labelled verbally gifted by us. This labelling served as a motivational factor for our "bright normal" student and must have had comparable effects on our other students as well.

B. Incompleted Work

In addition to the accomplishments listed above, two of our original goals remain incompletely realized. On the one hand, it is still not clear that humanistic talent can be trained. Although scores on measures of convergent and divergent thinking increased after exposure to our enrichment program, the quality of the students' writing remained unchanged--in fact many have declined slightly over the course of the summer. Moreover, there is some evidence that those well-qualified students who did not attend our summer program are somewhat more education- and achievement-oriented than those who did. It seems to us that the answer to this problem will be resolved only by appeal to longitudinal data, hopefully by the final year of the project.

On the other hand, we have made only minimal progress toward our goal of formulating a theory of intelligence. In our last report we summarized existing models. During the past year, we began to articulate an alternative perspective but we are not yet ready to set this forth in a formal presentation.

VI. Future Plans

As presently formulated our plans for the next three years are oriented toward six goals. These are:

First, we are seriously committed to the idea of developing a more refined conceptualization of intelligence and humanistic talent. This will entail investigating the fruitfulness of a variant on Dr. Webb's notion of intelligence as "power, structure, and style." Power is conventionally defined and assessed as "g." Structure refers to the Piagetian stages of cognitive development. Here, however, we would like to investigate the notion that formal operations do not represent the end point of intellectual development but rather are followed by a stage that can be described by the term "dialectical operations." Our work would consist of trying to specify more precisely the notion of dialectical operations and then developing means for assessing this concept. Style will be defined as social judgment, reflected to some degree in G. H. Mead's notion of role-taking ability and operationalized in terms of the Chapin Social Insight Test. We are encouraged by the fact that these three aspects of intelligence, derived from theoretical considerations, seem related to performance in our social sciences enrichment courses (i.e., in terms of the Concept Mastery Test--power--the Barron-Welsh Art Scale--structure--and the Chapin Social Insight Test--style).

Second, we will put on one more large scale assessment, this time relying on nominations and products as initial criteria of giftedness. We will then turn to an in-depth follow-up of those students previously

associated with our program that our staff considered talented, regardless of their test scores. Here we will change our methodology in the study of verbal giftedness from a psychometric to a more clinical approach.

Third, we intend to fully analyze the data derived from our biographical questionnaire. Our feeling is that these biographical data are a rich source of information about the nature of verbal giftedness that we have not as yet exploited. This data should hold a clue to the problem of the assessment and identification of verbal giftedness.

Fourth, we have become increasingly uneasy about the fact that working class and minority group children are virtually non-existent in our gifted samples. We obviously need alternative selection strategies in order to reach other than well-to-do middle class students. The gifted children of America's working classes may represent one of the country's major untapped natural resources.

Fifth, we intend to put together and refine our enrichment program for use in the public schools. After two years of experience, we are probably in a better position to do this than many educational agencies. Our first venture in this direction will take place in October, 1974, when Mr. McGinn of our project staff will conduct an enrichment social science course at a public school in Baltimore.

Finally, we intend to put together a counseling package for parents of verbally gifted youth. This will include tips on identification, on educational planning and useful enrichment strategies. In the form of a mail-out brochure, this should be of considerable practical advantage to our counseling goals.

Table 1

Scholastic Aptitude Test - Verbal Scores

	1973			1974		
Group	N	Mean	SD	N	Mean	SD
Girls	120	443.1	97.4	256	445.3	92.0
Boys	117	446.8	90.4	166	438.8	81.8
7th Grade Girls	65	391.8	87.1	114	412.4	80.3
8th Grade Girls	99	473.3	88.7	142	472.1	91.8
7th Grade Boys	51	409.4	77.5	68	416.2	82.2
8th Grade Boys	66	475.8	89.5	98	454.2	77.6
Enrichment Group	31	604.5	32.0	28	559.3	70.6
Enrichment Group - Girls	17	599.4	33.4	16	570.6	61.8
Enrichment Group - Boys	14	610.7	30.2	12	542.7	81.9

Table 2

Demographic and Additional Test Data

	Girls (N = 256)		Boys (N=166)		7th Grade Girls (N = 114)		8th Grade Girls (N = 142)		7th Grade Boys (N = 68)		8th Grade Boys (N = 98)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	13.1	1.2	13.2	1.1	12.6	0.3	13.6	0.3	12.7	1.4	13.6	0.4
# older siblings	1.3	1.5	0.9	1.1	1.2	1.4	1.3	1.5	0.9	0.9	0.9	1.2
# younger siblings	1.3	1.4	1.0	0.9	1.3	1.2	1.4	1.5	0.9	0.9	1.1	0.9
Father's ed. level	3.8	1.3	3.8	1.3	3.7	1.3	3.9	1.2	3.8	1.4	3.9	1.2
Father's occ. level	4.0	1.0	4.0	1.0	4.0	0.9	4.0	1.0	4.0	1.0	4.1	1.0
Mother's ed. level	3.3	1.2	3.4	1.2	3.2	1.2	3.4	1.2	3.3	1.3	3.4	1.2
Mother's occ. level	3.8	0.8	3.6	0.8	3.8	0.9	3.8	0.8	3.6	0.9	3.6	0.8
Liking for school	2.3	0.6	2.1	0.7	2.3	0.6	2.3	0.6	2.1	0.7	2.1	0.6
1st occ. choice level	4.3	0.7	4.5	0.8	4.4	0.7	4.3	0.7	4.6	0.7	4.4	0.9
RAT	14.2	4.5	12.8	4.1	13.4	4.4	15.1	4.3	12.2	4.2	13.3	3.9
Guilford Consequences	29.7	8.4	29.3	8.9	28.6	7.9	30.5	8.6	27.6	9.2	30.5	8.5

Table 3

School Type

	Girls (N = 256)	Boys (N = 166)
Public Schools	66%	71%
Private Schools	2	7
Parochial Schools	32	22

Table 4

Correlations between SAT-Verbal Scores

and the Variables Listed

	Girls (N = 256) SAT-V	Boys (N = 166) SAT-V
Father's ed. level	.29	.13
Father's occ. level	.25	.08
Mother's ed. level	.16	.13
Mother's occ. level	.13	.08
RAT	.31	.31
Guilford Consequences	.10	.06

Table 5

Enrichment Group Test Results

	Total Group N = 28		Girls N = 16		Boys N = 12	
	Mean	SD	Mean	SD	Mean	SD
SAT Verbal	559.3	70.6	570.6	61.8	542.7	82.0
Terman Concept Mastery Test	56.3	19.9	55.5	18.6	57.4	22.2
Chapin Social Insight Test	21.2	4.7	22.9	4.1	18.9	4.6
California Psychological Inventory						
Dominance	27.0	6.3	27.2	6.8	26.8	6.0
Capacity for Status	19.5	4.4	19.6	4.9	19.3	3.8
Sociability	24.3	5.2	25.2	4.7	23.0	5.9
Social Presence	34.6	6.9	35.4	7.0	33.6	7.0
Self-Acceptance	23.3	11.1	22.1	3.5	24.8	16.7
Sense of Well-Being	33.3	5.9	34.7	5.6	31.5	6.1
Responsibility	29.9	5.3	31.3	4.6	27.9	5.7
Socialization	37.8	5.8	40.4	3.6	34.3	6.3
Self-Control	25.8	9.2	25.8	9.1	25.8	9.9
Tolerance	21.3	5.7	22.9	5.5	19.3	5.6
Good Impression	15.8	6.6	15.9	6.0	15.6	7.6
Communality	24.2	3.0	25.6	1.8	22.3	3.2
Achievement vi conformance	26.2	4.4	26.9	4.3	25.2	4.7
Achievement vi independence	21.1	3.7	21.3	3.9	21.0	3.5
Intellectual Efficiency	39.8	5.3	41.3	4.6	37.8	5.6
Psychological Mindedness	11.3	2.8	10.7	2.8	12.1	2.7
Flexibility	11.8	4.4	12.0	3.8	11.6	5.3
Femininity	21.0	3.0	22.3	2.5	19.4	2.8
Empathy	23.3	4.6	25.4	3.8	20.6	4.3
Autonomy	21.5	2.8	21.8	3.5	21.0	1.7
Remote Associates Test	15.6	3.6	16.1	3.2	14.8	4.1
Myers Briggs Type Indicator						
Extraversion	15.5	6.8	18.4	4.7	11.6	7.3
Sensing	5.5	6.3	3.3	3.0	8.4	8.3
Thinking	7.2	6.5	3.5	3.8	12.1	6.3
Judging	10.0	7.0	9.4	6.0	10.8	8.5
Introversion	1..0	7.1	8.5	6.2	14.4	7.1
Intuition	19.4	5.0	20.4	3.6	17.9	6.4
Feeling	13.8	7.0	17.1	5.4	9.3	6.6
Perception	16.9	7.1	17.2	6.5	16.5	8.1
Holland's Self Directed Search						
Realistic	1.2	1.7	0.5	0.9	2.2	2.1
Investigative	9.1	4.4	7.7	4.3	10.8	4.1
Artistic	9.6	3.8	10.9	3.3	7.9	3.8
Social	8.0	3.6	9.5	3.3	6.2	3.3
Enterprising	3.9	2.4	3.3	2.3	4.6	2.4
Conventional	0.9	1.1	0.7	1.0	1.2	1.3
Barron Welsh Art Scale	22.1	11.4	21.3	11.7	23.1	11.4
CPI Regression Equation for Creativity	13.1		14.1		12.0	

Table 6

Verbal-Math Comparisons
Males (N = 30)

	Verbal Group (N = 30)		Math Group (N = 30)		t	p
	Mean	SD	Mean	SD		
SAT-Verbal	584.7	46.5	503.7	91.9	4.3	.001
SAT-Math	544.3	74.3 (N=14)	686.0	50.9	7.4	.001
Terman Concept Mastery Test	70.3	18.5	53.4	19.4	3.5	.001
California Psychological Inventory						
Dominance	29.1	10.2	28.0	6.9	0.5	ns
Capacity for Status	18.7	3.6	17.8	3.9	0.9	ns
Sociability	23.3	5.0	22.6	4.8	0.6	ns
Social Presence	34.0	6.1	35.2	6.0	0.8	ns
Self-Acceptance	20.7	4.1	20.2	3.1	0.5	ns
Sense of Well-Being	31.9	5.1	32.0	5.7	0.1	ns
Responsibility	29.3	5.2	28.3	4.8	0.8	ns
Socialization	36.7	5.7	36.3	5.6	0.3	ns
Self-Control	24.8	8.5	24.8	7.8	0.0	ns
Tolerance	21.1	4.5	19.6	5.6	1.1	ns
Good Impression	13.1	6.0	13.8	5.3	0.5	ns
Communality	24.1	2.7	24.4	2.3	0.5	ns
Achievement-Conformance	24.6	4.5	24.2	4.0	0.4	ns
Achievement-Independence	20.4	3.8	19.7	4.2	0.7	ns
Intellectual Efficiency	38.4	4.8	37.2	5.4	0.9	ns
Psychological-Mindedness	11.9	2.8	11.9	3.0	0.0	ns
Flexibility	12.6	3.6	12.5	4.2	0.1	ns
Femininity	19.0	3.8	17.1	3.8	1.9	ns
Empathy	21.0	4.0	20.7	3.4	0.3	ns
Autonomy	20.7	2.9	21.7	3.0	1.3	ns
Chapin Social Insight Test	20.8	5.1	19.4	3.5 (N=19)	1.0	ns
Remote Associates Test	14.9	4.1	13.5	5.2 (N=20)	1.1	ns
Modern Language Aptitude Test	66.4	15.5 (N=14)	69.2	17.3 (N=19)	0.5	ns
Barron Welsh Art Scale	21.3	12.5	14.6	10.5	2.3	.05
Myers-Briggs Type Indicator						
Extraversion	10.2	5.5	10.6	6.0 (N=20)	0.2	ns
Sensation	7.1	6.7	9.2	6.9 (N=20)	1.1	ns
Thinking	11.8	5.8	13.1	6.4 (N=20)	0.8	ns
Judging	12.4	7.0	12.3	6.1 (N=20)	0.1	ns
Introversion	16.1	6.1	16.4	6.6 (N=20)	0.2	ns
Intuition	17.8	5.4	15.6	5.4 (N=20)	1.4	ns
Feeling	9.5	6.4	7.4	6.6 (N=20)	1.1	ns
Perception	15.1	7.4	14.4	6.8 (N=20)	0.9	ns
Grade	7.8	0.5	7.8	0.8	0.0	ns
Age	13.3	0.6	13.1	0.7	1.2	ns
# older siblings	0.6	0.9	0.8	1.0	0.8	ns
# younger siblings	1.0	0.9	1.3	1.3	1.0	ns
Father's ed. level	4.4	1.0	4.3	1.1	1.5	ns
Father's occ. level	4.4	0.6	4.4	0.6	0.0	ns
Mother's ed. level	4.0	0.8	3.6	1.2	1.5	ns
Mother's occ. level	3.8	0.7 (N=15)	4.2	1.7 (N=12)	0.8	ns
Liking for school	2.1	0.7	2.0	0.8	0.5	ns
1st occ. choice level	4.7	0.5	4.7	0.5	0.0	ns

Table 7

Holland Codes

	Verbal Group (N = 28)	Math Group (N = 27)
Realistic	0	1
Investigative	14	22
Artistic	3	1
Social	7	1
Enterprising	3	2
Conventional	1	0

Table 8

Correlations with Summer Rating,

1973 and 1974 Enrichment Groups

	Males N=25	Females N=33
SAT-V	.10	.09
Concept Mastery Test	.16	.35**
Chapin	.37*	.19
Remote Associates Test	.16	.08
Barron-Welsh	.32	.05
Age	.14	.10

* p <.1

**p < .05

Table 9

Pre-test Scores

1973 and 1974 Enrichment Groups

	1973			1974				
	Mean	SD	N	Mean	SD	N	t	p
Remote Associates Test	16.1	4.5	30	15.6	3.6	28	.4884	NS
Guilford Consequences	30.3	9.9	31	28.8	7.5	28	.6505	NS
Concept Mastery Test	64.7	21.5	30	56.3	19.9	28	1.5308	NS
Semantic Differential [Range of possible scores: positive = 9, negative = 63]								
School	21.8	7.2	31	21.1	7.1		.3508	NS
Math	21.3	9.9	31	23.6	2.7		.7620	NS
English	24.3	11.0	31	22.0	10.1		.8068	NS
College	18.4	5.9	31	18.3	5.1		.0877	NS

Table 10

Mean Change Scores,

1973 and 1974 Enrichment Groups

	1973 Post-test minus Pre-test			1974 Post-test minus Pre-test				
	Mean	SD	N	Mean	SD	N	t	p
Remote Associates Test	1.2	4.3	26	-1.0	3.9	27	1.9952	.05*
Guilford Consequences	5.7	8.5	26	0.5	4.4	27	2.8122	.005*
Concept Mastery Test	10.2	12.1	26	12.2	14.8	27	0.5551	NS
Semantic Differential								
[Note: positive values correspond to decreases in attitude]								
School	2.4	4.3	26	1.0	4.9	26	1.0819	NS
Math	-0.6	5.0	26	0.2	6.1	26	0.4951	NS
English	3.6	9.4	26	-0.8	7.7	26	1.8744	NS
College	3.0	5.9	26	1.3	6.5	26	1.0070	NS

*one-tailed

Table 11

Comparison of Pre-test and Post-test Scores of

1974 Enrichment Group

	Pre-test			Post-test				
	Mean	SD	N	Mean	SD	N	t	p
Remote Associates Test	15.6	3.6	28	14.6	3.2	27	1.3382	NS
Guilford Consequences Test	28.8	7.5	28	29.5	8.3	27	0.5690	NS
Concept Mastery Test	56.3	19.9	28	69.3	18.4	27	4.2950	.002**
Semantic Differential [Range of possible scores: positive = 9, negative = 63]								
School	21.1	7.1	27	22.2	8.3	27	1.0729	NS
Math	23.6	12.7	27	23.7	12.9	27	0.1599	NS
English	22.0	10.1	27	21.4	9.4	27	0.5639	NS
College	18.3	5.1	27	19.7	7.7	27	1.0252	NS

**two-tailed

Appendix A

Formal Operations in Very Bright 8- to 14-Year-Olds[1]

by

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Piagetian notions of sensory motor intelligence and concrete operations have been studied extensively; however, little systematic research has focused on the final stage of Piaget's system--formal operations. Several reasons for this are apparent. The notion of formal operations is abstract, difficult to comprehend, and the findings in this area are less dramatic than the striking error data found in concrete operations studies. Tests of concrete operations also appear readily reproducible and easily age-normed, while those of formal operations evoke little such agreement.

Before discussing factors that might influence individual differences in the acquisition of formal operations, we might note that formal operations are cultural in a way that concrete operations apparently are not. Concrete operations develop in a remarkably similar fashion across a wide range of environments, cultures, and developmental handicaps (e.g., deafness). In most studies formal schooling does not appear to make any substantial differences (Goodnow & Bethon, 1966; Mermelstein & Shulman, 1967). Formal operations on the other hand seem to be dependent on the culture in which one has lived. Most so-called "primitive" cultures apparently do not use formal operations and their acquisition seems to require formal schooling (Goodnow & Bethon, 1966). Furth and Youniss (1971) found that

deaf children, who are essentially normal in the acquisition of concrete operations, are significantly retarded in the acquisition of formal operations. It is interesting to note in this regard that each of Piaget's tests for formal operations (law of floating bodies, equilibrium in the balance) involves principles discovered in historical time. It is hardly reasonable to assume that each child will discover principles that took the best minds of our culture centuries to discover. This is not to say that a child must learn these principles in class. Rather we might assume that the child must learn certain general cultural attitudes in school (e.g., what is an appropriate explanation) while the examiner's questions direct the application of these principles to the specific problem.

Nor is much known about the factors affecting individual differences in the acquisition of formal operations. Piaget (1971) conceded that formal operations might require a special aptitude for scientific-mathematical thought. Unpublished studies cited by Keating (1973), moreover, suggest that most normal individuals in our society do not typically use formal operations to solve problems. It appears, then, that there is considerable individual variation in the use of formal operations.

Three possibilities appear likely as explanatory mechanisms. First, as Piaget suggested, formal operations may arise from special mathematical-scientific aptitudes. There is a second possibility, however; i.e., that individuals who acquire formal operations are simply smarter (e.g., more intelligent in the psychometric sense) than those who do not. All of this is confounded with the third factor--education--that may also explain part of the variance.

The resolution of these issues is made particularly difficult by an almost total lack of normative data. Except for Inhelder and Piaget's (1958) original monograph where 11 is the earliest age for the occurrence of formal operations, there is little data to fix the age of first appearance of these forms of reasoning. Keating's (1973) (1974) studies suggest that bright 11-year-olds can pass formal operational tasks and children of average intelligence pass them somewhat later.

In an attempt to deal with the general problem of precocity in Piagetian operations and the association of precocity with intelligence, Webb (1974) undertook the study of a small sample (N=25) of very bright (IQ > 160) children ranging in age from 6 to 11 years. On a series of difficult concrete operational tasks (e.g., conservation of volume) for which good normative data are available, Webb found extreme precocity in the gifted sample. All the children passed the items that were supposed to be difficult for average 10-year-olds. The data from two formal operational problems, on the other hand, revealed essentially no precocity. Four boys, all within a few months of their 11th birthdays in age, were the only subjects in the sample who apparently passed the formal operational tasks.

These data appeared to establish one point and leave another in doubt. There was considerable <u>within stage</u> precocity in the acquisition of concrete operations, but whether there was any substantial <u>across stage</u> precocity in the acquisition of formal operations seemed doubtful. Since only a few of the oldest subjects showed formal operational behavior to any degree, there was no way of estimating when the majority of such very

bright youngsters would begin to pass the problems.

To further study the problem, the authors returned to the gifted Anne Arundel County sample this summer. It was our intention to test a slightly older group, who presumably would be more likely to pass formal operational tasks and to use a more extensive set of tasks.

Before describing the sample and the tasks used, one methodological point should be mentioned. The study described here is still in progress. Two groups of subjects have been studied to date--both bright groups--and more groups of subjects will be tested in the near future. We have not proceeded in the preferred manner of sampling from all groups to be tested and testing them in random order. This deviation from the usual procedure has been taken because the data are expensive to collect and time consuming to analyze. Some questions may be answered substantially with restricted samples and we may be able to avoid studying subjects whose data will be redundant.

Method

Subjects: Thirty-eight white middle-class children ranging in age from 8;3 (8 years, 3 months) to 14;4 were studied. Twenty-five younger students (8;3 - 12;2) with IQ's greater than 160 were located through a program operated by the Anne Arundel County, Maryland, school system. IQ's were determined by the Slosson Intelligence Test which correlates above .9 with the Stanford-Binet (Slosson, 1961). Seven girls and 18 boys were included in this sample.

Thirteen older students ranging in age from 12;7 to 14;4 were selected from the Verbal Talent Search winners. Seven boys and six girls in this

group scored from 490 through 670 on the verbal portion of the Scholastic Aptitude Test; the mean SAT-V score for these subjects was 558.

Procedure: Children were tested individually in their homes[2] by the experimenter and an assistant during a single five-week period during summer, 1974. Three formal operational tasks adopted from Inhelder and Piaget (1958) were used as well as two moral reasoning dilemmas (Adelson, et al., 1969; Piaget, 1932).* The formal operational tasks were communicating vessels, oscillation in a pendulum, and the balance problem.

1. Communicating Vessels. Subjects were asked to make predictions as to where the water level would be in a thin column connected to a wide column by rubber tubing if water were poured into the wide column up to a certain level. Subjects were then asked to predict whether or not the thin column could be filled to the top, the level of which was approximately 12 inches above the brim of the wide column. The next question was, "If I move the wide column up and down, what will happen to the water level in the thin column?" After this prediction subjects were encouraged to experiment with the apparatus. The child was asked for a general rule as to "how the water level in one column relates to the water level in the other column." Finally, subjects were asked to explain why water seeks its own level if they indeed arrived at that generalization.

2. Oscillation in a Pendulum. Subjects were asked to discover what determines the period of a pendulum. The apparatus consisted of a wooden dowl supported by two metal stands from which were suspended two short, medium, and long strings and a set of metal washer weights. The experimenter demonstrated and explained the problem:

*Analysis of moral reasoning problems were not complete at the time of this writing; therefore, analysis and results are not included in this paper.

> The period is the time it takes to go through a complete cycle. If we use the same length of string, the same weights, drop them from the same height with the same force or push, they will have the same period.
>
> Now if we use different string lengths, different weights, drop them from different heights, and use different pushes they will have different periods.

At this point the subject was invited to experiment and discover the factor or factors that determine the period. This task challenged the subject to eliminate the distractor variables of height of drop, weight of object, and force of drop in order to isolate the controlling variable of length of the string.

3. Balance Problem. The apparatus consisted of a balance constructed from an 18 inch wooden ruler mounted on a frame with holes at each inch mark, and a set of metal washer weights. The child was asked to balance a number of specific combinations of weights and distances sometimes using more than one solution. Subjects were then asked to formulate the general rule for balancing the moments of force. Care was taken to distinguish between empirical strategies and the theoretical rule that was sought.

Scoring: Transcripts of audio tapes made during each testing session served as protocols for scoring. Each protocol was scored independently by the investigator.[3] The scoring system was adapted from Inhelder and Piaget (1958) and corresponds to that used by Keating (1973). One of four categorical ratings, two concrete (IIA and IIB) and two formal (IIIA and IIIB) operational were assigned to each task. A breakdown of the ratings for each of the three tasks follows.

For the communicating vessels problem a IIA response meant the subject was aware of the elevation relation between the two water levels; a IIB

rating meant the subject observed the equality of water levels but was unable to explain the phenomenon.[4] Preliminary explanation and the beginnings of formal structuring rated a IIIA score. Finally, a IIIB rating was contingent upon the subject's explaining the final equality of water levels due to an equilibriation of pressures despite unequal volumes.

The pendulum problem determined whether or not the subject could experiment by holding extraneous factors constant while looking at the effect of one variable. A concrete operational response (IIA) was based upon the child's inability to separate variables and to order accurately the effects of one variable such as weight. At the more advanced IIB concrete operational stage a child still varied several conditions simultaneously but accurately ordered the effects of confounding variables. Responses involving preliminary separation of variables rated a IIIA score; spontaneous and anticipatory separation of variables received a clear-cut formal operational (IIIB) rating.

For the balance problem a IIA response meant the subject solved the combinations of weights and distances through a random trial and error procedure. The more advanced concrete operational stage (IIB) was characterized by a systematic trial and error procedure in which the subject discovered the inverse correspondence of weights and distance. Preliminary explanation of the proportionality between weight and distance received a IIIA rating. Finally, an explanation of the balance rule as well as correct anticipatory responses to new balance situations was scored as IIIB.

Results

Before considering the data from the Piagetian evaluation it is worthwhile to note that the results are based upon the experimenter's rating of each task. Obviously, the next step of this study is to have a qualified rater score the transcripts in order to establish inter-rater reliability. However, we did a check of internal consistency (see Table 1) for the experimenter's ratings. A 4 X 4 inter-correlation matrix for each of the three tasks and a total score (that is by adding the 1 to 4 score on all three tasks together for each subject) yielded correlations between tasks ranging from .41 to .66. Each task correlated from .78 to .89 with the total score. Therefore, the experimenter's scoring was consistent among the three tasks.

Thirty-eight subjects were divided into three age groups: median age 8 years; 9 months, 10;6, and 13;6 corresponding to Groups A, B, and C, respectively, in Figure 1 and Tables 2 and 3. Figure 1 presents percent in each age group showing evidence of formal operations defined as a score of either 3 or 4. The first set of columns shows the percent of each group who were judged formal operational on all three tasks. The next three sets of columns show the percentages for each task individually. The final set shows the percent scoring 3 or 4 on any of the three tasks. Clearly the order of the groups was C > B > A for each task as well as for any and all tasks.

Forth-five percent of Group A (median age 8;9) demonstrated formal operational reasoning on the pendulum task (see Table 2); a majority of Groups B and C (median ages 10;6 and 13;6, respectively) also passed the

pendulum task. Only a majority of the oldest children, i.e., Group C, passed the other two tasks, communicating vessels and the balance problem (see Table 2).

When concrete and formal operational ratings were divided into IIA, IIB, IIIA, and IIIB subcategories, 44 and 41 percent of Group B were rated IIB and IIIA, respectively. However, 36 and 45 percent of Group C were rated IIIA and IIIB, respectively. A comparison of groups at the IIIB substage indicates significantly more 12- to 14-year-olds (Group C) demonstrated clear formal operational ability than 10- to 11-year-olds (Group B) ($p < .001$).

Discussion

The major hypotheses of this paper were: (1) that intellectual precocity defined psychometrically by very high (greater than 160) IQ did not necessarily imply precocity across Piagetian stages, and (2) that very bright 12- to 14-year-olds would demonstrate within stage precocity by successfully completing a series of formal operational tasks. Data from the present study for the most part support these hypotheses.

Results from both the communicating vessels task and the balance problem support the hypothesis that very bright young children (Group A, median age 8;9) demonstrate a low rate of precocity in formal operations. These findings similarly replicate Webb's (1974) observation that children ranging in age from 6 to 11 years revealed essentially no precocity in formal operational ability.

Based on the results from Group B (median age 10;6) the present study also replicates Keating's (1973) finding that bright 11-year-olds pass formal operational tasks. However, as noted above, Piaget (1958) has cited age 11 as the beginning of formal operations; thus Group B results

do not imply precocity across cognitive stages. Indeed, the relatively low degree of this precocity can be underlined by noting that these bright 10- and 11-year-olds perform much closer to chronological age than mental age expecations.

At this point we note that the Group A pendulum task results are inconsistent both with results from the other two formal operations tasks and with our predictions. One possible explanation for this inconsistency might be that there is actually some degree of horizontal décalage among formal operations tasks and that the pendulum problem is quite a simple problem compared to why water levels stay the same or to explaining how a balance works. However, at this point in the data analysis we cannot explain why approximately 40% of Group A pass the pendulum task; further analysis is necessary.

The second major hypothesis, that very bright 12- to 14-year-olds demonstrate within state precocity was supported by the overall results. The oldest subjects (median age 13;6, Group C) demonstrated a surprising degree of formal operational ability at the advanced IIIB stage. Indeed, their responses clearly gave evidence that these very bright 12- to 14-year-olds were reasoning as logical young experimenters.

Finally, the low rate of precocity across stages in this gifted sample suggests that when we do test a sample of normal subjects we can guess that they will be only slightly below the gifted group in acquisition of formal operations. Moreover, our study of the differences between humanistic and mathematical giftedness requires testing samples of mathematically precocious children, particularly girls. It may indeed be possible that Piaget is right and "special aptitude is required" for formal operations.

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Footnotes

[1] This research was supported by a grant from the Spencer Foundation of Chicago to The Johns Hopkins University. The writers wish to thank Diana Pujals who assisted in the collection and analysis of data.

[2] One older boy, a participant in the Johns Hopkins summer session, was tested at Hopkins as a matter of transportation convenience.

[3] At the time of this writing, each protocol had been sc[illegible] only once; therefore, without established reliability, results must be tr[illegible]ted as preliminary. Since each protocol will be scored by a second rat[illegible], scoring criteria are described in detail.

[4] Each subject was also asked to draw the water levels in three "tilted glass" drawings. Whether or not the subject was able to draw <u>horizontal</u> water levels was used as a further criterion for distinguishing IIA from IIB responses on this task.

Table 1

Correlations between Ratings on Communicating Vessels: Pendulum, Balance, and Total Score

	Communicating Vessels	Pendulum	Balance	Total Score
Communicating Vessels		.62**	.66**	.89**
Pendulum			.41*	.80**
Balance				.78**
Total Score				

*.01 < p < .05

**p < .001

Table 2

Percent Passing Formal Operational Tasks

	Communicating Vessels	Pendulum	Balance
Age Group[a]			
A. 8;3 - 9;10 N=11[b]	9	45	0
B. 10;1 - 11;3 N=13[c]	38	62	17
C. 12;2 - 14;4 N=14[d]	86	93	64

a
Age is reported in years; months

b
Median age 8;9

c
Median age 10;6

d
Median age 13;6

Table 3

Percent Breakdown of Responses by Two Older Groups

		Concrete Operational		Formal Operational	
		IIA	IIb	IIIA	IIIB
Median Age	10;6[a]	12.5	43.8	40.6	3.1
	13;6[b]	2.4	16.7	35.7	45.2

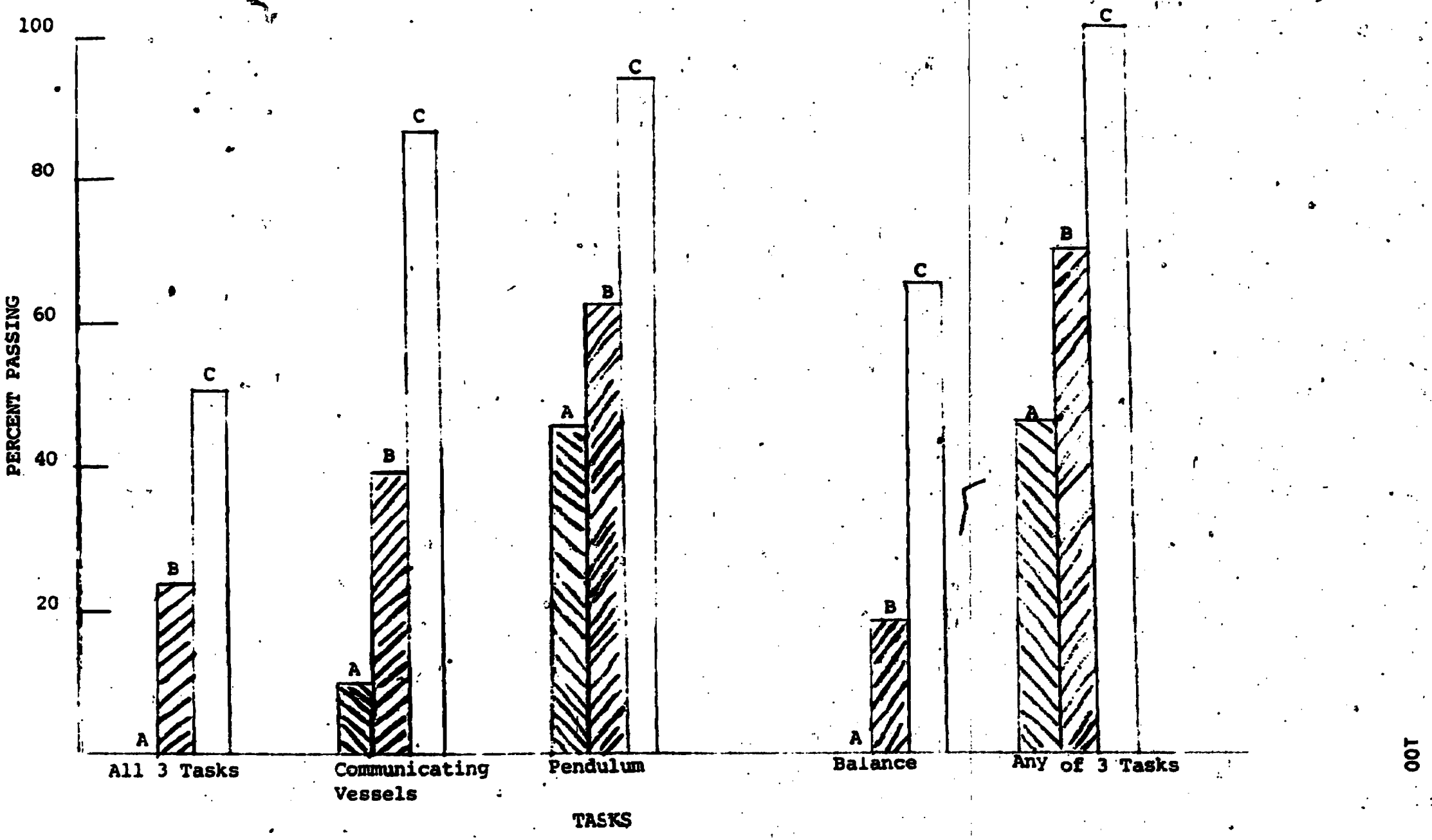
a
N = 13 based on 32 ratings (13 Communicating Vessels, 13 Pendula, and 6 Balance ratings); median age 10;6, Group B.

b
N = 14 based on 42 ratings (14 Communicating Vessels, 14 Pendula, and 14 Balance ratings); median age 13;6, Group C.

NOTE: $\chi^2 = 19.46$, df = 3, $p < .001$

Figure 1

Percent Demonstrating Formal Operations on Three Tasks



Note: A = 8;3 - 9;10, median age 8;9. B = 10;1 - 11;3, median age 10;6.
C = 12;2 - 14;4, median age 13;6.