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The purpose of this study was to explore the similarities and differences in the reading behaviors of highly creative (HC) and highly intelligent (HI) secondary students. An intensive analysis of the oral introspective and retrospective responses of 36 subjects to two written passages was made. An experimental classification framework was developed to analyze the date. Results indicated (1) that the HC group exceeded the HI group in responses for selected content elements and cognitive patterns in both free and controlled reading situations, (2) that there was no difference between groups in the recall of directly stated information, (3) that the HC group exceeded the HI group in reading for nonliteral meanings, and (4) that the HC group exceeded the HI group in variation of thinking methods. It was concluded that these two groups had different reading styles. The HC group possessed imaginative characteristics and read "from within." The HI group possessed intellective characteristics and read "from without." The implications of this study for the areas of understanding giftedness, understanding the reading process, and curriculum planning are discussed. Sample interviews are included. (BS)

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Dissertation Abstract:

READING OF HIGHLY CREATIVE VERSUS HIGHLY INTELLIGENT SECONDARY STUDENTS

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READING OF HIGHLY CREATIVE VERSUS HIGHLY INTELLIGENT SECONDARY STUDENTS*

by

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I. PURPOSES OF THE STUDY

The major purpose of this study was to explore similarities and differences in the reading behaviors of two types of gifted secondary students, namely, the highly creative, HC, and the highly intelligent, HI. Specifically, this study was designed to focus upon an intensive analysis of the oral introspective and retrospective responses of each subject to two written passages. Two ancillary purposes entailed: the development of procedures to secure the evidence of the reading behaviors for each subject in the two groups; and the development of a classification framework for analyzing and organizing the data secured from the two groups for the comparative analysis implied by the main purpose.

Definition of Terms

A clear understanding of the hypotheses and procedures generated from the major purpose requires the definition of the following eight terms.

1. HC Group. -- The HC group, highly creative, was defined as Freshman, Sophomore, and Junior students scoring in the top 15 per cent for their grade and sex on the five-test creativity battery used initially by Getzels and Jackson, but not in the top 15 per cent of intelligence as measured by standardized intelligence tests.

2. HI Group -- The HI group, highly intelligent, was defined as Freshman, Sophomore, and Junior students scoring in the top 15 per cent for their grade and sex on intelligence measures, but not in the top 15 per cent of creativity as measured by the five-test creativity battery.

3. Free Reading, FR. -- Oral introspective responses made spontaneously by a subject to each passage read. The only demand was that the subject report everything which occurred to him as he was reading initially. The subject was thus "free" to define the task for himself.

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* Advisory Committee for this dissertation was Dr. Helen M. Robinson, Chairman; Dr. Philip W. Jackson; and Dr. Benjamin S. Bloom

4. Free Reading Analysis, FRA. -- Oral retrospective responses to questions designed to have a subject analyze and reconstruct the thinking for his responses in the FR. These questions were also used to check on any gaps or editing suggested by his FR responses. FRA responses immediately followed the FR.

5. Controlled Reading, CR. -- Oral introspective responses to a set of questions about a particular passage. A subject introspected from the point at which he first heard a particular question. These responses continued until a subject indicated that he had finished with a particular question. The question thus "controlled" the direction of the reading; it tended to limit the range of reading behaviors more specifically than in the FR.

6. Controlled Reading Analysis, CRA. -- Oral retrospective responses made by a subject immediately after he indicated that he was finished with a particular question for a passage. As with the FRA, these responses were made to questions designed to have a subject analyze and reconstruct the thinking for each CR question, and to check on any previously unreported behaviors suggested by his responses in the CR.

7. Literal Level. -- Responses limited to the surface meanings or visible organizational aspects of the passages read, i.e., what the authors actually or literally said via the words and the manner in which the words were organized.

8. Non-literal Level. -- Responses going beyond or penetrating beneath the surface meanings and visible organizational aspects of the passages to possible implied or symbolic meanings, affective overtones, structural or stylistic elements and their effects.

Hypotheses for This Study

The following hypotheses were generated from the major purpose.

1. In the Free Reading, the responses of the HC group will be characterized by more expressions of the following behaviors in relation to the passages than will the HI group: affect, humor, imaginative representations, speculation, fantasy, imaging, sensations, and valuing.

2. In the Controlled Reading for literal meanings, the HC and HI groups will not differ in their ability to comprehend and reproduce the directly stated details, facts, major ideas, and conclusions of a passage.

3. In the Controlled Reading for non-literal meanings, the HC and HI groups will differ in the following ways:

   a) The HC group will do more speculating about possible meanings, outcomes, purposes, and themes than will the HI group.

   b) The HC group will propose more than one possible interpretive synthesis proceeding from combined intellective and imaginative bases while the HI group will develop and maintain one interpretive synthesis predicated on an intellective basis.

c) The HC group will manifest more imaginative behaviors in relating or extending a passage's components to other contexts and situations directly and indirectly related while the HI group will manifest more intellective behaviors limited to situations directly related or requested.

d) The HC group will judge a passage on more subjective criteria (e.g., affect experienced, novelty of ideas, degree of personal participation, experience, interest) while the HI group will judge using more objective criteria (e.g., clarity, adequacy, logic of presentation, significance of ideas).

4. In the Reading Analysis, the HC group will differ from the HI group in the following ways:

a) The HC group will reveal more variation and shifting in their methods of thinking than will the HI group.

b) The HC group will reveal more combining of affective, imaginal, and sensation-type elements with reading or cognitive abilities than will the HI group.

II. THE SIGNIFICANCE OF THE STUDY

Although there have been many studies comparing the reading achievement of gifted students with that of average and below-average students, there have been virtually no studies which have compared various aspects of reading comprehension of diversely gifted individuals with one another. The lack of research in this area seems startling since reading is so crucial in our culture.

Hence, it was considered that this study might provide significant information about the intellectual functioning of two types of gifted students as revealed through the act of high-level reading. Specifically, this study could very possibly illuminate the manner in which differently gifted students responded to and processed ideas, information, and relationships by means of reading. Also new facets of the complex act of reading might be discovered which would increase our understanding of the various kinds of processes underlying this act. Furthermore, this study might yield new insights into reading as a general method of inquiry (i.e., as a means for acquiring, reflecting about, and utilizing ideas and relationships in printed materials) which would be of considerable value in the educative process.

III. BACKGROUND OF THE STUDY

The two types of gifted secondary students focused upon in this study were previously identified by Getzels and Jackson in a study of giftedness. They found that these students differed in personality, environmental, and cognitive characteristics, but not in total achievement as measured by standardized tests. Torrance found some differences between these two kinds of students at the elementary level on specific verbal and numerical tests. However, prior to and during this investigation, no research was located which dealt intensively with the reading of highly creative, HC, versus highly

intelligent individuals, HI, from the standpoint of problem-solving using reading or from analyses of the reading act per se.

This gap in our knowledge about the reading processes of gifted individuals led to speculations about possible similarities and differences in their cognitive functioning in the reading act. From speculations about the cognitive functioning of creative versus highly intelligent non-creative individuals in reading, there emerged the outlines of a problem centered upon possible similarities and differences in their reading behaviors, which evolved into an exploratory study of the reading behaviors of HC versus HI individuals.

In formulating both the conceptual and methodological aspects of this investigation, the research and theory from three areas were drawn upon: cognitive giftedness, problem-solving, and reading. The first area contributed more to the conceptual aspect of this study while the second and third contributed more to its methodological aspect. A case study approach utilizing oral introspection and retrospection was selected as the best means for exploring the cognitive or reading behaviors for two reasons: the lack of information available concerning the reading of the two kinds of individuals; and the desire to secure more evidence about their reading than would be available from examining only the end products of their reading.

IV. PROCEDURES OF THE INVESTIGATION

Three general phases were conceived to achieve the major purposes of this study: (1) the development of the conceptual framework; (2) the formulation of the methodology through which to secure the evidence of the reading process; and (3) the analysis of the data through the use of an experimental classification framework. Each phase involved two or more aspects.

Development of the Conceptual Framework

The conceptual framework of this study was evolved primarily from a survey of related research and theory in the area of cognitive gifted ness rather than in the areas of reading and problem-solving. One aspect of this survey was to identify the sets of specific characteristics which were considered to distinguish highly creative from highly intelligent non-creative individuals. The second aspect was to relate these sets of characteristics logically to the reading act. The accomplishment of the second aspect was based on the assumption that reading was a cognitive act.

Two sets of differentiating characteristics were gradually evolved which seemed relevant to reading. One set "described" creative individuals; the other set "described" intelligent and non-creative individuals. From these sets of characteristics extrapolated to the reading processes, all but Hypothesis 2 were developed. It was derived from the research in reading.

Procedure for Securing Evidence of the Reading Process

The procedures for selecting the two gifted groups for the main study, along with scores on reading tests, were a general replication of the selection procedures used by Getzels and Jackson in their study of giftedness. Replication of these procedures provided the rationale, methods, and criterion measures for selecting the two types of gifted secondary students for this study.

The subjects for both the three pilot studies and the main study were identified in the Freshman, Sophomore, and Junior classes of one midwestern private school, but the actual data were collected one year later. They were selected on the bases of intelligence measures, a five-test creativity battery, and measures of reading achievement. All subjects were achieving in reading well above grade level. There were eighteen subjects in each of the two experimental groups of the main study, the HC and HI groups of subjects for the three pilot studies, which were carried out to ascertain the most effective techniques and tasks for securing the evidence of the reading behaviors in the main study.

The techniques and tasks using the semi-structured interview for the main study followed the below-noted sequence. Each subject was given a preliminary training session, requiring approximately two academic hours, in the use of the oral introspective and retrospective techniques. The instructions emphasized that everything was to be reported as the subject worked with the reading tasks and that there were no "right" answers.

After completing the training interview, a set of semi-structured interviews for which all responses were tape-recorded was carried out with each subject. The responses from these interviews constituted the raw data for the analysis of the reading behaviors of the two groups. First, for the FR section, each subject introspected as he read a passage until he indicated he had finished. No questions were asked, but reminders to respond were given. Second, the FRA section immediately followed the FR, and the subject analyzed and reconstructed his FR responses. Questions were used to stimulate his recall. Third, for the CR section, each subject introspected from the point at which he was given a question pertaining to a passage. Reminders to respond were given. Finally, the CRA section for a particular question began when the subject indicated he was through introspecting to it. After the CR and CRA sections for one question were completed, the subject was given the next question, and the afore mentioned procedures were repeated. Questions asked in the CRA section paralleled those asked in the FRA section.

The two passages read in the main study were a prose excerpt from a novel, The Stranger, by Albert Camus, designated as Passage A, and a poem, "Grasshopper," by E.E. Cummings, designated as Passage B. Both passages met all criteria established for providing opportunities for revealing a wide range of reading behaviors. Passage A was read and responded to first, followed by Passage B.

Analysis of the Data Using an Experimental Classification Framework

Both the general purpose and the hypotheses required: the identification of the distinguishing characteristics in the protocols secured from the two groups; the quantitative organization of each characteristic identified in order to ascertain the frequency with which it was manifested in the protocols; and the use of the frequencies derived to make comparisons between the verbalized reports of the two groups.

Previous models for analyzing mental processes were found unsatisfactory for such reasons as insufficient scope and level of generality. The experimental classification framework was developed primarily from abstracting characteristics from the data and then comparing these characteristics with

"components" of other models for such purposes as precision of statement, terminology, and support for types of thinking described. This framework required a number of revisions before a level of reliability of 70 per cent agreement among the judges was reached. The judges independently classified the responses of one HC and one HI subject for both passages. Subsequently, all responses of all subjects were analyzed and classified by this investigator.

The classification framework in the form applied to the protocols of the main study had two general dimensions which constituted two major styles of thinking. Dimension 1, Intellective, included six cognitive patterns or types of thinking: 1.1 Limiting; 1.2 Recalling; 1.3 Analyzing; 1.4 Synthesizing; 1.5 Extending; and 1.6 Evaluating. Dimension 2, Imaginative, also included six cognitive patterns: 2.1 Searching; 2.2 Speculating; 2.3 Discovering; 2.4 Envisioning; 2.5 Fantasying; and 2.6 Valuing. The code numbers preceding the patterns showed the specific classification of each response and permitted frequency counts of the number of responses made by a subject in each pattern and dimension. The basic response unit of the classification framework was defined as a verbalization revealing one pattern within one dimension containing one idea. Repetitions of the same idea within the same pattern were excluded from the frequency counts. Certain content elements were also defined and included within the framework, namely, images, sensations, affective manifestations, humor, different types of major interpretations, and role-playing. All responses were analyzed for evidences of these pattern and content elements. The classification framework was used for all sections of the reading task.

Frequency counts were computed separately for the responses of each group for the characteristics noted in the hypotheses. Some means and per cents were also computed. Comparisons of the performances of the HC and HI groups were made using the Chi-square statistic to determine if there were any statistically significant differences between them. The Chi-square statistic was used in two ways: as a test of association where the over-all performances of the two groups on several characteristics were compared; and as a test of the goodness of fit where the performances on one characteristic were compared.

V. FINDINGS RELATED TO THE HYPOTHESES

All findings secured in testing Hypothesis 1 were based upon the frequency counts derived from the analysis of the data using the classification framework.

As was predicted for the Free Reading, the HC group exceeded the HI group in the frequency counts made of the responses for selected content elements and cognitive patterns. Specifically, the responses of the HC group exceeded those of the HI group for these elements by almost six times the number of images and sensations, by four times the number of affective manifestations, and by almost thirteen times the number of humorous statements. Significant differences (.001 level) were found when the performances of the HC and HI groups for each of the elements were separately compared. A significant difference (.01 level) was also found when the over-all performances of the groups for these elements were compared. For the cognitive patterns, the HC group exceeded the HI group by one and a half times the number of responses classified

as 2.2 Speculating, by more than four times the number of responses classified as 2.4 Envisioning, by more than sixteen times the number of responses classified as 2.5 Fantasying, and by more than one and a half times the number of responses classified as 2.6 Valuing. Significant differences (.001 level) were found when the performances of the HC and HI groups on each of the cognitive patterns were separately compared. A significant difference (.001 level) was also found when the over-all performances of the two groups for these patterns were compared.

Hypothesis 2

All findings obtained in testing Hypothesis 2 were based upon the frequency counts and per cents derived from the analysis of the data using the classification framework.

As was predicted in the reading for the recall of directly stated information in the Controlled Reading, the two groups showed virtually no differences in the number and quality of responses classified as 1.2 Recalling. No significant difference was found when the per cents of responses manifesting 1.2 Recalling were compared for the two groups. However, on the number and per cents of other responses made to the recalling questions not classified as 1.2 Recalling, a significant difference (.001 level) was found between the two groups for the two dimensions. The HI group produced more responses classified within the Intellective Dimension; the HC group, more responses within the Imaginative Dimension.

Hypothesis 3

All findings secured in testing Hypothesis 3 were based upon the frequency counts, means, and per cents derived from the analysis of the data using the classification framework.

As was predicted in the reading for implied or connotative meanings in the Controlled Reading, the HC group exceeded the HI group in the frequency counts made of the responses for selected content elements and cognitive patterns.

a) The HC group exceeded the HI group in the number of responses classified as 2.2 Speculating by approximately two and a half times. Significant differences (.001 level) were found between the groups on their total number of responses classified as 2.2 Speculating for Passage A, Passage B, and A and B combined.

b) The HC group exceeded the HI group in the number of major interpretations by nearly twice the number. A portion of major interpretative responses for the HC group were classified within Dimension 2, Imaginative, while no major interpretation responses were classified within this dimension for the HI group. A significant difference (.001 level) was found between the two groups on the total number of interpretations produced. All the HI major interpretations appeared to have an intellective basis while those of the HC group appeared to have both intellective and imaginative bases.

c) The HC group exceeded the HI group by almost five times the number of responses classified as manifesting imaginative behaviors in relating the components of the passages to other contexts and situations. The HI group ex-

ceeded the HC group by more than half again the number of responses classified as manifesting intellective behaviors in relating passage components to other contexts and situations. Significant differences (.001 level) were found between the over-all performances of the two groups on the total number of responses classified within the two dimensions for Passage A, Passage B, and A and B combined. A comparison of the total responses classified within each dimension for the HC group revealed a significantly greater number (.001 level) within the Imaginative. A comparison of the total responses classified within each dimension for the HI group revealed a significantly greater number (.001 level) within the Intellective. However, some of the responses for each group were classified within the "dominant" dimension for the other group. That is, some responses for the HI group were classified as manifesting imaginative behaviors while some responses for the HC group were classified as intellective.

d) The HC group judged the passages more frequently using subjective criteria than did the HI group based upon the number of responses classified as 2.6 Valuing for the questions designed to elicit judging responses. The HI group judged the passages using more objective criteria than did the HC group based upon the number of responses classified as 1.6 Evaluating for the same questions. The HC group significantly exceeded (.001 level) the HI group on the total number of responses classified as 2.6 Valuing. The HI group significantly exceeded (.001 level) the HC group on the total number of responses classified as 1.6 Evaluating.

Hypothesis 4

All findings obtained in testing Hypothesis 4 were based upon the frequency counts and means derived from the analysis of the data using the classification framework.

As was predicted for the Analysis sections, the Free Reading Analysis and the Controlled Reading Analysis, the retrospections of the HC group differed from those of the HI group in the amount of shifting and variation in methods of thinking and in the combining of selected content elements with reading.

a) The HC group exceeded the HI group in the frequency counts for shifting and variation. However, these results were questioned for two reasons. First, the amount of shifting done by a group was found to be definitely associated with the number of responses made, suggesting a confounding effect. Second, more questioning by the experimenter was required for the HI subjects to reconstruct their responses than for the HC subject which probably produced some effects not clearly manifested in the responses.

b) The responses of the HC group exceeded those of the HI group in the number of instances combining affective, imaginal, sensation-type, and role-playing elements with reading. Specifically, the HC group exceeded the HI group by three times the number of affective manifestations and images, four times the number of sensations, and twenty-one times the number of role-playing manifestations. The HC group significantly exceeded (.001 level) the HI group in the total number of responses manifesting the four elements for Passage A, Passage B, and A and B combined.

Ancillary Findings

When considered together, the preceding results implied the presence of different general reading styles for the two groups -- at least for the tasks of this study. The total number of responses made by each group classified within the two general dimensions, Intellective and Imaginative, was used as data to study the two general reading styles. Comparing the results for both groups revealed that for the HI group almost two-thirds of its total responses were classified within Dimension 1, Intellective, and slightly more than one-third were classified within Dimension 2, Imaginative. In contrast, for the HC group almost three-fourth of its total responses were classified within Dimension 2, Imaginative, and slightly more than one-fourth were classified within Dimension 2, Intellective. The HC group significantly exceeded (.001 level) the HI group on the total responses within the Imaginative Dimension for the combined FR and CR and the combined FRA and CRA. The HI group significantly exceeded (.001 level) the HC group on the total responses within the Intellective Dimension for the combined FR and CR and the combined FRA and CRA.

Comparisons of the total number of responses classified within each dimension for the Fr and CR combined and the FRA and CRA combined for the HC group revealed significantly greater numbers (.001 level) within the Imaginative Dimension. Comparisons of the total number of responses classified within each dimension for the Fr and CR combined and the FRA and CRA combined for the HI group revealed significantly greater numbers (.001) within the Intellective Dimension.

VI. LIMITATIONS OF THE STUDY

The findings of this study should be viewed with the following limitations in mind.

1. Conclusions and implications drawn from the results of this study can only be directly applied to the reading of literature. The demands and tasks of other content fields were not considered. Furthermore, the characteristics composing the differences between the two groups were manifested in response to complex materials and the questions asked were generally formulated in probabilistic terms. Also, the set to secure the "right" answer was minimized.

2. Conclusions and implications drawn from the results of this study should only be applied to able readers. The reading achievement of all subjects participating in this study was very high, according to the tests used.

3. In retrospect, a definite limitation of this study was the exclusion of those students who were classified as both highly creative and highly intelligent according to the criterion measures. In all probability, members of this group would have the greatest potential for making a major contribution to society in the future.

4. The manner in which the hypotheses were developed for what was an exploratory study posed major problems in relating the data secured to them. The hypotheses were developed before any evidence of the actual reading behaviors of these students was secured. Difficulties arose in relating the characteristics of the data to some of the terminology of an analyses implied by the

hypotheses. Not until the classification framework was fully developed and applied to the data were the problems between the hypotheses and the data revealed.

VII. MAJOR CONCLUSIONS AND INTERPRETATIONS

Bearing in mind the above-noted limitations and the fact that this study was an exploratory investigation, several tentative conclusions were reached.

Conclusion 1. The two gifted groups appeared to exhibit different dominant and subordinate styles of reading for the areas of prose and poetry within literature. Further support for this conclusion was provided in a brief follow-up interview in which the subjects generally indicated that their reading in the experimental situation was quite typical of their reading in literature. While other content fields were mentioned, no definitive patterns could be established. The general characteristics of the dominant reading styles of the two groups are described in the next two paragraphs.

The HC Reading Style. -- The dominant reading style of the HC individual, as revealed through his oral responses, appeared to possess imaginative characteristics. He experienced many sensations and images which he apparently enjoyed and from which he constructed meanings not only for the materials read but uniquely for himself. He generated many speculations while reading which appeared to serve multiple purposes, i.e., exploring ideas and meanings, stimulating his own thinking as well as tying in his own experiences, considering various types of relationships and ways of ruling out ambiguity in meaning. In analyzing, he was keenly sensitive to nuances in and connotations of: types of words and their sound and visual patterns both in and out of the passage contexts; shifts in sentence patterns; dialogue structure; colors; textures; motion; temperature; time progression; image fragments; and characterization. He often fantasied while reading but frequently converted these fantasies later into striking, appropriate, and highly abstract interpretations at a symbolic level and provocative analyses of the general tone and mood of a passage. He also transformed essential components of a passage easily into other contexts and artistic media. He "created" new situations and objects from the meanings and forms he used. His "bridges" to other contexts were apparently images, sensations, and/or role-playing. He seemed to be interested in experiencing what the author himself had experienced. His several interpretations for a passage were often quite different from one another, reflecting sharp insights into levels and types of themes and problems. He judged material primarily on what he secured from it as a person rather than on outside "objective" criteria, although he made some use of the latter. He also seemed quite aware of his processes in reading, verbalizing such processes easily and fully. In short, he seemed to have been able to penetrate through the screen of words describing the experiences reported by the authors and in so doing to recreate the essential realities which these experiences must have had. In this manner, the HC reader became a part of the experiences -- he was there. Thus, he seemed to have read more "from within" than "from without" -- although he was perfectly capable of the latter.

The HI Reading Style. -- In contrast, the dominant style of the HI individual, as revealed through his oral responses, appeared to possess intellective or realistic characteristics. Experiencing few images or sensations,

he was rather embarrassed about those he did receive and rarely used them in constructing meanings for the materials read. Although generating a considerable number of speculations, he seemed to use them primarily for the purpose of ruling out ambiguities encountered in the material. He was alert to specific types of stylistic devices used, and systematically analyzed and categorized them in relation to the particular passage read. However, the subtleties and nuances contained within the materials were often overlooked. He did not transform essential components of a passage read easily into other contexts and artistic media. Instead, he systematically compared and contrasted these components with direct or vicarious experiences or art forms to which he felt these components related. He did not "create" a new object or situation; he built a case for or connection to a pre-existing object or situation. His "bridge" to other objects and situations was the comparison-contrast. His use of images, sensations, or role-playing as "bridges" was virtually non-existent. He was interested in securing the meaning of a passage qua passage as presented, rather than in experiencing what the author might have experienced. He judged material more on "outside" objective criteria than "subjective" criteria, although he made some use of the latter. In short, he secured the meanings conveyed in the language of the passages with speed and efficiency remaining apart from the underlying experiences which the authors might have had. Thus, he seemed to have read largely "from without" -- he seemed neither able to read "from within" a passage or desirous of so doing.

Conclusion 2. Speculating appeared to play a critical role in the reading of both groups when ambiguities, conflicts, and paradoxes were perceived in the materials. Both groups made use of speculating in the same ways, i.e., considering and selecting alternative meanings for a passage segment and minimizing ambiguities. However, the HC group appeared to use speculating in other ways, e.g., generating as many meanings as possible for a passage as a kind of mental game being played with and for themselves.

Conclusion 3. The classification of major interpretations into various cognitive patterns of the Intellective and Imaginative Dimensions for this study revealed not only several types of major interpretations but also suggested possibly different "routes" for arriving at them. For the HI group, the "route" lay only in the Intellective Dimension. For the HC group, the "routes" lay in both dimensions. Characterizing the Intellective interpretations was synthesizing the meaning segments into a specific theme for a particular passage or extending the meaning segments into a "universal" theme with the passage viewed as an example of it. Characterizing the Imaginative interpretations was the experiencing of a generalized image often accompanied by sensations and affect which simultaneously concretized and symbolized the general meaning of a passage. Hence, for the major interpretations manifested in the protocols, meaning segments apparently constituted the basis for the Intellective "route" while the generalized image apparently constituted the basis for the Imaginative "route."

Conclusion 4. The content elements of images, sensations, and role-playing were apparently an important part of the reading process for the HC subjects and a virtually irrelevant part of it for the HI subjects. The HI subjects tended to discard these elements as aids to meanings for a passage or to handling the demands of questions asked. In contrast, the HC subjects used all the

elements -- and particularly images -- to secure meanings for passage segments, to form the basis for major interpretations, to "bridge" to other contexts and art forms, and to form the basis for fantasying. The HC subjects apparently found their images, sensations, and role-playing not only useful and personally satisfying but also entertaining. In contrast, the HI subjects appeared to find the experiencing of such phenomena rather embarrassing, childish, and disruptive.

Conclusion 5. Although time-consuming and complex to apply, the classification framework for the data provided both a workable system for abstracting the major characteristics from the protocols of the subjects and a useful means for organizing these characteristics in order to make the subsequent comparative analysis for similarities and differences. Using this framework pointed up sharp differences between the reading of the two groups.

VIII. IMPLICATIONS OF THE FINDINGS

This study appears to have specific implications which are of significance for three areas: the understanding of giftedness; the understanding of the reading process; and curriculum planning.

First, with regard to giftedness, modes or styles to which the Imaginative Dimension seemed to have a particular connection were allocentric mode as described by Schachtel (1959), the preconscious processes as described by Kubie (1958), and three types of analogical patterns as described by Gordon (1961). In contrast, the Intellective Dimension in this study seemed to have characteristics somewhat resembling what Bloom and his associates (Bloom et al, 1956) termed objectives in the cognitive domain and what Hadamard (1954) described as the "later conscious work." Also, the findings from this study would appear to fill a gap in our knowledge about the cognitive processes in reading -- at least with regard to literature -- for two kinds of gifted students.

Second, with regard to the reading process, these findings further suggest that the high-lvel reading process, already recognized as being highly complex, may be even more complex than was previously thought. That is, the reading process, in addition to those features which comprise an intellective or realistic dimension, also apparently has other distinguishing features which comprise an imaginative dimension. Furthermore, the classification framework might have value in examining the reading responses of other individuals by providing a basis for their analysis and classification. Also, since the framework is cognitively based, it should have value for analyzing the reports of thinking and problem-solving where reading is involved. The framework might stimulate the development of other frameworks which could provide increased insights into high-level cognitive and reading processes.

Third, with regard to curriculum planning, if the reading process contains two dimensions -- and there may be others -- then the differences found between the two groups in their reading have important implications. Specific areas which would seem to be involved are: the teaching of reading; the utilization of reading in various kinds of problem solving in many areas, the development of appreciation -- not only for literature but for other areas as well; and the possible use of reading as preparation for creative writing and other types of creative work.

APPENDIX A

Two retrospective excerpts from the protocols of the subjects are cited below. These excerpts were selected to be representative of some of the qualitative differences between the two groups, and appear in the form of a dialogue.[1] The retrospective responses were made to Passage B, the poem, "Grasshopper." The question posed to the subjects was: "How might this poet describe or present a butterfly? Two small tots playing, then arguing, and finally, fighting? Beauty or humor?" The HI responses are cited first, followed by the HC responses.

Portion of CRA responses for HI subject to B-3:

E: What made you laugh when you . . . when I started reading the question?

S: I don't know, because . . . you know grasshopper's enough, ah . . .

E: By grasshopper's enough?

S: . . . Beka because you know . . . you know because it's a butterfly adds another dimension to the whole thing, I can just see the, the . . . poem coming out coming out into three dimensions all over the page . . .

E: Did you actually imagine it coming out in three dimensions off the page?

S: I'm not sure . . . (extended pause)

E: Why a whole another, ah dimension?

S: Well, ah, because a grasshopper you think of as not, I think the leap is ah, is going along, you know with grasshopper, in lin, ah lin . . .

E: In a linear way?

S: Yeah, linear way instead of leaping up, but, and then a butterfly flying is . . . (extended pause)

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[1] E refers to the experimenter; S, to the subject.

E: Did you relate this to mathematics? At all?

S: I don't think so . . .

E: Did you actually imagine a, let us say, a finished poem for the butterfly?

S: No . . .

E: Did you imagine a butterfly?

S: Yes . . .

E: How did this appear?

S: Looked like a butterfly that's all.

E: What kind of a butterfly?

S: Well let's see . . . it had spots I think (laughs)

E: Were there, was there color?

S: Yes, orange . . . (extended pause)

E: Did this help you in considering how the poem might be, or how he might handle the poem . . . as you worked with the question?

S: . . . I don't think so, no . . .

Portion of CRA responses for HC subject to B-3:

S: Now, I'll, tell you, how I got these thoughts (laughs) . . . um, for this one . . . I . . . ah . . . get the image of presenting a butterfly . . . . And I looked at how he presented a grasshopper, well he didn't really present a grasshopper what he, what did to give us a picture of a grasshopper, and because the grasshopper's a movie, a moving insect, it has a lot of movement to it, there's a lot of things a grasshopper can do, he did a lot of things with the poem, poem leaped, it jumped around, um, it sort of hopped, you can I get the picture of a grasshopper through the way he, puts words on the paper, the form, the punctuation . . . and, so I saw that a butterfly too is a very moving, insect . . . um . . . you can do a lot with the movement of the butterfly in the paper, um, it sort of, can make the words flitter on the paper . . . um . . . um, or move, gently as a butterfly sitting on a flower, his wings would, would sort of ah, oh slowly and, and, very quietly, open and close, this is ah, I think could be easily done, he seems to be capable of doing this . . . and, then, the general image of a butterfly struck my mind and I saw a beautiful orange butterfly with black, rings and spots on its

wings, and . . . um . . . I saw that he could ah, give a picture of a butterfly of such a nature, he could describe it easily on paper, but then it kept striking me that he couldn't, he he wouldn't want to go, into depths about the butterfly's character, or something of this ah, what the butterfly is like on the inside . . . the soul of the butterfly, something a little bit beyond just a color color or a picture of the butterfly . . . um . . . but generally it seemed like a pretty easy topic because ah, a butterfly is, is an animate beautiful object you can . . . ah . . . imagine with . . .

Subsequent questioning produced the following responses by the subject after completing a long initial statement begun above.

E: One thing I wanted to ask way back early in you responses here, a phrase you used, he might use words that could sound like wings. . . Did you at this point, have anything in mind specifically?

S: Specific word?

E: Mhm, or words.

S: Ahm, not specific words but words that might begin with ah, w's, that would have a swishing sound . . . s-h or something to, this, what it, mm onomatopoetic words . . . soft . . . mm, light and feathery . . . um sounds . . . and, also ahm shimmering . . .

E: Anything else?

S: Ah . . . no, just general words that begin with soft sounds and give a swish . . . and, ah . . . shimmer, glow . . .