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CREATIVITY AND RISK-TAKING IN YOUNG CHILDREN

The University of North Carolina at Greensboro PH.D. 1980

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CREATIVITY AND RISK-TAKING IN YOUNG CHILDREN

by

Shirley P. Ritchie

A Dissertation Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Greensboro
1980

Approved by

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APPROVAL PAGE

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September 25, 1980

Date of Acceptance by Committee

October 28, 1980

Date of Final Oral Examination

RITCHIE, SHIRLEY P. Creativity and Risk-Taking in Young Children. (1980)
Directed by: Dr. Nancy White. Pp. 83

The purpose of this research study was to examine self-assessment of risk-taking attitudes of young children in relationship to IQ and creativity ratings by teachers. A model of identification for young, gifted children was proposed which gave equal weight to cognitive, affective, and creative traits. Risk-taking was included in the model as an important means of assessing affective traits of creativity.

Review of literature examined traditional measures of giftedness and the relationship of these measures to divergent or creative thinking. Prior research studies established creativity as a separate entity from IQ and teachers' attitudes toward risk-taking or non-conforming behavior of students as more negative than their attitudes toward conforming students. Risk-taking was established as a motivating drive in creativity.

The relationship between IQ, creativity, and risk-taking attitudes of young children was investigated. The data were collected using teacher judgment (Renzulli-Hartman Scale of Creativity), subjects' self-assessment

of risk-taking (PACT), and the Slosson Intelligence Test.

The subjects were 48 boys and girls in kindergarten through third grade in 3 schools in piedmont North Carolina. The schools were located in 3 different school systems--in rural, small town, and urban settings, respectively. Subjects were selected by their teachers as highly creative.

The .05 level of significance was required. Results of analysis of data showed a positive relationship of teachers' rating of creativity to IQ. There was no relationship between subjects' self-assessment of risk-taking and teachers' rating of creativity. Teachers were shown to be biased in favor of females in the selection process.

The researcher concluded that subjects' attitudes toward risk-taking was a better means of measuring creative traits of young children than teachers' judgment unless teachers value creativity and are trained to recognize its traits.

ACKNOWLEDGEMENTS

Appreciation is expressed to my advisor, Dr. Nancy White for her invaluable support and counsel and to other members of the doctoral committee for their help: Dr. Thom Clark, Dr. Hyman Rodman, Dr. Donald Russell, and Dr. Rebecca Smith.

The special skills of Pat Geiser in preparing this study for publication are acknowledged.

This dissertation is dedicated to my husband and daughter whose understanding and support allowed me to be a risk-taker.

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CHAPTER I

INTRODUCTION

This introductory chapter defines the parameters of the investigation and is divided into six sections: (1) Nature of the Study, (2) Background for the Study, (3) Assumptions, (4) Hypotheses, (5) Definitions, and (6) Limitations of the Study.

Nature of the Study

There has been strong emphasis in the past on high IQ as a total measure of giftedness. Since the 1950's, views of the nature of giftedness and the limitations of the IQ in measuring all the qualities associated with it have led to a recognition of the need to include creativity measures. This study examined the historical trends in measurement of giftedness and researched risk-taking as a creative trait to be considered in an identification model. Attitudes toward risk-taking and sex differences in risk-taking behavior were included in the study.

Academic achievement two or more grade levels above the norm and IQ scores of 120 or above were the most predominant means of identification of giftedness in the United States before 1960 (Gallagher, 1975). J. P.

Guilford's theory of multiple kinds of intellectual abilities which included divergent thinking opened the door to examination of the limitations of the IQ test. He questioned the IQ's ability to test divergent thinking:

> "Whatever the strong components of an IQ test, they are probably very much confined to the cognitive category. Certainly, there is usually almost nothing involved in the way of divergent thinking or of transformations . . .In singling out the gifted child, therefore, giftedness might be defined so as to emphasize either high IQ or high creative abilities, or both, depending upon where one wishes to place the emphasis." (Guilford, 1962, p. 163-164)

The dependency on the IQ to determine the gifted population resulted in the affective and the creative aspects being ignored or considered less important. These aspects must be considered if traits such as risk-taking are to be fostered. The pressure to conform in school situations can thwart creativity in young children who seek to please and are sensitive to the feelings of others.

Due to the degree of conformity expected of children in school, risk-taking has not traditionally been valued by teachers. Lowenfeld and Brittain (1975) reported that researchers had found that the demands of parents, teachers, and peers to conform had contributed to much less creative behavior in children by the age of eight or nine. The sweet, conforming child was rewarded in the classroom to the retarding of the development of creativity.

One key philosophy, proposed by Gallagher (1975), related to creative production was the "take a chance position" versus the "play it safe" notion. He thought that there was sound theoretical ground for believing that girls were less creative than boys since they were encouraged to adopt the "play it safe" or dependent philosophy. Generally, girls were found to do as well as boys in school achievement; yet, in adulthood, they represented relatively few of the high-level creative scientists, writers, or musicians. These different sex roles began at an early age.

Methods of identification unsuited to the particular needs of individuals in their unique stage of development in all areas of growth are unrealistic and do a disservice to children who are erroneously labeled as gifted. The overall purpose of this study was to contribute to a multidimensional model of identification for young, gifted children. It gave equal consideration to cognitive, affective, and creative growth in a developmental framework. The specific component of the model which was researched was risk-taking as it related to creativity and IQ. As a justification of the need for such a model, the traditional approaches to identification of giftedness were also researched.

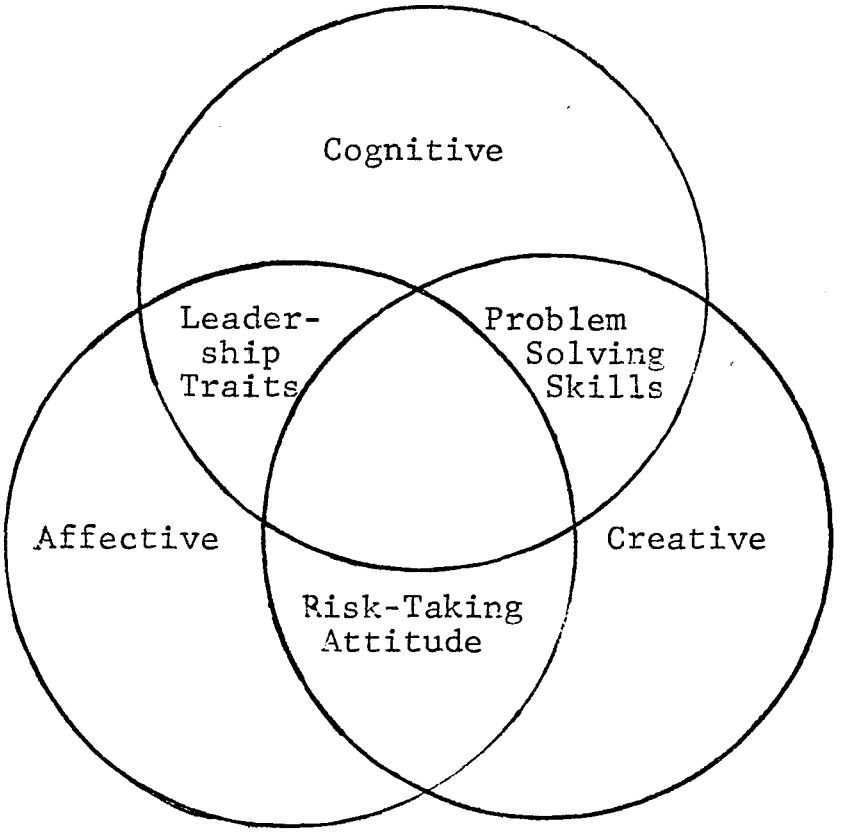
The scope of the study was confined to children in kindergarten through third grade who were rated highly creative by their teachers. Subjects were students in seventeen classrooms in piedmont North Carolina. The three schools chosen for the study were located, respectively, in rural, small town, and urban settings in three different school systems (See Appendix B).

Background for the Study

The author of this research study proposed an identification model for young gifted children which placed equal importance on cognitive, creative, and affective domains (Ritchie, 1978). The model was designed to consider the unique needs of children in kindergarten through grade three. Special emphasis was placed on measuring behavior which resulted from integration of the domains. Problem-solving skills, leadership traits, and risk-taking attitudes were viewed as evidence of integrated abilities and the most important to be assessed. The aspect of the model which was researched in this study was risk-taking. The model is depicted in Figure 1.

FIGURE 1

Model for Assessment of Giftedness in Grades K-3



Although creativity as a component of giftedness was recognized as early as the 1960's (Getzels & Jackson, 1962; Torrance, 1965; Taylor, 1972), recent models of identification of giftedness continued to favor high IQ and high academic achievement. The 1979 North Carolina model used a scale of a possible 23 points (Appendix A). The early childhood checklist or the alternative creativity

scale included in the model allowed for a maximum of two points for creative traits. Since a child had to have 19 of 23 points to qualify for a gifted program, creativity was not given equal weight to IQ (maximum score 5 points), achievement test (maximum score 8 points), and grades or performance as judged by teachers (maximum score 5 points).

Risk-taking or nonconformity as a characteristic of creativity has been recognized by authorities in the field of gifted education. Torrance (1965) listed "he is not afraid of trying new things" as a trait of creativity on his identification model. Williams (1972) included risk-taking along with curiosity, imagination, and complexity as traits in the affective realm of creativity. Renzulli et al. (1976) included risk-taking in their Creativity Scale for Rating Behavioral Characteristics of Superior Students.

Maslow's formulations of defense and growth described the motivating drive toward risk-taking in these terms:

> "Every human being has both sets of forces within him. One set clings to safety and defensiveness out of fear . . .afraid of independence, freedom, separation. The other set of forces impels him forward toward full functioning of all his capabilities . . . This basic dilemma or conflict between the defensive forces and the growth trends I conceive to be existential, imbedded in the deepest nature of the human being . . ." (Maslow, 1956, pp. 37-38)

This statement implied that risk-taking was a basic drive which, when coupled with an independent spirit and a desire to grow, allowed the individual to function fully by withstanding the pressure to conform to societal expectations. The inclusion of risk-taking in an identification model for giftedness would strengthen the model by providing information on the depth of the individual's desire to be creative.

With this principle in mind, the researcher specifically examined the relationship between teachers' rating of creativity in kindergarten through third grade children and the same children's self-rating of risk-taking. Other questions investigated were (1) Does a bias exist in the selection of males and females as highly creative?; (2) Is IQ related to teacher assessment of creativity and pupil assessment of risk-taking?; (3) Do teachers rate risk-taking lower than other traits of creativity?; and (4) Do ratings of creativity vary by grade?

Assumptions

1. Due to the traditional approach to education which emphasizes conformity, teachers do not value risk-taking as highly as they value conformity.
2. Girls are more conforming in their behavior than boys.

3. Cognitive abilities measured by IQ and creativity are separate components.
4. Due to the inhibiting nature of requirements for conforming behavior in school, kindergarten children are more creative than older children.

Hypotheses

1. There is no relationship between teachers' rating of creativity and subjects' self-rating of risk-taking.
2. Teachers rate females as highly creative significantly more often than males.
3. There is no relationship between IQ and risk-taking.
4. There is a negative relationship between IQ and creativity.
5. Teachers rate risk-taking significantly lower than other traits of creativity.
6. Teachers in kindergarten rate creativity significantly higher than teachers in grades 1, 2, and 3 do.

Definitions

1. For the purposes of this study, creativity or divergent production is defined by four cognitive abilities and four affective traits.

   Cognitive Abilities (Guilford, 1967, p. 138)

   a. fluency - ready flow of ideas
   b. flexibility - readiness to change direction in thinking or to modify information

c. originality - ability to produce rare, remotely related, and clever responses

d. elaboration - ability to fill out ideas with details

Affective Traits (Williams, 1972, p. 17)

a. curiosity - willingness to be inquisitive and wonder, toy with an idea, be open to puzzling situations, ponder the mystery of things, follow a hunch

b. imagination - the power to visualize and build mental images, to dream about things that have never happened, to feel intuitively, to reach beyond sensual or real boundaries

c. complexity - the challenge to seek many alternatives, to see gaps between how things are and how they could be, to bring order out of chaos, to delve into intricate problems or ideas

d. risk-taking - courage to expose oneself to failure or criticism, to make a guess, to function under conditions devoid of structure, and to be unconventional

2. Giftedness is defined by the ability to exhibit a high degree of integration of convergent and creative thinking ability (Guilford, 1957).

Limitations of the Study

Generalizability of this study is limited to children in kindergarten through third grade in piedmont North Carolina. The subjects were drawn from a total sample of 468 students in eighteen classrooms in piedmont North Carolina.

Teacher judgment was relied upon to select the total sample of students and to administer the creativity scale from which the subjects were selected. Since one of the purposes of the study was to compare teacher judgment and subject self-assessment, this method of selection was deemed appropriate. Selection of teachers was limited to volunteers as their cooperation was necessary for the study.

Delimitation

The inclusion of a rural, a small town, and an urban school and the inclusion of all grade levels (K-3) in each school increased randomization of the sample (See Appendix B).

CHAPTER II

REVIEW OF THE LITERATURE

Background information and pertinent findings from research studies which were related to this study are contained in this chapter. The chapter is divided into three sections with subheadings; A. Assessment of Giftedness, (1) Historical Perspectives, (2) Limitations of the IQ, and (3) Alternative Means of Assessment; B. Creativity and Giftedness, (1) High-creativeness vs. High-IQ, (2) Creative Traits and Processes, and (3) Assessment of Creativity; C. Risk-taking, (1) Risk-taking and Creativity, (2) Attitudes Toward Risk-taking Behavior, and (3) Sex Differences in Risk-taking Behavior.

Assessment of Giftedness

Creativity has not always been considered a component of giftedness. It was largely ignored until the second half of this century. Only those cognitive abilities measured by IQ were included in the concept of superior thinking until researchers challenged the omission of creative thinking (Thurstone, 1962; Torrance, 1960; Guilford, 1957; Meeker, 1976; Sagan, 1977).

Historical Perspectives

The means of identification of gifted children in the United States in the early 1900's was by teacher nomination. Students were chosen as gifted who were doing very well in school. When it was realized that many highly intelligent people such as Albert Einstein and Thomas Edison did not do well in school, means other than teacher judgment were sought for identification and standardized tests of mental ability became popular (Gallagher, 1975).

These standardized or IQ tests were directly derived from Alfred Binet's assessment of mental abilities developed in France in 1905. Binet was seeking to isolate mental traits which could be tested to identify developmentally retarded children.

In 1916, Lewis Terman revised Binet's test, established a ratio of mental development to chronological age, and named it the Stanford-Binet Intelligence Scale. Terman's famous "Genetic Study of Genius" became the precedent for research on high-IQ children, a term used synonymously with gifted children in the first half of the century (Getzels & Jackson, 1962).

The failure of IQ to measure other components of giftedness was challenged in 1952 by Thurstone in a speech to the Industrial Research Institute Conference on the

Nature of Creative Thinking. Thurstone recognized the error of looking for creative talent solely in the cognitive or intellectual domain:

> "Instead of describing mental endowment in terms of an intelligence quotient, it is now considered preferable to describe an individual in terms of his mental profile. When a student is described in terms of his mental profile, we know much more about him than if merely his general level of mental endowment is indicated by a single global index like the intelligence quotient . . . we no longer recognize a sharp line of demarcation between the intellective functions and the personality characteristics" (Thurstone, 1962, p. 54)

Although the IQ was the predominant measure of giftedness in this country in the first half of the century, new insight into the nature of intelligence began to emerge in the 1950's and other means of assessment were deemed necessary.

Limitations of IQ

J. P. Guilford (1957) broadened the perspective of intelligence considerably when he proposed that people had at least fifty (and probably many more) different kinds of intellectual abilities, which included divergent and evaluative thinking as valuable components of intelligence. He questioned the means of assessing giftedness by the IQ:

> "In tests of convergent thinking there is almost always one conclusion or answer that is regarded as unique, and thinking is to be channeled or

> controlled in the direction of that answer . . . In divergent thinking, on the other hand, there is much searching about or going off in various directions . . .Divergent thinking . . . is characterized as being less goal-bound. There is freedom to go off in different directions. . . Rejecting the old solutions and striking out in some new direction is necessary." (Guilford, 1957, pp. 6, 7, 9)

Mary Meeker continued the work of Guilford and, in an interview on National Public Radio (1976), she stated that intelligence could not be measured by IQ, that it was three-dimensional. The child may have had five or six abilities but the lack of one prevented him/her from getting the "right" answer on an intelligence test.

This view of the intellect posed serious questions about the validity of purely convergent tests. Kranz (1978) believed divergent thinking required both cognitive and noncognitive thinking and closed the door on the "right" answer to any question. In order to evaluate, a person drew on any number of sources to answer and could not be "wrong." The imaginative intuitive person was penalized for using other thinking processes than those being tested.

Sagan (1977) discussed hemisphericity from the evolutionary view of intelligence. Intuitive knowledge, having a long evolutionary history going back to the origin of life, superceded the relatively recent accretion of rational

thinking by the human species. He believed that rational thinking was fully verbal. Many people were almost entirely rational in their conscious lives and many others were almost entirely intuitive. These two different, accurate, and sometimes complementary modes of thinking were often poorly integrated. Observations of patients with brain lesions strongly suggested that those functions which were rational resided in the left hemisphere of the brain and those which were intuitive resided in the right hemisphere. The importance of the two hemispheres of the brain to mental funtioning compounded the difficulties in assessing mental abilities.

In discussing the Stanford-Binet Intelligence Test, Sagan commented:

> "There is certainly little room on such examinations for testing intuitive leaps . . .Unsurprisingly, IQ tests seem to be powerfully biased toward the left hemisphere." (Sagan, 1977, pp. 183-185)

Alternative Means of Assessment

Piaget's examination of mental growth involved quality or assessing the formation of new mental structures and did not rely on quantity or store of information as did IQ tests. In assessing the stages of cognitive development, Phillips (1969) recommended a less structured, observation, and questioning approach which classified

the subject into a developmental stage by means of a qualitative analysis of his/her performance. Gowan & Burch (1971) identified critical periods in the development of giftedness and believed one of them was early entry into the concrete operational period of development. In identifying gifted children by this criterion, a test which determined in which stage of development the child operated would be imperative.

In exploring an alternative to IQ in assessment of Mexican-American children in the United States, De Avila and Havassy (1973) concluded that the failure of Mexican-American children to perform well on capacity and achievement measures could be attributed to reasons other than the alleged cognitive inability of the children since their data showed no difference between them and other children on a Piagetian measure. They postulated that cultural and linguistic differences as they affected capacity and achievement were not considered in standardized tests of intelligence since the tests assumed a uniform cultural experience and a facility with the English language.

In a report to the California State Department of Public Instruction in 1976, Hilliard delineated the problem in assessment of different cultural populations as igonorance of the basic cultural differences.

> "The continuing inability of behavioral scientists to see conditions of oppression which may exist overtly or subtly between people is a major factor in the continuing gross misassessment of people of color." (Hilliard, 1976, p. 40)

Only by the explanation of specific manifestations of behavior within cultural context could assessment of human behavior take on meaning. The use of observation and listening by a variety of observers who knew and understood the child intimately was the only way to insure the least biased assessment and avoid a disservice to the child (Hilliard, 1976).

Hillard (1976) proposed that in any assessment there were two questions which were important. The first one was "Do you know what I know?" All standardized tests required a response within a restricted range. They were convergent and limited to persons who framed the questions and asked the same questions to all people regardless of their background. The second and most important question was "What do you know?" This assessment required patience, time, and sophisticated clinical perception in observing what people did. Human beings' systems, world views, and general behavioral styles predetermined the way they approached their world. Differences in style did not reflect differences in aptitude. While the dominant cultural style in America

was atomistic, objective, and analytical, the Afro-American cultural style preferred gestalts rather than details. There was a focus on people rather than things, approximations rather than exactitude, and an emphasis on nonverbal rather than verbal communication. It was inevitable that the viewers or testers were influenced in their interpretation by inherent cognitive and behavioral style and since higher education produced those who developed assessment procedures, there was a bias in favor of the atomistic, objective, and analytical style (Hilliard, 1976).

Summary

In summary, assessment of giftedness in the United States has grown during this century from reliance on teacher judgment to standardized intelligence tests and more recently, to inclusion of less structured, observation, and questioning approaches. Recognition of the limitations of the IQ in testing divergent and intuitive thinking and of ethnic differences in styles of mental operation forced the use of broader approaches to assessment than merely IQ.

Creativity and Giftedness

The inclusion of creativity as a component of giftedness did not receive widespread support until the 1960's when reseach studies confirmed Guilford's findings that convergent and divergent thinking were separate mental processes in the gifted population.

High-creativeness vs. High-IQ

Getzels and Jackson (1962) conducted studies on 449 adolescents from a private school outside of Chicago. The average IQ of the group was 132 with a standard deviation of 15. Two experimental groups were formed: one high in intelligence (Ave. IQ 150) but not concomitantly high in creativity, the other high in creativity but not concomitantly high in intelligence (Ave. IQ 127). Two essential findings of the study were: (1) a relatively low relationship between the IQ metric and measures of creativity, and (2) despite the 23-point difference in IQ, the equal superiority of the high IQ and the high creativity groups in scholastic performance on standardized achievement tests.

Torrance (1960) replicated these two aspects of the Getzels and Jackson study in eight schools including one similar to the one used in the original study. In the similar school and five of the other schools, he found

the same two phenomena: (1) a low relationship between IQ and creativity measures, and (2) despite sizable differences in IQ, superiority in achievement of the two groups. From this study Torrance concluded that if one considered only the highly intelligent, as measured by our current IQ tests, he would fail to identify about 70 percent of the highly creative students.

Creative Traits and Processes

Guilford (1967) defined divergent production in 1950 through factor analysis. He established 4 factors of creative thinking: (1) fluency, (2) flexibility, (3) originality, and (4) elaboration. Fluency of thinking analysis revealed three kinds of fluency factors: word fluency, ideational fluency, and associational fluency. A flexibility-of-thinking factor was found which had no known precedent: the readiness to change direction or to modify information. To the fluency and flexibility factors Guilford added an originality factor which was evidenced by rare, remotely related, and clever responses. Finally, elaboration defined by ability to fill out ideas with details was added to make up the four factors classified as divergent production.

Lowenfeld (1962) made art the focus of his research and came up with very similar characteristics of creativity

to those of Guilford: flexibility, fluency, sensitivity to problems, originality, and the ability to analyze, to synthesize, to redefine materials and problems, and to organize them coherently. Originality was a quality described as the opposite of conformity in thought and expression. The uncommon responses and unusual solutions to problems of creative individuals sprang from their own minds, not from what they had read or heard. Ability to redefine and to rearrange was evidenced by changing the function of materials. Analysis was the ability to arrive at details after studying a whole. Synthesis was the meaningful combination of several elements to make something new. Coherence of organization was the relating of the elements into a unified whole.

Widely accepted characteristics of the gifted were recently expanded to include creative characteristics of the affective domain: spontaneous, non-conforming behavior; sensitive apprehension and interaction with the external environment; a more intense emotional involvement; and commitment. Williams (1972) defined similar affective traits of creativity: risk-taking, complexity, curiosity, and imagination.

Maslow (1962) defined two processes of creativity, the primary process and the secondary process. The primary process grew out of the unconscious and was common and universal and found in all healthy children. It was the kind of creativeness that was lost by many as they grew up. This process was a way of thinking and perceiving which was very different from the laws of logic. It allowed for playfulness, childish behavior, regression to prior states, and new discoveries.

The second process allowed for creative production by an uncreative person who had walled off his/her unconscious and circumvented the primary process. He/she worked together with many other people, used knowledge of those who came before and, cautiously and carefully, came up with new creations (Maslow, 1962).

Maslow linked creativity to mental health.

> "The healthy person who creates. . .manages a fusion and a synthesis of both primary and secondary processes both conscious and unconscious . . .and he manages to do this gracefully and fruitfully. It is possible to do even though it is not very common." (Maslow, 1962, p. 99).

Thurstone, in a paper delivered to the Industrial Research Institute Conference on the nature of creative thinking in 1952, also recognized the primary process. He suggested research into the prefocal thinking before

the moment of insight which led to creative thinking. He believed that selecting people who had an inventive turn of mind related to problem solving as opposed to those who were distinguished for scholarly achievement required an informal approach.

Gowan (1972) stated that the essence of greater mental health and creativity was in strengthening the preconscious so that it shared in the three-part membership of the unconscious, the preconscious, and the conscious mind. He believed that children were more often creative than adults, for in the process of creative growth, adults did not reach their full potential. They became less mentally healthy due to adverse circumstances. The genius of creativity occurred in the third stage of development (Piaget's intuitive stage) and flourished under the affectionate, encouraging adult who strengthened the bridge between fantasy and reality. The child felt in control with such support and discovered his/her individuality. Whether or not the third stage was fully realized depended upon the significant adults in the child's life. The child who was frightened by mistakes and parental prohibition would give up.

Assessment of Creativity

> "In the history of creativity testing, the mainstream of psychology, psychometrics, and education has virtually ignored efforts that recognize creativity as a higher mental process, especially if these efforts attempt to go beyond the rational processes." (Torrance & Hall, 1980, p. 2).

The Torrance Tests of Creative Thinking (1966) were among the first instruments to be made available for testing creative ability. The tests included a series of verbal and figural tasks to sample as many kinds of creative thinking as possible.

The problem of identification of creative traits in the affective domain has required looking at methods other than the IQ test. Thurstone (1962) suggested informal means such as personality questionnaires and projective tests such as the Rorschach to measure temperamental characteristics. These tests were to be combined with IQ tests to compile a mental profile which revealed distinguishing characteristics of the creative person.

Instruments to measure an individual's perception of himself have been found to be an effective way of identifying creative talent. The assumption behind such instruments was that perception was related to creative components of personality which, when operationalized, allowed for measurement. The individual could be

expected to behave consistently with his/her perception of self. The Khatena-Torrance Creative Perception Inventory is such a model. It supplies verbal stimuli which triggers psychological structures to creative or noncreative behavior (Khatena & Torrance, 1977).

Teachers ratings of students' creativity were questioned by Guilford (1967) on logical and empirical grounds. The ordinary classroom did not offer all the opportunities to display significant aspects of creativity to provide an adequate base for judgment. Low interjudge correlations of such rating scales left open the question of teachers' understanding of characteristics to be judged even when they were explained to teachers.

Carroll (1976) conceptualized giftedness in at least three major, broad areas: intelligence, creativity, and creative production. To proposed intelligence and creativity standardized tests, he suggested evaluating creative productions as a third measure. The three variables, rated on a scale of high to low, would offer a profile on each subject assessed.

The Renzulli-Hartman Scale of Creativity (Appendix D) recognized ten traits which have been well documented with research as being creative abilities. These were curiosity, unique ideas, uninhibited expression of

opinion, high risk-taking, intellectual playfulness, sense of humor, awareness of impulses, sensitivity to beauty, nonconformity, and critical analysis (Renzulli et al., 1976).

Starkweather (1964) recommended that an instrument be developed for the measurement of conforming and nonconforming behavior, providing the child with an opportunity to make a choice in a situation in which he/she could follow a model or respond freely according to preference. The Pennsylvania Assessment of Creative Tendencies (Appendix E) is such a test. It measures attitude toward risk-taking by allowing the person to answer "yes," "no," or "don't know" to questions which reflect nonconforming ideas and behaviors.

Summary

In summary, creativity or divergent thinking has been shown to be a separate entity from convergent thinking. Cognitive and affective traits of creativity are now widely agreed upon and recognized as a component of giftedness. Primary creative processes have been linked with the preconscious level of thought which allows for the use of the unconscious. Secondary processes rely wholly on the conscious mind. Good mental health is a product of an integration of primary and secondary processes

and leads to fruitful problem solving. Assessment of creativity requires formal and informal means which identify characteristics, evaluate creative production, and measure an individual's assessment of his/her creative components of personality.

Risk-Taking

Studying the relationship between divergency and risk-taking was important in order to delve more deeply into a prominent trait in the personality of creative individuals. It was especially the trait of risk-taking which set them apart from others and impelled risking failure to achieve. It was a force that enabled many great men and women to make significant contributions to society (Rudder, 1972).

White and Williams saw threats to risk-taking as destructive to creativity.

> "Vast segments of our social order...legislate against creativy...Conformity to...rules and methods, can strangle the very life from creative talent." (White & Williams, 1965, p. 281)

Risk-taking and Creativity

Rogers (1962) described the risk-taking or non-conforming system as an "internal locus of evaluation." The value of a product was established by the person as being satisfying regardless of the praise or criticism of others. Creative people were not oblivious to or un-

willing to be aware of the judgment of others; they were merely willing to apply their own standards to their behavior. The creative personality had a sense of personal worth and a value system which was nonconforming. This required an acceptance of self as a source of judgment. The creative person relied on his/her sensitivity for guidance.

Torrance & Hall (1980), in answer to an inquiry as to their recent thinking about creativity and risk-taking (Appendix B), placed risk-taking in the "further reaches of creativity." The further reaches encompassed the suprarational view of creativity, those kinds of things which went beyond rational thinking. Until recently there was no widespread awareness that the great creative achievements went beyond the rational--not contrary to reason but outside the province of reason.

This view of risk-taking seemed to place it in the same category as Maslow's (1962) primary process of creativity which encompassed ways of thinking and perceiving which were different from the laws of logic. Both Maslow (1962) and Gowan (1972) believed that the primary processes were necessary for good mental health and should be strengthened.

Williams (1972) in his model of creativity included the affective behaviors of risk-taking, complexity, curiosity, and imagination. All of these traits, if held in abundance,

were outside the bounds of conformity so often required by society, particularly in educational settings. Of the four traits, risk-taking was probably the easiest to observe and the one which was most often ridiculed or punished.

Without risking censorship, manifesting creative behavior in an environment which valued conformity would be impossible. This would place children in a dilemma. Creative children, when realizing that they were different, would have to decide to go against the majority. For this reason, risk-taking would probably be the one trait which could mean the difference between observable creative and noncreative behavior. Most children would likely choose to minimize their abilities in order to resemble others.

Attitudes toward Risk-taking

Brophy and Good (1974) in their extensive review of the literature, concluded that male and female teachers tended to prefer compliant children to assertive and independent ones. A strong drive to push the bounds of conformity, explore, and discover one's own answers to life's riddles got a child disapproval and even punishment. Teachers were annoyed with pupils who manifested independent behavior, displayed marked curiosity, and sought other ways of doing things. Therefore, teachers tended to over-rate conformity as a mark of superiority.

Torrance (1965) discussed the case of a teacher's misunderstanding of creativity. A kindergarten child's imaginative and nonconforming ways of adding to or changing the teacher's dittoed drawings were considered signs of mental retardation. After being treated as a mentally retarded child for years, pediatricians affirmed that the child was of above average or superior intelligence but it was extremely difficult to repair the damage done and enable the boy to achieve his potentialities.

In results obtained in studies of originality in 1967, Torrance defined a different developmental curve of creativity in each of six cultures. The most dramatic drops were found in the United States between the third and fifth grades. Some reasons for this decline in originality were determined to be sex stereotyping, pressure from adults to discontinue fantasy, and peer pressure. In each case, the child was confronted with the necessity to risk disapproval for nonconformity. As Torrance tested fourth-grade children, he was impressed by their inhibiting preoccupation with safety and their fear of making mental leaps.

Torrance (1965) questioned the assumption that drops in creativity in nine-year-olds were a purely developmental

phenomenon and were unchangeable. He found that elementary children who were rewarded for originality wrote stories which were longer, more original, and more interesting than their classmates who were rewarded for correctness. Only imaginative, creative teachers found ways to reduce the discontinuities in creative development which frequently meant that they violated existing school rules and policies.

In studying high-IQ and highly creative groups of adolescents, Getzels and Jackson found a bias on the part of teachers:

> "The data are quite clear-cut. The high IQ group stands out as being more desirable than the average student, the high creativity group does not. Even though the scholastic performance is the same, the high IQ students are preferred ...." (Getzels & Jackson, 1962, pp. 31, 32)

These findings were replicated in the elementary school by Torrance who stated:

> "Two of the most consistent findings are for the high IQ pupils to be better known by their teachers and to be considered more desirable as pupils than the highly creative subjects." (Torrance, 1959, p. 66)

Sex Differences in Risk-taking Behavior

Cantor (1975) in a review of literature on children's conformity behavior which involved twenty-two studies published found ten studies with effects obtained involving interaction of sex with other variables. The

one clear outcome of the studies was that there was greater conformity in girls than in boys.

Torrance (1959) selected top-scoring boys and girls on a test battery of creativity thinking and compared them with a group of control children. Divergent-thinking girls were less frequently chosen by their peers, but being divergent did not influence the popularity of the boys. Seemingly, there was more pressure for conformity by girls than by boys.

Walberg (1969) studied the performance of gifted girl students in the secondary school and found that they tended to be conforming, dependent, docile, and uninterested in risk-taking. He suggested that they inhibited their intellectual talent in order to conform to a feminine role which led to social approval. Pankove (1967) found a significant relationship between creativity and risk-taking when influence of intelligence was partialled out for boys only. There was no significant relationship for girls. Kass (1964) placed 6-, 8-, and 10-year-old children in a gambling situation and found that males took more risks.

Rudder (1972) found no significant relationship between either sex and risk-taking in a study in which she tested fifth graders in a middle-class community with

measures involving a game of chance and an academic task. Likewise, Strum (1971) found no sex differences in fifth graders who were measured by whether or not they risked answering wrong on an academic test.

Summary

In summary, risk-taking is an important aspect of creativity which often determines whether or not the individual will exhibit nonconforming behavior. Many teachers reward conformity and discourage nonconformity, making it difficult for students to exhibit divergent behavior in the classroom. Studies of sex differences in conforming behavior largely showed that girls were more conforming than boys.

CHAPTER III

METHODS OF PROCEDURE

The description of methods of procedure includes (1) Design of Research, (2) Research Instruments, (3) Subjects, (4) Method of Data Collecting, and (5) Methods of Data Analysis.

Design of Research

This research utilized multiple approaches to data collection: teacher judgment, subjects' self-rating, and standardized testing. Hypotheses one, three, four, and five dealing with the relationships between IQ, creativity, and risk-taking were tested by the Spearman's rho measure of association. Hypothesis two was tested by the Chi-Square test of independence to determine if there were a sex bias in selection of subjects. Hypothesis six was tested by an ANOVA to determine if rating of creativity varied between grades.

Research Instruments

The Renzulli-Hartman Scale of Creativity

The Renzulli-Hartman Scale of Creativity (Appendix D) was developed for elementary students to provide a more

objective and systematic instrument to be used in guiding teacher judgment in the identification process for gifted children. The Scale of Creativity was constructed after a comprehensive review of the literature dealing with characteristics of creative students. All scale items included in the instrument were supported by common agreement between at least three studies. Coefficient of stability was determined to be .79 and interjudge reliability .91 (Renzulli et al., 1976).

The Pennsylvania Assessment of Creative Tendency (PACT)

The Pennsylvania Assessment of Creative Tendency (Appendix E) was designed for young children (K-3 grades) in 1974 under the auspices of Research for Better Schools and measures risk-taking attitudes. It is a scale designed on the assumption that divergent or creative thinking is not only a cognitive but an affective phenomenon. The PACT relates beyond the .01 level of significance with the widely used Minnesota Test of Creative Thinking (Rookey, 1977). Through Project ASCENT, a federally funded program for gifted children, the scale was normed in 1978 on six hundred kindergarten through third-grade students in three schools in piedmont North Carolina (Appendix F).

The Slosson Intelligence Test

The Slosson Intelligence Test is an individually administered short form of the Stanford-Binet Intelligence Test. Correlations between the two tests are reported in the .90 range over a ten-year span of time (Steward & Jones, 1976).

Subjects

The total sample for the research study was 468 children in eighteen heterogeneous classrooms located in schools in three different school systems in piedmont North Carolina. One school was chosen in each of three geographic settings: rural, small town, and urban (Appendix B). All teachers of kindergarten through third grade were asked to participate. From those volunteering, six were randomly selected at each school. At least one and no more than two teachers at each grade level within a school were selected. Seventeen female teachers and one male teacher participated in the study.

After receiving training in the traits of creativity to be measured, each of the eighteen teachers chose six children in his/her classroom whom he/she considered to be the most creative. Each teacher then rated the selected six on the Renzulli-Hartman Scale of Creativity. Children scoring at or above the mean (25) for gifted populations

were selected as subjects. Forty-eight subjects were selected in this manner. One teacher had no children who scored above the required score (25) and, therefore, her classroom was not represented in the study.

TABLE 1

Screening Sample

Schools	Teachers	Classroom Students	Highly Creative Sample for Further Testing
Rural (1)	6	156	36
Small Town (1)	6	156	36
Urban (1)	6	156	36
Total 3	18	468	108

TABLE 2

Descriptive Data of Subjects
(Scoring above Mean (25) for Gifted)

Grade	Subjects	Male	Female
K (5)	18	4	14
1 (4)	10	4	6
2 (4)	9	4	5
3 (4)	11	3	8
Total 17	48	15	33

IQ

Total Ave. = 120.15 Ave. Male = 121.20 Ave. Female = 119.10

Method of Data Collection

Teachers were trained to administer the Renzulli-Hartman Scale of Creativity before their selection of students for rating. All teachers participating in the study attended a training session including an explanation of the behavior associated with the characteristics measured and a discussion of the administration and scoring of the Scale of Creativity. The teachers were then instructed to administer the scale to six students in their classroom whom they considered to be the most creative. From the original group selected (108 students), 48 subjects who scored at or above the mean (25) for gifted populations qualified for the study. The Slosson Intelligence Scale was administered to the subjects by the researcher unless it had been administered within the previous two years by school personnel. The PACT was given to the subjects within two weeks following the rating by teachers on the Renzulli-Hartman Scale of Creativity. It was administered individually to kindergarten children and in small groups to children in grades one through three.

Method of Data Analysis

The Spearman's rho method of analysis was applied to the examination of the relationship between IQ,

teacher rating of students' creative ability (R-H Scale of Creativity), and subjects' self-rating of risk-taking (PACT). A Chi-Square test of significance was applied to the number of males and females chosen by teachers as highly creative. A one-way analysis of variance (ANOVA) was used to determine whether or not there was a significant difference between means of the different grade levels (K, 1, 2, 3) on the R-H Scale of Creativity.

CHAPTER IV

ANALYSIS OF DATA

The analysis of data is divided into five categories: (1) Creativity and Risk-Taking, (2) Male and Female Distribution of Subjects, (3) IQ and Risk-Taking, (4) Creativity and IQ, (5) Risk-Taking and Other Traits of Creavitity, and (6) Grade Level and Creativity. The level of significance chosen for analysis was $p < .05$.

Creativity and Risk-Taking

Table 3 summarized the results of testing the null form of hypothesis one: there is no relationship between teachers' rating of creativity and subjects' self-rating of risk-taking.

TABLE 3

Analysis of Creativity and PACT Scores

Variable	n	Mean	Median	Std. Dev.	Min.	Max.
Creativity	48	31.48	30.50	4.56	25.0	40.0
PACT	48	24.19	24.00	3.87	12.0	32.0

Spearman Correlation Coefficient

	PACT
Creativity	- 0.20763*

* $p > .05$

The lack of significant difference between the two measures ($p > .05$) supported the null hypothesis; that is, there is no relationship between teachers' rating of creativity and subjects' self-rating of risk-taking.

Male and Female Distribution of Subjects

A chi-square test of significance was applied to null hypothesis two: there is no difference in the rating of creativity between sexes. Results were summarized in Table 4.

TABLE 4

Analysis of Male and Female Distribution of Subjects

Sex	Obs.	Exp.	χ^2
M	15	24	6.95*
F	33	24	

* $p < .05$

The significant difference between the two measures ($p < .05$) did not support the null hypothesis. Therefore, the alternative hypothesis was accepted; that is, teachers rate females as highly creative more often than males.

IQ and Risk-Taking

The Spearman's rho test of association was applied to null hypothesis three: there is no relationship between subjects' IQ and their risk-taking attitudes. Results were summarized in Table 5.

TABLE 5

Analysis of IQ and PACT Scores

Variable	n	Mean	Median	Std. Dev.	Min.	Max.
IQ	48	120.15	119.00	12.58	95.0	151
PACT	48	24.18	24.00	3.86	12.0	32.00

Spearman Correlation Coefficient

	IQ
PACT	-0.06239*

* $p > .05$

The lack of significant difference between the two measures ($p > .05$) supported the null hypothesis; that is, there is no relationship between IQ and subjects' self-rating of risk-taking.

Creativity and IQ

The Spearman's rho test of association was applied to null hypothesis four: there is no relationship between IQ and creativity. Results were summarized in Table 6.

TABLE 6

Analysis of Creativity and IQ Scores

Variable	n	Mean	Median	Std. Dev.	Min.	Max.
Creativity	48	31.48	31.50	4.56	25.0	40.0
IQ	48	120.15	119.00	12.58	95.0	151.0

Spearman Correlation Coefficient

	IQ
Creativity	0.28833*

* $p < .05$

The significant positive correlation between the two measures ($p < .05$) did not support the null hypothesis. Therefore, the alternative hypothesis was accepted; that is, there is a positive relationship between IQ and creativity.

Risk-Taking and Other Traits of Creativity

The Spearman's rho test of association was applied to null hypothesis five: there is no relationship between risk-taking and other traits of creativity. Results were summarized in Table 7.

TABLE 7

Analysis of Risk-Taking and Other Traits of Creativity Scores

Variables	n	Mean	Median	Std. Dev.	Min.	Max.
Other Traits	48	28.70	28	3.8	22.0	36.0
Risk-Taking	48	2.77	3	1.0	1.0	4.0

Spearman Correlation Coefficient

	Other Traits
Risk-Taking	0.65148*

* $p < .05$

The significant correlation between the two measures ($p < .05$) did not support the null hypothesis. The alternative hypothesis was accepted; that is, there is a positive relaship between risk-taking and other traits of creativity.

Grade Level and Creativity

An ANOVA was applied to null hypothesis six: there is no difference in creativity between grades. Results were summarized in Table 8.

TABLE 8

ANOVA of Grade Level and Creativity

Dependent Variable: Creativity

Source	DF	SS	MS	F Value	PR>F	R-Square
Model	3	25.58	8.53	0.39*	0.7574	0.26
Error	44	950.40	21.60	STDEV	CREATM	
Corrected Total	47	975.98		4.65	31.48	

* $p > .05$

The lack of significant difference in creativity between grades supported the null hypothesis; that is, there is no difference in creativity between grades.

CHAPTER V

RESULTS

The results of this research study are summarized under three topics: (1) Interpretation, (2) Relationship to Previous Research, and (3) Implications of the Findings.

Interpretation

The results of statistical analysis supported null hypotheses one, three, five, and six. Null hypotheses two and four were rejected.

Hypothesis 1

Nonsignificance of Spearman's rho correlation coefficient indicated no relationship between teachers' rating of creativity and subjects' self-rating of risk-taking. Subjects whom teachers rated high on creativity were not the same subjects who rated themselves high in risk-taking. The findings indicated that subjects' attitudes toward risk-taking had no bearing on teachers' perceptions of their creative characteristics.

Hypothesis 2

A chi-square analysis of male and female distribution of subjects revealed a significant difference in favor of females. Thirty-three females and fifteen males were rated superior on creativity by teachers.

A break-down of the distribution of males and females by grade level is depicted in Table 9.

TABLE 9

Male and Female Distribution by Grade Levels

Grades	Subjects				Total	
	NM	%M	NF	%F	N	%
K	4	22.2	14	77.8	18	100.0
1	4	40.0	6	60.0	10	100.0
2	4	44.4	5	55.6	9	100.0
3	3	27.3	8	72.7	11	100.0
Total	15		33			

Hypothesis 3

Examination of the Spearman's rho analysis revealed that subjects who rated themselves high in risk-taking attitudes on the PACT were not necessarily the same as high IQ subjects. The mean IQ for the group was 120.15 which

fell into the superior range. IQ scores ranged from a low of 95 to a high of 151. There was no significant difference in the average male IQ (121.10) and female IQ (119.20). Likewise, there was no significant difference in means between the male PACT (23.47) and the female PACT (24.51). Thus, a generalization of there being no difference in IQ and risk-taking attitude and no sex difference in IQ and risk-taking can only be made for children in grades K-3 in the superior range of intelligence.

Hypothesis 4

Examination of the Spearman's rho correlation between teachers' rating of creativity and IQ revealed a positive relationship. Teachers perceived young children with higher IQ to be more creative than those of lesser IQ. There was no significant difference in teachers' rating on creativity of male subjects ($\bar{x}$ = 32.14) and female subjects ($\bar{x}$ = 32.18).

Hypothesis 5

The analysis of risk-taking (item 4) and all other traits of creativity by use of Spearman's rho correlation showed a positive relationship. Teachers rated risk-taking the same as other traits. They perceived the children to exhibit risk-taking to the same degree that they exhibited other creative characteristics.

Hypothesis 6

The ANOVA of Creativity scores by grades revealed no significant difference in means ($K\bar{x}$ = 30.44, $1\bar{x}$ = 32.20, $2\bar{x}$ = 32.55, $3\bar{x}$ = 30.81). Teachers at all grade levels rated creativity the same.

Relationship to Previous Research

In attempting to determine the relationship of IQ and creativity in children of superior IQ, this study was related to previous studies of Getzels and Jackson (1962) and Torrance (1960). Unlike the previous studies, teacher judgment rather than standardized tests was relied upon to measure creativity, and younger children were tested. Findings of the previous studies and this study were inconsistent. In this study, there was a relationship between creativity and IQ not found in the Torrance study between the Stanford-Binet IQ and creativity.

Sex differences in risk-taking have been examined by means such as standardized tests and observation with upper elementary school children (Torrance, 1959; Walberg, 1969; Pankove, 1967; Kass, 1964; Rudder, 1972; and Strum, 1971). This study relied on teacher judgment and self-rating of attitude toward risk-taking in younger children.

The tendency toward greater conformity by girls was demonstrated by previous studies with upper elementary school children (Torrance, 1959; Walberg, 1969; Pankove, 1967; and Kass, 1964). This study analyzed sex differences in risk-taking of younger children and discovered no differences.

Implications of the Findings

The results of hypothesis two tested in this study indicated that a bias existed in teachers' selection of students for rating as highly creative. Females were selected in a ratio of two to one. A possible explanation for this bias is that teachers prefer conforming students and more girls than boys conform to teachers' expectations.

No sex differences were found in the study on any of the measures. The boys selected resembled the girls in IQ, creativity, and risk-taking attitude. Any differences were possibly eliminated in the selection process by teachers' not selecting as many males and females.

One implication of the evidence that no relationship existed between teachers' rating of creativity and subjects' attitude toward risk-taking is that many children would like to engage in creative behavior but do not do so in the presence of the teacher. Another

implication is that young children's attitudes toward risk-taking are a separate means of identification and more valid than teacher judgment. It is possible that risk-taking is an indication of creative abilities and teachers' rating of creativity depends upon high IQ and achievement. This implication is supported by the lack of any relationship between IQ and risk-taking attitude.

The fact that IQ and creativity showed a positive correlation implied that teachers chose high-IQ children and rated them as "highly creative."

CHAPTER VI

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

This research study examined the traditional approaches to assessment of giftedness with the purpose of adding another dimension to the process of identification of young gifted children. A model of identification was proposed which gave equal weight to cognitive, affective, and creative domains.

The IQ was questioned as an adequate measure of giftedness due to its limitation in measuring nonconvergent thinking and affective traits. Alternative measures such as Piagetian tests and observation of behavior were reviewed.

Creativity was established as an important aspect of giftedness. High-IQ and high-creative abilities were supported by past research (Thurstone, 1962; Meeker, 1976; Guilford, 1967) as separate entities. Risk-taking was proposed as an affective trait of creativity which represents a basic drive in the primary creative process

characteristic of children in the intuitive stage of development.

The attitudes toward risk-taking examined revealed a bias by teachers toward the conforming child. Prior studies of sex differences in risk-taking behavior largely showed girls to be more conforming than boys.

The relationship of risk-taking attitudes of children in kindergarten through third grade and their IQ and creativity traits as judged by teachers were researched. Results of analysis of scores on measurement instruments supported the hypothesis that risk-taking was separate from IQ and teachers' rating of creativity. The research study also revealed a teacher bias in selection of females as highly creative more often than males.

Conclusions

The results of this research study supported the following conclusions for children of superior IQ in grades K-3 in piedmont North Carolina.

1. Teachers are biased in favor of females in selection of highly creative in a greater than two to one ratio over males. The researcher concluded the reason for this bias to be the greater conformity of females as supported by prior studies, since the males selected for the study equaled the girls

in IQ, creativity, and self-assessment of risk-taking. Any differences between sexes were eliminated in the selection process when teachers rated convergent-thinking students higher on creativity.

2. Student self-assessment of risk-taking is a separate entity from IQ and from teacher judgment of creativity and a more valid way of measuring children's creative tendencies. The positive correlation of IQ and teachers' rating of creativity indicated lack of measurement of separate entities using these two instruments.

Recommendations

1. A multiple means of assessment of giftedness for young children should be used so that equal weight is placed on cognitive, affective, and creative measures as well as on formal and informal means of testing.
2. Self-assessment instruments should be used to provide information on attitudes of children toward risk-taking.
3. Only teachers who value creativity and are trained in observation of creative traits should participate in assessment of creativity.

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APPENDIX A

Identification of Gifted and Talented,

Division for Exceptional Children,

North Carolina State Dept. of Public Instruction

July, 1979

APPENDIX A

IDENTIFICATION OF GIFTED AND TALENTED

Division for Exceptional Children
State Department of Public Instruction
July, 1979

Programs for the Gifted and Talented

1. Definition: Gifted and talented students are defined as those students who (1) possess demonstrated or potential intellectual, creative or specific academic abilities and (2) need differentiated educational services beyond those being provided by the regular school program in order to realize their potentialities for self and society. A student may possess singularly or in combination these characteristics: general intellectual ability; specific academic aptitude; creative or productive thinking abilities.

2. Identification Standards. Identification of students must be accomplished by multiple means. These methods include, but are not limited to, teacher, peer and/or creativity/divergent thinking; anecdotal records; and biographical data. No child shall be denied entry into the program on the basis of only one method of identification. Consideration must be given to the total minority populations in the school in making up the racial composition of the classes. Gifted children who are handicapped are not to be discriminated against in placement.

   Data on identification of gifted and talented students for placement into programs and service shall include the following:

   a. standardized achievement or aptitude total or subtest scores.

   b. an intellectual assessment score. Individual intellectual quotient tests, such as the Stanford-Binet Form LM or the Wechsler Scales, are preferred over group tests.

c. superior demonstrated ability in one or more content areas as indicated by grades or by demonstrated skills (products such as science projects, creative writing, etc.).

d. recommendations by one or more school personnel. Behavioral scales and checklists may be used.

Procedures for the Identification of Gifted and Talented Students, issued by the Division for Exceptional Children, must be used by all local educational agencies in student identification. The Student Identification Profile found in these Procedures shall be used to evaluate each student new to the program. A local administrative unit may, if desired, gather additional data (see Procedures for specifics allowable) for assessing students who have narrowly missed the cutoff point and to insure non-discrimination.

Permission to deviate from the Definition and Procedures can be given by the Director, Division for Exceptional Children.

PROCEDURES FOR THE IDENTIFICATION OF GIFTED AND TALENTED STUDENTS

I. General Information

According to the Rules Governing Programs and Services for Children with Special Needs, a "child with special needs" must have an annual review of the IEP to see that placement and service are appropriate. Each child will have an in-depth reassessment at least every three years. The Rules... and these Procedures will apply for the identification and placement of students new to the program.

The earlier the identification, placement and service the better. The statewide testing program in grades one, two, three, six and nine gives baseline achievement data in every school in the State. An administrative unit may retest a child following due process procedures, if desired, to

validate existing test data. Recommended tests can be found in An Identification Model[1] or in these Procedures. As a student progresses in the gifted and talented program from elementary grades into the secondary grades, more evaluation attention for placement can be given to demonstrated skills, individual performance and self nomination than to previously collected data. Task completion and academic success may carry more weight at this level than standardized test data.

Permission to deviate from the Definition and Procedures can be given by the Director, Division for Exceptional Children.

II. Identification Procedures

Identification procedures including observation, initial screening, referral, etc. are explained in Rules... . Those applicable to the gifted and talented program shall be followed.

In beginning the identification procedure, a pool of possible candidates will be developed. Suggestions in obtaining this pool could be the use of the "Teacher Observation and Recommendation Sheet" (An Identification Model, page 29), the listing a top percent of white students and non-white students (for example, a certain percent of each group), and/or self and parent referrals. Development of such a pool will insure that children who are gifted and talented, who are creative and productive thinkers, or who manifest gifted potentials will be included in the pool from which children will be evaluated for placement and service. Inclusion in the pool does not of itself constitute a formal student referral requiring parent notification. Careful data collection on all students in the pool to document that children who are culturally different or handicapped have not been discriminated against must be maintained. Using these

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[1]Cornelia Tongue and Chairman Sperling, An Identification Model, State Department of Public Instruction, 1976, pages 21-24.

Procedures and the included Student Identification Profile, the School-Based Committee will collect the data to be used to evaluate students in the pool and to identify those students eligible for the gifted program. Those students meeting the State criteria and cutoff point will be offered programs and services following the due process procedures outlined in Rules...

A. Achievement or Aptitude Test Data:

The chart below will be used to obtain the points a student receives on standardized achievement or aptitude test data. Total reading or total math scores or a composite score may be used depending on program goals. However, as a child is not necessarily gifted in all academic areas, discretion must be excerised in selection of test data to match the child's area of giftedness--for example, use math scores, not composite scores, to assess a child highly gifted in math alone. Serious consideration should be given to use composite scores for enrichment programs and appropriate subtest scores for content areas.

The statewide testing programs for grades one and two do not give a composite score. Use reading or math percentiles to reach the points a student will receive.

Achievement or Aptitude Conversion Chart: Use the statewide test data or other comparable tests of this type.

96% and up = 8 points
93% - 95% = 7 points
89% - 92% = 6 points
85% - 88% = 5 points
77% - 84% = 4 points

B. Intelligence Quotient Data:

An administrative unit has the option of using individual test data, which are preferred, or group test data. Individual test data are more discrete.

Intelligence Quotient Data Conversion Chart:

96% and up = 5 points
93% - 95% = 4 points
89% - 92% = 3 points
85% - 88% = 2 points
77% - 84% = 1 point

C. Performance Data:

Grades in a specific subject such as math or an average of academic grades may be used for student evaluation. Grade averages should refer to the past year of work at least. In classes not using numerical averages, the School-Based Committee will convert the grading system into percentiles or equate letters to this scale A=5, B=4, C=3.

If demonstrated ability/interest (such as science projects, creative writing products, etc.) is used rather than grades, this ability should be listed with a brief accompanying explanation (anecdotal records or biographical data). This option will enable a child successful in product production but lacking grade score success to receive consideration for service.

Evaluation in demonstrated ability/interest (superior, very good, etc.) will be compared with the average student's performance.

D. Recommendations:

The Renzulli-Hartman Scale to be used beginning grade 4 has been validated as an instrument valuable along with other data to identify gifted and talented students. Students are evaluated by professional personnel, usually teachers, who are familiar with them, on pre-determined characteristics of gifted child behavior in the area of ability to learn (academics), motivation and perserverance traits, creativity and productive thinking abilities, and leadership characteristics. Use of this instrument channels teacher opinion along the lines of what is a gifted child and helps to avoid lack of knowledge

of desirable characteristics or an opinion that is too openended. Use of this behavioral scale will reveal student behaviors in a broader vista than just academics. It is recommended that more than one person rate the student to avoid a single subjective opinion; an average of the personnel rating for the student could be used. Professional personnel need training in the use of this checklist to more accurately assess the student's abilities.

The four parts of the Renzulli-Hartman have certain numbers of behavioral characteristics being evaluated. Use the directions to ascertain the total points for each of the scales. On the Student Identification Profile (IV) mark an X in the appropriate score. To get the subtotal refer to the (5) to (1) figure at the top. Addition of these numbers will give the total points on the Renzulli-Hartman. Then use the conversion chart to get the points allowable towards the profile score of 23.

The Early Childhood Checklist to be used in grades K-3 will direct teacher attention in a parallel way to the Renzulli-Hartman, as it reflects similar student behaviors.

Use of these recommendations will provide the School-Based Committee with data on a personal level that may not be generally known.

After grade nine, checklists are not required, but may be used if desired, as more identification attention leading to placement will be given to student performance.

III. Maximum Points and Cutoff Score

Use of the Procedures and Student Identification Profile sheets will result in a maximum possible score of 23 points. All students who receive 19 points are to be offered programs and service. These Procedures

will mean that identification standards become consistent statewide.

At the secondary level, as performance becomes more important and school districts may decide not to use behavioral scales, the point system may be adjusted by either of these two methods:

A. Omit the behavioral scales, double the points for performance to keep the 23 total points, and use the same cutoff and option.

B. Omit the behavioral scales and use 18 total points with 14 points required for placement and 13 points for the option (see IV below).

IV. Identification Option

A local educational agency may re-evaluate all students who receive 18 points according to this formula:

> If a student's achievement or intelligence quotient score caused a lack of points, another appropriate test may be substituted taken from the list in An Identification Model, the Ross Test of Higher Cognitive Processes, or the Peabody Individual Achievement Test (PIAT) to ascertain if the student receives the necessary 19 points.

EARLY CHILDHOOD CHECKLIST (K-3)

		Usually	Sometimes	Never
1.	The child can put stories in his own words and enjoys sharing these with others.	____	____	____
2.	The child is able to create a story from a picture new to him.	____	____	____
3.	The child communicates easily with others.	____	____	____
4.	The child possesses self-confidence around peers.	____	____	____
5.	The child gets along well with adults.	____	____	____
6.	The child has a well-developed vocabulary.	____	____	____
7.	The child gets along better with older children than those of his own age, is sometimes aggressive and "bossy" with his age peers.	____	____	____
8.	The child gets involved and absorbed in a particular task and strives to complete it.	____	____	____
9.	The child adapts well to changing situations, is flexible.	____	____	____
10.	The child is easily bored with routine tasks.	____	____	____
11.	The child follows through with assigned tasks.	____	____	____
12.	The child is curious about many things and asks many questions.	____	____	____

	Usually	Sometimes	Never
13. The child is sensitive to beauty, likes music, art, movement.	____	____	____
14. The child can complete the missing parts of a familiar picture by drawing the parts in proper perspective.	____	____	____
15. The child exhibits good gross motor skills.	____	____	____
Subtotal	____	____	____
Weighted	x 2	x 1	x 0
	____	____	____

Total Score _____

Conversion Chart: (Use conversion chart)

25 to 30 positive responses = 5
20 to 24 positive responses = 4
15 to 19 positive responses = 3
10 to 14 positive responses = 2
Below 9 = 1

Points _____

APPENDIX B

Description of Schools

APPENDIX B

Description of Schools Included in the Study

There were three basic environments; rural, small town, and urban. The rural environment, south and east of Charlotte, was farmland which was sparsely populated with large distances between homes. Also, in this district, there were very few resources in terms of varied activities or varied interests. Most of the teachers grew up in this area of the state, went to school in the same area, and remained to teach there. Training was reasonably homogeneous, limited to the perceptions and activities of that particular region, and reflective of a particular set of values. There was a concern for conforming, with personal values remaining constant over long periods of time. Both the schools and the community expected children to grow up adhering to the standards of the rural community.

The second environment included in the research study was a small town located in the same county as the rural setting. Many of the rural characteristics were reflected in the town. Most of the people came from the same kind of background and for two or three generations had

had similar employment -- predominantly in the textile industry. The teachers' resources for training were limited by the area. Teachers were largely conservative in attitudes with a preference for traditional methods of teaching; parents were minimally involved, allowing the school to take the responsibility for educating their children.

The third research setting was in Charlotte, a major city in the Carolinas. The school was competitive with strong parental support. Many students were college-oriented, even at an early age. Also, there was a great deal of interest in students' gaining basic skills and an emphasis on convergent activities. Delineation of subject matter had resulted in fragmentation of activities and schedules. Many specialists within the system were available to teachers on a weekly basis but many available resources in the community were not being used. Teachers came from different areas of the state and country with a variety of experiences and levels of training. They were highly professional and open for further training.

APPENDIX C

Letter from E. P. Torrance

APPENDIX C

THE UNIVERSITY OF GEORGIA
COLLEGE OF EDUCATION
DEPT. OF EDUCATIONAL PSYCHOLOGY
ATHENS, GEORGIA 30602

325 ADERHOLD HALL

TELEPHONE: (404) 542-4110

September 14, 1980

Ms. Shirley Ritchie
College of Human Development and Learning
University of North Carolina at Charlotte
UNCC Station
Charlotte, NC 28223

Dear Ms. Ritchie:

Thanks for your letter of September 5 and your interest in my work on risk taking and creativity.

I regret to say that I have done no recent work in this area. In fact, I suppose my book Mental Health and Consturctive Behavior (1965) pretty well summarizes what I have done in this area.

If I have to put this in the framework of my recent thinking, I would have to place it in the "further reaches of creativity" discussed in the enclosed reprint.

Good luck with your new undertakings.

Sincerely,

E. Paul Torrance

E. Paul Torrance

APPENDIX D

Renzulli-Hartman Scale of Creativity

APPENDIX D

The Renzulli-Hartman Scale for Rating Behavioral Characteristics of Superior Students

Name _____ Date _____

School _____ Grade _____ Age _____ Yrs. Mos.

Teacher or person completing this form: _____

How long have you know this child? _____ months

DIRECTIONS: This scale is designed to obtain teacher estimates of a student's characteristics in the areas of creativity. The items are derived from the research literature dealing with characteristics of creative persons. It should be pointed out that a considerable amount of individual differences can be found within and therefore, the profiles are likely to vary a great deal. Each item in the scales should be considered separately and should reflect the degree to which you have observed the presence or absence of each characteristic. Please read the statements carefully and place an X in the appropriate place according to the following scale of values.

1. If you have seldom or never observed this characteristic.
2. If you have observed this characteristic occasionally.
3. If you have observed this characteristic to a considerable degree.
4. If you have observed this characteristic almost all of the time.

Space has been provided following each item for your comments.

Scoring

Add the total number of X's in each column to obtain the "Column Total".

Multiply the Column Total by the "Weight" for each column to obtain the "Weighted Column Total."

Sum the Weighted Column Totals across to obtain the "Score" for each dimension of the scale.

Enter the Score below.

CREATIVITY CHARACTERISTICS

1. Displays a great deal of curiosity about many things; is constantly asking questions about anything and everything.

2. Generates a large number of ideas or solutions to problems and questions; often offers unusual ("way out"), unique, clever responses.

3. Is uninhibited in expressions of opinions; is sometimes radical and spirited in disagreement; is tenacious.

4. Is a high risk taker; is adventurous and speculative.

5. Displays a good deal of intellectual playfulness; fantasizes; imagines ("I wonder what would happen if..."); manipulates ideas (i.e., changes, elaborates upon them); is often concerned with adapting, improving, and modifying institutions, objects, and systems.

6. Displays a keen sense of humor and sees humor in situations that may not appear to be humorous to others.

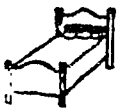
1	2	3	4

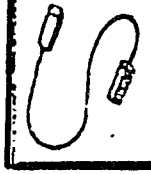
	1	2	3	4
7. Is unusually aware of his impulses and more open to the irrational in himself (freer expression of feminine interest for boys, greater than usual amount of independence for girls); shows emotional sensitivity.				
8. Is sensitive to beauty; attends to aesthetic characteristics of things.				
9. Is nonconforming; accepts disorder; is not interested in details; is individualistic; does not fear being different.				
10. Criticizes constructively; is unwilling to accept authoritarian pronouncements without critical examination.				
Column Total				
Weight				
Weighted Column Total				
TOTAL				

APPENDIX E

Pennsylvania Assessment of Creative Tendencies

Name_____ School_____ Grade___

 I like to go swimming.	Yes	?	No
 I like spinach better than ice cream.	Yes	?	No
 1. I would like to make up a new song.	Yes	?	No
 2. I would like to learn a new game.	Yes	?	No
 3. New places are fun to visit.	Yes	?	No
 4. I like to meet new classmates.	Yes	?	No

 5. Making up words is dumb.	Yes	?	No
 6. I don't like new games.	Yes	?	No
 7. Pictures of grass should be colored only green.	Yes	?	No
 8. You have to be a grown up to think up a good idea.	Yes	?	No
 9. It would be fun to take a picture through a goldfish bowl	Yes	?	No
 10. It is not fun to visit new places.	Yes	?	No

 11. Games are not fun if you lose.	Yes	?	No
 12. The more pieces in a puzzle, the better I like it.	Yes	?	No
 13. A good drawing has to look like the real thing.	Yes	?	No
 14. I like to make up words.	Yes	?	No
 15. It would be fun to draw a picture while standing on your head.	Yes	?	No
 16. Making up songs is silly.	Yes	?	No

APPENDIX F

Pennsylvania Assessment of Creative Tendencies - Norms Data

APPENDIX F

Pennsylvania Assessment of Creative Tendencies - Norms Data

1978

Sample Distribution for Grade Levels (All Schools)

Grade

K

2%	15%	36%	33%	11%	3%
2	20	48	44	11	3

0 0

7.51 11.83 16.15 20.47 24.79 29.11 33.43

Mean
($\bar{\sigma}$ = 4.32)

1

1%	19%	32%	35%	11%	2%
1	30	51	56	18	5

0

6.22 10.29 14.36 18.43 22.50 26.57 30.64

Mean
($\bar{\sigma}$ = 4.07)

2

1%	2%	15%	27%	40%	12%	3%
1	2	27	48	71	21	3

0

8.53 12.80 17.01 21.34 25.61 29.88 34.15

Mean
($\bar{\sigma}$ = 4.27)

3

1%	1%	10%	36%	31%	21%	0%
1	1	7	26	22	15	0

8.37 13.00 17.63 22.26 26.89 31.52 36.15

Mean

($\bar{\sigma}$ = 4.63)

Grand Mean = 20.63