To the Graduate Council:

I am submitting herewith a dissertation written by Deborah Ann Hino entitled "A Study of Differences among Intellectually Gifted Students Enrolled in Different Special Education Programs." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

William S. Verplanck, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Vice Chancellor
Graduate Studies and Research

A STUDY OF DIFFERENCES AMONG INTELLECTUALLY GIFTED STUDENTS ENROLLED IN DIFFERENT SPECIAL EDUCATION PROGRAMS

A Dissertation

Presented for the

Doctor of Philosophy

Degree

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Deborah Ann Hino

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DEDICATION

In memoriam

John W. Hino

December 16, 1920-July 16, 1980

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ABSTRACT

The present study investigated differences among intellectually gifted students enrolled in different special educational programs. The subjects were 62 fourth-eighth grade students enrolled in two rural school systems in East Tennessee. Forty-six of these subjects had been confirmed as intellectually gifted (IQ = 130 or above). Half of these 46 subjects were enrolled in a special educational program which emphasized indirect service, while half were enrolled in a special program which emphasized direct service. Both emphasized enrichment-oriented activities. The remaining 16 subjects had been referred for individual assessment but had not yet been confirmed as intellectually gifted.

Data were collected on the subjects' academic and non-academic functioning. Academic function was defined to include basic skills, the understanding of abstract academic concepts, and classroom work habits, and was assessed by a review of the subjects' group achievement test scores, a word association test, and a teacher-completed behavior rating scale. Non-academic functioning was defined to include personal interests, evidence of leadership skills, and quality of social interactions and was assessed by an individual interview, a word association test, and a teacher-completed behavior rating scale. The interview schedule,

the word association test, and the rating scale were designed specifically for this study.

No conclusive differences were found between the two groups of confirmed gifted students in either academic or non-academic functioning. This finding suggests that participation in either type of program has similar effects on intellectually gifted students' school-related functioning. Confirmed gifted students, when compared to unconfirmed gifted students, were found to be academically superior, to have a greater variety of personal interests, and to hold more formal leadership positions. In contrast, the unconfirmed gifted were rated by teachers as being superior in informal leadership skills and social interactions. These findings suggest that participation in either type of special educational program encourages continued above-average academic functioning and apparently has a positive effect on some aspects of non-academic functioning. The data also suggest that the unconfirmed gifted students may be talented in categories of giftedness other than academic and intellectual talent.

The arbitrary criteria established by the State of Tennessee Department of Education (i.e., IQ = 130 or above) may be inconsistent with the broader range of criteria actually used by teachers to identify gifted students. The question of whether a referral process which uses one set of criteria for referral and another for confirmation could

have a detrimental or discouraging effect on students and teachers arises. Also, by excluding some students who obviously have special talent in addition to above-average intellectual potential, legislators and educators are excluding precisely those students for whom enrichment-oriented programs were designed to benefit.

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CHAPTER I

AN OVERVIEW OF THE RESEARCH ON INTELLECTUALLY GIFTED CHILDREN

If asked to describe the typical gifted child, many people would describe a young Picasso brushing out a painting or a serious nine year old who seldom plays kickball because she is busy studying DNA research. Some people might base their description on a memory of a fellow high school student who they presume was gifted and who they remember as a skinny boy with glasses, a briefcase, and the nickname "Mr. Wizard."

In fact, few people could identify a "gifted" child on sight; gifted children, by and large, look just like other children. Yet these gifted children, the great majority of whom appear to be so average in many ways, have been described as our country's greatest resource. They are the individuals who, in theory, will one day shape our institutions, our values, and our culture. By virtue of their giftedness, they are presumed to possess the potential to contribute to society in ways no assembly of average persons can. To paraphrase a French proverb, one genius is different than the sum of much mediocrity. The gifted child possesses the ability and skill to advance society in whatever direction society may want to advance. Society's responsibility rests in helping the gifted child fulfill this promise.

Unfortunately, many potentially able persons do not realize their potential, cheating not only society but also themselves. We study the gifted, especially gifted children, in the hope that we can prevent this abortion of talent. If we are to progress as a society--and our society clearly values "progress"--we must nurture and utilize all available resources.

Psychology and education have devoted much time and effort to the study of intellectually gifted children on the rationale that they represent our country's greatest resource. Researchers have accumulated a great deal of information on the intellectually gifted child--who he is, what he is like in comparison to intellectually average children, how he can be identified, and how he should be educated.[1] The following review of the literature addresses each of these areas in order to provide the reader with a general understanding of the intellectually gifted child.

Historical and Contemporary Concepts of Giftedness

In 1869, Sir Francis Galton published one of the first systematic studies of intelligence, Hereditary Genius. In this work, Galton offered the world evidence that genius, which he defined as the ability to achieve distinction in

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[1]The personal pronoun "he" is used throughout this paper to refer to a single child, regardless of sex. The decision to use "he" is not meant to imply that all gifted children are male. In fact, in the present study, 56% of the subjects are females.

society, is inherited. Galton published the statistics he had collected on men of achievement in English society, i.e., men who held positions in the government, men appointed as judges, men credited with scientific discoveries. He noted that the proportions of low-, average-, and high-achieving men in a population followed the same general distribution as the known genetic traits of height and weight: most men clustered in the average range, while gradually decreasing numbers of men appeared in the upper and lower extremes. Galton documented that his men of distinction had a greater number of eminent relatives than would be expected by chance, just as tall men had a greater number of tall relatives than would be expected by chance. He also documented that eminent families produced fewer eminent members in each successive generation. He pointed out the parallel between this pattern and the fact that tall families produced fewer tall members in each successive generation. Accordingly, based on these statistics, Galton concluded that genius, the intellectual ability required to achieve distinction, is a genetically determined trait. This concept of giftedness as an innate ability, genetically determined, was accepted as fact by most members of the academic community.

Guided by Galton's conclusions, European educators began looking for a reliable, practical way to determine which children had inherited sufficient intellectual ability

to benefit from formal education and which had not. By 1905, Binet and Simon had developed a method of measuring potential for educational success. They compiled a series of tasks arranged hierarchically according to the age at which most children successfully completed the task. The child who was tested was assigned a mental age which indicated the extent of his intellectual development when compared to other children. Binet and Simon's test was quickly adapted as a measure of intelligence, a genetically determined quality. Even though the procedure originally was designed to identify the low-functioning child, it was quickly adapted to the study of intelligence at all ability levels. The Binet scales offered a reliable, systematic way to judge a child's potential which could be used to study genius as well as retardation.

Prior to the development of Binet's test, the study of childhood genius had been limited to descriptions of child prodigies recognized because of exceptional accomplishment at an early age (Whitmore, 1980). It was generally accepted that these children had been cursed by their inheriting an abundance of intelligence. Anecdotal reports of such children presented them as "freaks of nature," distinct from the rest of the human species. Lombroso's (1895) theories on childhood genius, widely read and accepted, postulated a genetic connection between genius and insanity. Binet's early writings on these child prodigies reflected the

popular belief that giftedness was accompanied by illness, social failure, and insanity. It was then widely believed that gifted children could excel only in one narrow area of mental ability, that they lacked general intelligence, and that they were apt to deteriorate into insanity at an early age (Hildreath, 1966). Binet's method for measuring potential offered the opportunity to study these children from a different perspective.

American Lewis Terman (1925) challenged this stereotype of the child prodigy. He noted that little objective data had been collected on the characteristics of gifted children, and that less data had been collected on the social and personality factors which allowed the promise of genius to be fulfilled. To remedy this situation, Terman (1925-1959) began his longitudinal work, the Genetic Studies of Genius, by identifying approximately 1,000 children as intellectually gifted. In 1916, Terman had published the Stanford revision of the Binet scales, in which he introduced the concept of the intelligence quotient. Terman calculated an individual's intelligence quotient (IQ) as the ratio of his mental age to his chronological age, multiplied by 100. Terman now considered a child to be intellectually gifted if his or her performance on the Stanford-Binet Test of Mental Ability (Terman, 1916) yielded an Intelligence Quotient, or IQ, higher than 99% of all children in his or her age group. By using his "objective" test to identify a

child's potential to achieve, rather than identifying any observable outstanding achievement, Terman ushered in a concept of genius which sharply departed from the concept of genius defined by Galton and others. Beginning with Terman's study, genius was equated with high IQ.

Hollingsworth (1926), in her own study of intellectual giftedness, defined gifted children as

> those who test much above average on standardized scales for the measurement of intelligence and also those who test much above average on scales for the measurement of special talents [p. 42, emphasis added].

She commented, however, that "little is known about the latter," and consequently limited her study to the intellectually gifted. Like Terman, Hollingsworth defined intellectual giftedness in terms of the intelligence quotient, including in her study only children "so gifted that not more than one child in a hundred falls within their range" (p. 42). This criterion translates to a Stanford-Binet IQ of 140 or higher.

Witty (1930) challenged Terman's definition of genius as equivalent to a performance on an intelligence test. He criticized Terman's neglect of such factors as drive, motivation, and special opportunities as determining factors in the nature and extent of achievement. Witty emphasized the limitations of the intelligence test in identifying the creative child, whom he also identified as gifted. He eventually would state that "the child whose performance is

consistently remarkable in any potentially valuable area might well be considered gifted" (Witty, 1940, p. 512). In challenging Terman's definition of genius, Witty also challenged the popular definition of intelligence.

The question whether intelligence is an unidimensional construct or a multidimensional construct and its various answers were reflected in the changing definition of giftedness. When such investigators as Spearman (1927), Thurstone (1938), and Guilford (1956) began to develop multidimensional models of intelligence, concepts of "genius" developed to reflect each model. Terman's understanding of genius had been based on his understanding of intelligence as an innate, fixed capability which could be described adequately in an IQ score. If intelligence was unidimensional, superior intelligence, or genius, also was unidimensional. In contrast, the contemporary models of giftedness postulated both cognitive and noncognitive facets, including creativity, leadership, task commitment and conceptual style. Many of these later models were inspired by Guilford's Structure of Intellect model (1956, 1959). Guilford suggests that "intelligence" can be conceptualized as having three dimensions--operations, contents, and products. Each operation acts on each kind of content and each kind of product to yield 120 distinct mental abilities. Each of these mental abilities is unique and must be evaluated separately. Guilford's model presented intelligence as a

multidimensional construct requiring many different measurement tools. In sum, it denies flatly the existence of "intelligence" except as a loose concept representing his 120 abilities.

The introduction of Guilford's model of intelligence was important because it legitimized multidimensional definitions of giftedness and directed researchers away from a single measure of intelligence. It encouraged researchers to continue their study of intelligence, but also prompted them to explore additional factors which they believed contributed to the realization of genius. Guilford's model precipitated a research shift from the description of the gifted individual to the understanding of what characteristics separate the genius who fulfills his potential from the genius who fails. Researchers became extremely interested in "creativity" as a factor contributing to genius (Albert, 1969). Torrance (1971) suggests that the reason for the shift in scholarly interest from "genius" to "creativity" was the growing recognition that the intelligence test did not adequately measure intelligence and that a high IQ did not predict outstanding achievement. Rather, the distinguishing characteristic of the successful person seemed to be originality or creativity. In this vein, educators and psychologists developed a model of giftedness which included both "intelligence" and "creativity" as contributing factors.

To explore the feasibility of this dual-faceted model of giftedness, Getzels and Jackson (1962) identified mutually exclusive groups of highly intelligent adolescents and highly creative adolescents for the purpose of studying academic achievement in each group. Getzels and Jackson developed their own measures of creativity, consisting primarily of tests requiring facility in dealing with verbal and numerical symbol systems and object-space relationships. Some instruments required rapid verbal responses while others required original responses to complex verbal situations (e.g., supplying the last line to a fable or determining how many mathematical problems could be solved based on a paragraph of information). Getzels and Jackson found that the creative adolescents' academic achievement was as high as that of their intelligent peers, even though the average IQ of the creative group subject was 23 points lower than that of the average high intelligence subject. Although the study was widely criticized for its definition of creativity and its method of identifying subjects, Getzels and Jackson did establish that factors other than intelligence can be effective predictors of outstanding academic achievement. Wallach and Kogan (1965) continued research on the two-facet model of giftedness by studying interactions between intelligence and creativity. They concluded that whatever creativity tests measure, it is different from what intelligence tests measure, and it interacts with different

levels of intelligence in different ways. Students judged to be high or low in intelligence or creativity achieved different levels of academic success, depending on their judged abilities in the other areas.

Recently, researchers have tried to broaden the concept of giftedness to include many different facets, echoing Witty's (1940) early definition of giftedness and Strang's (1960) idea that "giftedness" could take many forms, depending on the circumstances. Some of the models (e.g., Gallagher, 1961) differentiate between the intellectually gifted, the creative and talented, and the academically talented, but include all these groups as gifted. C. W. Taylor (1968) has proposed a model of giftedness which addresses six areas of talent: academic, creative (and productive), evaluative or decision-making, planning, forecasting, and communication. His model differs from other conceptualizations of giftedness in that it ignores the traditional content areas of science, art, and leadership and focuses instead on cognitive processes (Torrance, 1971).

The definition of "giftedness" used in federal legislation reflects the currently accepted concept of giftedness:

> Gifted and talented children means children, and whenever applicable, youth, who are identified at the preschool, elementary, or secondary level as possessing demonstrated or potential abilities that give evidence of high performance capability in areas such as intellectual, creative, specific academic, or leadership ability, or in the performing and visual arts, and who by reason thereof require

> services or activities not ordinarily provided by the school [Congressional Record, 1978]

This definition is consistent with a multidimensional model of giftedness in that it allows for exceptionality in five distinct areas, some cognitive and some non-cognitive. It evades the specific models of intelligence and of creativity, but by listing each separately, the definition is consistent with current thought that the two are different abilities. By defining giftedness both in terms of demonstrated abilities and potential abilities, it allows for giftedness to be identified at different times in a child's life. Although it is not perfect, this definition at least is consistent with contemporary thinking on the nature of giftedness.

Characteristics of the Gifted

Although discussions on the definitions of giftedness continue, much data have been collected on the characteristics of children identified as intellectually gifted. A large proportion of the information has been taken from one study--Terman's Genetic Studies of Genius (1925-1959). As noted previously, Terman conducted a large-scale, longitudinal investigation of the physical, mental, and personality traits of exceptionally gifted children and, through extensive follow-up studies, gifted adults. He investigated what intellectually superior children were like as children, what kind of adults they grew up to be, and what factors influenced their later achievements.

Based on individual intelligence testing, Terman identified 1,528 gifted subjects (857 males and 671 females) who met the minimum criterion for inclusion in the study by achieving a Stanford-Binet IQ equal to 140 or above. This group represented the top 1% of the juvenile population in California. Terman also identified approximately 500 intellectually average children in order to make reasonable comparisons between gifted children and their average peers.

Terman collected extensive information on each subject, including physical and developmental histories, reports on personal and educational interests, records of all books read over a period of two months, ratings of classroom and social behaviors, reports of medical exams, and results of seven tests of character. Terman concluded that the gifted children were superior to the average children and stated that

> the deviation of gifted children from the generality is in the upward direction for nearly all traits; there is no law of compensation whereby the intellectual superiority of the gifted is offset by inferiorities along nonintellectual lines [Terman & Oden, 1947, p. 29].

The Terman study has been criticized since its inception (Witty, 1930) for following a selection procedure which resulted in a sample heavily biased in favor of middle- and upper-class, urban Caucasians and for narrowly defining genius as a high IQ score. Regardless of these criticisms, however, Terman's data destroyed the popular conception of the gifted child as physically weak, socially unpopular, and

emotionally disturbed. As Terman himself predicted (1925), some of the original findings have been confirmed by further research while others have been refuted.

Before reviewing the physical, intellectual, and social characteristics of gifted children as described by Terman and others, it is important to note that few of the studies on the characteristics of the gifted present comparisons of gifted children with non-gifted children (Kaplan & Lotsof, 1968). Kaplan and Lotsof (1968) reviewed the existing literature reviews on the characteristics of the gifted and found that only 7 of the 45 articles referenced referred to any control group. For all of the criticism directed its way, Terman's study did attempt to provide comparative data about intellectually average children. Given the quality of the research on characteristics of the gifted, it is possible, and even probable, that much of the information on characteristics is not unique to the gifted but true of the general population.

Physical characteristics. Terman measured, weighed, and examined 500 of his gifted subjects and concluded that gifted children, on the whole, are physically better developed than their intellectually average peers (Terman, 1925). Terman's gifted group was taller, heavier, healthier, and more mature in their physical development. Hollingsworth (1926) confirmed Terman's findings in her own study but also pointed out that the range of heights and weights overlaps

considerably for the gifted, average, and below-average groups. Witty (1930) reports similar findings on physical development: "The physical status and general growth of the gifted group are undoubtedly above average" (p. 38).

Some contradictory data do exist on the physical development of gifted children, however. Thom and Newell (1945), for example, report that the high IQ child is at his own age level in physical development, not above. Recently, Frierson (1965) questioned the validity of Terman's conclusions, hypothesizing that the superior physical development of Terman's subjects was a function of high socioeconomic status rather than high IQ. To test this idea, Frierson compared gifted and average children in upper and lower socioeconomic groups and found no differences in physical development within each socioeconomic level. Gifted and average children in the upper socioeconomic group were essentially the same physical size as were gifted and average children in the lower groups. Frierson did find differences between all children at the upper socioeconomic levels and all children at the lower levels, with the upper socioeconomic children being taller, heavier, and healthier (i.e., superior in their physical development). These findings proved to be true regardless of intelligence quotient. Frierson concedes that gifted students appear to be taller and heavier when compared to national height and weight norms, but he attributes this finding to the greater frequency of upper-class children in the gifted population.

Although Frierson's data fail to provide support for Terman's conclusions of superior physical development, neither do they provide support for the unpleasant description of the gifted child as weak and scrawny. Frierson's data confirm that economic status is an important contributing factor in the physical development of all children, including the intellectually gifted.

Intellectual development. Gifted children are, by definition, intellectually superior. The specific areas of superiority, however, have been favorite topics of a number of investigators. Terman and Oden (1947) noted that intellectual differences appeared early in the lives of their subjects. Parents reported that their gifted child demonstrated his curiosity, memory, extensive fund of information, large vocabulary, and interest in numbers at an unusually early age. Hollingsworth (1926) states that the gifted display an early interest in reading and numbers, in managing everyday affairs, and in learning the exact meaning of words. Goodhart and Schmidt (1940) present a list of superior intellectual abilities that includes great curiosity; a wide range of divergent interests; a large, fluid vocabulary; a good memory; the ability to generalize, interpret and recognize relationships; the ability to use economy in work methods; and a strong sense of responsibility. Gallagher (1960) integrates the conclusions of several authors by stating that most authors would agree that the

gifted child's outstanding strengths are generally centered in the following abilities:

1) the association and interrelation of concepts;
2) the critical evaluation of facts and arguments;
3) the creation of new ideas and origination of new lines of thought;
4) the ability to reason complex problems through;
5) the ability to understand other situations, other times, and other people; to be less bound by one's peculiar environmental settings [Gallagher, 1960, p. 20].

Baker (1949) emphasized that the intellectual abilities of superior children differ both in quantitative and in qualitative ways. He contends that superior learners learn by complex associative methods rather than by direct rote drill and that they tend to look for the abstract or generalized rules governing situations.

Gallagher and Lucito (1961) address the issue of cognitive style as a function of intellectual ability by comparing gifted, average, and retarded children's cognitive strengths and weaknesses as measured by the subtests of the Wechsler scales. They found that the gifted excel in tasks requiring verbal comprehension skills, above and beyond their overall superior performance. Relative to their performances on other tasks, average children perform relatively better on tasks requiring memory and sequencing skills. Their abstract reasoning and verbal comprehension skills are relative weaknesses. Gifted students also display relative strength in abstract reasoning, or the ability to associate concepts. Namy (1967) completed a similar study comparing

gifted children with pseudo-gifted children--that is, children described as gifted by their teachers but scoring only in the high-average range on an intelligence test. He found that the pseudo-gifted children resembled Gallagher and Lucito's average group more than they resembled the gifted group. Their relative intellectual strengths lie in memory skills rather than reasoning skills. Namy concluded that the differences in cognitive abilities are reflected in differences in academic talents. In all likelihood, the pseudo-gifted were excellent students who memorized their lessons quickly, thus seeming to be gifted.

Academic characteristics. Terman, in order to determine the extent to which his subjects were accelerated in school, computed a progress quotient--the ratio of a child's actual grade placement to the typical grade placement for his chronological age. The average progress quotient for his entire gifted group was 114; thus, the average gifted child was accelerated 14% beyond the grade placement expected given his age. Additionally, many of the teachers surveyed indicated that gifted children merited further promotion.

Regarding specific academic subjects, Terman reports that teachers rated the gifted students significantly more competent than average students in debating, United States history, composition, literature, and ancient history. The gifted students were rated equally competent to the average students in penmanship, sports, manual training, painting,

and shop work. This pattern of academic strengths suggests that the gifted students excel in subjects requiring a high level of abstract thought.

Terman's gifted subjects demonstrated their academic talents equally well on more objective measures of their skills. Terman administered the Stanford Achievement Tests to a sample of the gifted subjects. The average achievement quotient equalled 144, indicating that the gifted subject was working at an academic level 44% above the average student in his grade. More than half of the gifted students scored two full academic years beyond their actual grade placement. Some students scored as high as three or four years beyond their grade placements. The gifted group's superiority was most evident in reading, arithmetical reasoning, and general information. It was least evident in computation and spelling.

Research conducted since Terman's study has emphasized the high general achievement of children with high IQ's. Gallagher and Crowder (1957), Hollingsworth (1926), Lightfoot (1951), Miller (1957), and Witty (1930) all present findings which support Terman's conclusions that the typical gifted student is academically talented.

When interpreting these research findings on academic characteristics, it must be remembered that the subjects in virtually all of these studies were identified as gifted on the basis of their intelligence quotients. The IQ is an

index representing a child's performance on a test originally designed to predict academic success. The fact that a high proportion of "gifted" students find success in school should not be surprising. The conclusion that most students with high IQ's are academically successful may be more a conclusion relating to the validity of the intelligence test than a descriptive characteristic of gifted children.

Emotional adjustment. In an article entitled "The Gifted Child--Facts and Fallacies," Witty (1948) stated, "The idea that gifted children are eccentric, queer, and emotionally unstable has been expressed again and again" (p. 4). In an effort to discount this myth, Witty presented a summary of the available data as contrary evidence. Only seven years later, Barbe (1955) was able to state, "There is general agreement among authorities that gifted children show superior personality and character traits" (p. 253). Indeed, most of the research on the emotional adjustment of the gifted child supports Witty's and Barbe's statements.

Terman (1925), by means of some ingenious, if questionably sound procedures, assessed the gifted child's tendency to overstate in reporting experiences and knowledge, the wholesomeness of his preferences and attitudes, his tendency to cheat when given the opportunity, and his general emotional stability. The gifted children's performances were superior to the control children's performances in all areas; the typical gifted 9-year-old scored as high as the

typical average 12-year-old on all measures. Terman also asked teachers to rate both the gifted and the average children on intellectual, volitional, emotional, aesthetic, moral, physical and social traits, and on mechanical ingenuity. More than half of the gifted group was rated above average on all traits except mechanical ingenuity. Terman commented on the one below-average rating by stating, "It is certain teachers were in error here" (Terman & Oden, 1947, p. 29), and by citing other test evidence that gave positive correlations of mechanical ability and intelligence.

Hollingsworth (1926) generally concurred with Terman's findings in her study of moderately gifted children. In her research on highly gifted children (IQ above 170), however, she comments that these very intelligent children have special adjustment problems. Hollingsworth suggests that these high IQ children are too intelligent to be understood by the general population. She mentions that the imbalance in these children's skills--the marked contrast between the body of the 8-year-old and the intellectual development of a 13-14-year-old--made it difficult for these children to find playmates.

The findings of Terman and Oden's (1947) follow-up study also are indicative of the gifted's generally good emotional adjustment. Terman and Oden documented that the gifted group as young adults had slightly lower rates of suicide and insanity and better marital adjustment than the

general population. These findings add support to the earlier conclusion that the intellectually gifted, as a group, are better emotionally adjusted than the intellectually average.

Responding to methodological criticisms of Terman's work as imprecise and subjective, a number of researchers attempted to address the issue of emotional adjustment by using more objective, standardized criteria, i.e., personality tests and more detailed rating scales. The results of these studies generally confirmed Terman's findings. The studies of the personalities of high IQ children consistently showed them to have fewer emotional problems than the average child (Gair, 1944; Gallagher & Crowder, 1957; Hildreath, 1966; Lightfoot, 1951). Lightfoot (1951), typical of this group of investigators, compared gifted children and retarded children by using tests and rating scales and found the gifted to be above average in adjustment while the retarded were below average. He found the gifted to be more dominant, more creative, protective, aggressive, and curious.

Other investigators abandoned the global concept of adjustment and instead examined specific personality and character traits. Independence as a personality trait has received much attention. Smith (cited in Gallagher, 1960) compared matched groups of gifted and average adolescents by having each subject, his teacher, and his classmates complete an interpersonal adjective checklist in order to

create a description of each subject. The gifted students consistently were described as more independent than their average peers. No differences were found in any other individual traits assessed by Smith, including no differences in interpersonal dominance, social responsibility, or cooperation. Lucito (1959) compared bright and dull children on their tendency to conform to peer pressure. He assigned his subjects the task of judging the lengths and positions of several lines, then provided them with false information about the frequency and correctness of other subjects' responses. He recorded the subjects' tendency to conform to the judgment of the group and concluded that the bright subjects were significantly less conforming than the dull subjects.

In an attempt to better understand why gifted children are seemingly so much better adjusted than their average peers, Bonsall and Stefflre (1955) completed an interesting, but often overlooked, study. These investigators compared gifted and average students on the usual emotional and personality traits. When all gifted students in their study were compared to all average students, the expected results were found in favor of the gifted's superior emotional adjustment. Gifted children were found to be superior in thoughtfulness, restraint, emotional stability, and objectivity. However, when the investigators controlled for socioeconomic background so that only gifted and average

children from similar backgrounds were compared, little or no differences in emotional adjustment were found. In fact, clear differences emerged between socioeconomic groups, regardless of the subjects' intellectual abilities. Bonsall and Stefflre questioned Terman's description of the intellectually gifted child, suggesting instead that the general emotional superiority Terman found only described children from the upper socioeconomic levels. Frierson (1965) also controlled for socioeconomic level in his study of gifted children, and also found no differences in emotional adjustment or in personality traits between gifted and average children within each socioeconomic group.

Social adjustment. Several questions have been raised concerning the social adjustment of the gifted child. In answer, Gallagher (1960, p. 33) states, "There is little or no question about the general social status of high IQ elementary level children. It is high!" He cites as support for this statement his own sociometric study (Gallagher, 1958) in which he documented that intellectually gifted elementary school students averaged more than six friendship choices while average students averaged fewer than four choices. Gallagher cites studies completed by four other investigators which yielded similar results as further support for his statement.

Gronland (1958) reviewed studies of the social adjustment of gifted students in a school setting and reported low

but positive correlations between intelligence test scores and sociometric status. Williams (1958), however, found no difference in social acceptance between gifted and average kindergarten and early elementary students. He concluded that the discrepancy between his and others' findings might be a function of the chronological age of his subjects but might indicate a need for re-examination of the presumed high social status of the gifted.

Gallagher (1960) explains the conflicting data on social adjustment by pointing out that many factors besides intelligence contribute to social popularity. He notes that even though the research tendency is to look at one factor at a time, social popularity probably is determined by the interaction of such factors as emotional stability, family position, propinquity, and mental ability. Along these lines, Tannebaum (1962) discovered that academic brilliance was neither socially acceptable nor socially unacceptable by itself, but interacted with such other factors as athleticness and studiousness in determining popularity. The most popular secondary students in his study were those judged to be brilliant and athletic, yet non-studious. The most unfortunate combination of these traits was brilliant, studious, and non-athletic.

Propinquity, or geographic nearness, has been found to be an important factor in determining the results of sociometric analyses. Gifted children are as susceptible to

this influence as average children. Gallagher (1958) and Miller (1956) both found that propinquity was a major determining factor in their subjects' friendship choices; children who lived near one another or sat near one another in class tended to choose one another as friends regardless of intellectual ability. Given this, it seems that socioeconomic level and teachers' preferences for seating children of similar academic ability together may be contributing factors in judging the impact of intellectual ability on friendship.

Mann (1957) investigated the social adjustment of 67 gifted students who spent half of the school day in the regular classroom and half of the day in a special workshop for the gifted. He found a strong tendency for children to choose friends of similar intellectual ability. Specifically, gifted children who attended the workshop chose as friends other gifted children who also attended the workshop. Mann conceded that these results may be interpreted as the tendency to choose friends based on their intellectual ability or may merely reflect the increased frequency of social contact between workshop participants. Goldworth (1958) compared the social acceptance of fast learners who participated in special workshops for one and one-half hours twice a week with fast learners who did not participate in the workshops. He found a slight trend in favor of the non-participating students' increasing in social acceptance, but the difference was slight.

Identification of the Gifted

Identification is a necessary first step in any study of gifted children and an important step in any educational program for gifted children. The criteria by which a child is deemed gifted are a function of the definition of giftedness and the scope of the special program for which he is being identified. If a school is interested in intellectual giftedness and has designed a special program to encourage children of high intellectual abilities, the school will attempt to identify all children who seem to possess superior intelligence, independent of any academic or artistic talent they may also possess. Likewise, if a school is planning a special program for mathematically talented youth, it will search out students who demonstrate high math achievement. Verbal intellectual ability and artistic creativity, in this case, become irrelevant.

The purpose of identification of the gifted is to help educators locate those children who need a special educational program to achieve at a level consistent with their ability. The identification process should be to determine what type of program would be most beneficial. Identification of the gifted is not a goal in itself; rather, it is a means to accomplishing the goal of providing each gifted student with an appropriate education.

A good identification process is both effective and efficient. Effectiveness refers to the identification of

the highest possible percentage of the total number of gifted hypothesized to be in a given population. Efficiency refers to the proportion of suspected gifted who eventually are confirmed as gifted (Pegnato & Birch, 1959).

The identification process usually is divided into two stages: screening and individual assessment. The purpose of screening is to identify all students who may possibly be gifted. Teachers look for students who demonstrate intellectual, social, and academic behaviors indicative of giftedness. Comprehensive screening procedures usually supplement teacher referrals with behavior checklists and standardized group tests. Students identified as possibly gifted are then assessed individually to confirm their giftedness. In most identification programs, the criteria for giftedness are predetermined. Individual assessment tools include individual intelligence tests, individual achievement tests, and, if relevant, a review of work samples.

Again, the definition of giftedness and the rationale for the special program (and, thus, the rationale for identifying students as gifted) determine the criteria to be used in designating a student as gifted and determine, in part, the assessment tools to be used. As of yet, no absolute criteria, beyond an arbitrary IQ score, have been established for identifying gifted children.

Screening process. Teacher referral is the most frequently used technique in the identification of gifted children (Marland, 1972). Most children who eventually are identified as gifted are first nominated, or referred, by their teacher. Logically, a teacher is in an excellent position to notice which students in her class seem to possess outstanding abilities. Teachers generally get to know their students fairly well over the course of the school year, especially at the elementary level.

Terman, in his search for 1,000 gifted students, asked teachers to nominate the three brightest students in their classes and the most intelligent student they had ever taught. Hollingsworth (1926) used a similar method in identifying gifted students for her study. Marland (1972) documented that teacher referral is the initial screening method most frequently recommended by experts in gifted education.

Even though teacher referral seems to be a logical way to identify gifted students, data on the effectiveness of this method indicate that teachers are neither effective nor efficient as referral agents. Terman discovered that teachers' nominations accounted for slightly less than 50% of the students whom he eventually identified as gifted. Most of the other subjects proved to be the youngest child in their class. Terman also had asked each teacher to identify the youngest child in her class on the theory that

a student who was chronologically younger than his classmates, yet able to keep up with academic work, must have had a mental age (and, thus, an IQ) that was above average. Terman reasoned that a child whose mental age was average or below would not be able to keep up with chronologically older students, would be retained, and thus no longer would be the youngest in the class. Terman found that slightly over 50% of his final sample came from this list of youngest students. He later wrote (Terman & Oden, 1947) that

> if you wanted to know who was the brightest child in a classroom your best single chance of finding out was not to ask the teacher but to take the name of the youngest child in the room [p. 230].

Lewis (1943) asked teachers to identify students in their classes who they believed were extremely mentally retarded, geniuses, or distinct problem children. No further definitions or guidelines were given; teachers were forced to respond based on their own individual norms of retardation and genius. Teachers identified over 7% of their students as retarded; they identified less than 1% as geniuses. Only 40% of the students whom teachers identified as geniuses had IQ's above 121; 27% of these students had group IQ scores of 109 or below. Lewis's findings echo Terman's doubts about teachers' abilities to identify high IQ students.

Pegnato and Birch (1959), in their landmark study comparing the effectiveness and efficiency of different identification methods, found that teachers failed to

nominate over 50% of the students who later were identified by IQ tests as gifted. Other estimates of teachers' success rates vary, but none is very impressive. Jacobs (1971) found that kindergarten teachers were able to identify only 10% of the gifted students in their class. Walton (1961) gave kindergarten teachers credit for correctly identifying 46% of their gifted students and also credited them with accurately identifying all of their highly gifted (IQ over 160) students. Cornish (1968) documented that sixth-grade teachers identified just 31% of the gifted students in their classes. These same teachers referred approximately the same number of gifted and non-gifted students for individual assessments.

In an attempt to account for teachers' low success rate, Gallagher (1960) suggests that teachers expect the gifted student to be enthusiastic in his approach to school, cooperative, and academically outstanding. Only children who conform to this model are referred. Teachers tend to deny that the underachieving child, the poorly motivated child, and the belligerent or apathetic child can be gifted, too. Teachers in general are not trained to look beyond academic success when identifying giftedness and hence overlook the mediocre student who is a great thinker. Jacobs (1971), looking for behavior patterns among the non-gifted children teachers had nominated as gifted, also concluded that teachers are aware of only a few of the gifted's

characteristics. Jacobs found that the referred students in his study who were not intellectually gifted were "verbally adept children who were very cooperative and appeared to elicit teacher approval by their actions" (p. 141).

Gear (1976) reports that teacher education on the characteristics of gifted children results in significant improvement in teachers' referral effectiveness. Her teachers nominated as possibly gifted 86% of the total gifted population. It is important to note, however, that their efficiency (i.e., the proportion of referrals confirmed as gifted) did not improve. Essentially, Gear's teachers were nominating a much larger number of students, which happened to include a larger number of non-gifted students.

Because teacher referral is the most frequently used screening method, it is important for teachers to be both effective and efficient. Obviously, students who are not referred cannot receive the benefits of participation in a special program. Most schools supplement teacher referrals with behavior rating scales and standardized test scores as alternate ways to identify possibly gifted students.

Behavior rating scales are most helpful in assisting teachers to identify the possibly gifted student who does not fit the "perfect student" stereotype. Gowan (1977) recommends the use of a behavior checklist as an economical way to improve teacher effectiveness.

Renzulli, Hartman, and Callahan (1971) have developed a widely used rating scale which is divided into four major sections: learning characteristics, motivational characteristics, creativity characteristics, and leadership characteristics. Renzulli et al. conducted an extensive review of the literature to identify and isolate observable behavioral characteristics in each of these four areas. Each characteristic had to be cited in at least three separate studies to be included on the scale. Teachers of both gifted and average fifth-grade students were asked to rate the students on each characteristic. Significant differences were found between the two groups on every section. Renzulli et al. also correlated students' scores on the rating scale with their scores on achievement tests, on the Torrance creativity scales, and on sociometric measures. They found significant positive correlations on all comparisons. Lowrance and Anderson (1977) studied correlations between students' scores on the Renzulli-Hartman scale and their IQ scores. They found that only the learning characteristics section was positively correlated with IQ.

Renzulli et al. carefully point out that their scale is designed to guide teachers in the identification process. It was not developed to replace existing identification procedures but rather as a supplementary means that can be used in conjunction with other criteria.

Many schools rely on standardized group tests to improve teachers' effectiveness in identifying gifted

students. Both group intelligence tests and group achievement tests are used, depending on the established criteria for giftedness.

Pegnato and Birch (1959) found that group intelligence tests identified only 50% of the intellectually gifted students in their study. Limitations of group tests include the fact that these tests are designed for the average student and fail to take into account the intellectual characteristics of the gifted child, specifically his abstract reasoning and divergent thinking skills. Ceilings on group tests often are too low to differentiate between the bright student and the gifted student. Group intelligence tests tend to be heavily biased in favor of verbal skills; gifted students with poor reading skills or with language deficits do not perform well on these tests. Group tests are similar to typical academic tasks and may prove to be anxiety producing for performance-conscious students. Students who are not highly motivated to achieve, who have a belligerent or apathetic attitude toward school, who suffer from an attention deficit, or who are emotionally disturbed tend to perform below their true ability level.

Martinson and Lessinger (1960) point out that the poor effectiveness rate associated with group tests is not always a function of the test. Gifted students often are overlooked when the minimum acceptable score is set too high in the screening stage. Pegnato and Birch (1959) found that

individual testing of students who achieved group IQ's of 130 or higher identified only 22% of the gifted population in a junior high. Also, only 56% of the students referred for individual testing under this criterion were found to be gifted. When referrals were limited to students with group IQ's of 120 or higher, 71% of the gifted population could be identified, with 27% of the referrals being gifted. Pegnato and Birch found that individual testing of students with group IQ's of 115 or above was the most effective screening procedure in that they were able to identify 92% of the gifted population using this criterion. However, only about 19% of all referred students were later found to be gifted, making this criterion rather inefficient.

Pegnato and Birch also evaluated the effectiveness of group achievement tests in identifying gifted students. Using the criteria of an achievement score three grade levels above grade placement as the indicator of giftedness, Pegnato and Birch were able to identify 79% of the gifted students. As with group intelligence tests, though, only 21% of all students referred by this method were found to be gifted.

Pegnato and Birch note that 97% of the gifted population can be identified by combining group intelligence scores and group achievement scores in one screening procedure. Unfortunately, the investigators do not present any information on the total number of children who would be

referred for individual testing using this method. According to the other data they present, it is possible to infer that over one-third of the entire school population would be referred for individual testing using the combined criteria. While this method may be very effective in identifying all the gifted students in a school, it cannot be considered very efficient.

Individual assessment. In the realm of intellectual giftedness, the individual intelligence test represents the final word in the identification of gifted children. It is the standard against which other tests and techniques are validated. It is the instrument used to confirm or deny the results of preliminary screenings. In the identification of creative children and children with special talents, however, the utility of individual intelligence tests has been questioned.

Terman, as the first investigator to use the intelligence quotient as the definitive criterion of giftedness, chose to identify as gifted only the top 1% of the juvenile population. Hollingsworth (1926) used essentially the same criterion, choosing subjects with Stanford-Binet IQ's of 140 and higher. With the introduction of the Wechsler scales (1944) and the concept of the deviation IQ, researchers redefined giftedness as achievement of a score greater than two standard deviations above the mean. This criterion includes the top 2.5% of the population and translates to

a Wechsler intelligence quotient of 130 or a Binet IQ (1960 revision) of 132.

Of course, the specific test score marking the line between gifted and merely bright is completely arbitrary. Otto (1957) states that any child who achieves an IQ equal to 120 or higher and who also demonstrates the promise of making a significant contribution to society is a potential genius and should be educated as such. Newland (1963) surveyed professionals in several academic disciplines on their opinions as to what percentage of the population should be identified as gifted. The responses indicated that most professionals consider the top 5%-8% of the population to be gifted. This percentage can be represented by Wechsler IQ scores of 120-125 and above, scores that are clearly below the generally accepted criterion for giftedness.

The primary advantages of individual intelligence tests include the possibility for interaction between the examiner and the child and the possibility for flexibility in administration. During an individual evaluation, the examiner can work to establish a good rapport with the child, lessening the negative effects of anxiety. He can observe the process a child uses to solve problems and question the child who gives unusual, but potentially correct, answers. The examiner can administer the test in the sequence most likely to yield an optimal performance, allowing

for concentration difficulties, distractions, etc. Individual tests can be analyzed in terms of intellectual strengths and weaknesses better than group tests can be analyzed. A child who is gifted in one area of intellectual functioning but not others can thus be identified.

Critics of intelligence tests point out that these tests do not actually measure "intelligence" at all but rather they predict academic success. The critics contend that intelligence tests do not adequately measure some of the theorized facets of intelligence, such as divergent thinking. Guilford (1959) says that this lack has great impact in the identification of the gifted because the gifted are most likely to excel in the areas intelligence tests do not measure.

Bruch (1969) and Meeker (1969) have attempted to modify the Stanford-Binet and the Wechsler tests to conform to Guilford's Structure of Intellect model of intelligence. Others, like Torrance (1969), have developed creativity tests to be used along with intelligence tests. To date, no evidence exists to show that divergent thinking in fact is related to creative production in the real world. Also, as Vernon, Adamson, and Vernon (1977) point out, no satisfactory evidence exists to suggest that Guilford's model of intelligence is more correct than any other model of intelligence, including Binet's.

Other critics accurately point out that intelligence tests are biased against disadvantaged populations, including

racial minorities, rural populations, and lower socioeconomic groups. This bias holds true for all ability levels, but scores are even more distorted at the extremes of the scale. Torrance suggests abandoning the intelligence test when attempting to identify gifted children in these populations and suggests evaluating them instead on the basis of whether or not they demonstrate characteristics associated with giftedness in disadvantaged groups. Torrance (1971) has compiled a list of characteristics which he says exist to a high degree among disadvantaged (primarily black) but talented children:

1. High nonverbal fluency and originality;
2. High creative productivity in small groups;
3. Adept in visual art activities;
4. Highly creative in movement, dance, and other physical activities;
5. Highly motivated by games, music, sports, humor, and concrete objects;
6. Language rich in imagery [p. 321].

In the identification of intellectually gifted children, individual intelligence tests remain the yardstick against which other identification tools are measured for effectiveness and efficiency. At the present time, children who are called intellectually gifted are, by definition, children who demonstrate superior intelligence as measured by an individual intelligence test. The criticisms of the tests used in psychology and education are valid; however, these tests remain the single definitive measure of intellectual giftedness.

Educating the Gifted

The rationale for providing special educational opportunities for the gifted child parallels the rationale for studying the gifted. Educators tend to cite potential benefits to the individual child, benefits to the school, and benefits to society as reasons for expending extra time, extra effort, and, one presumes, extra money on the education of the gifted child. Tuttle (1980), in his textbook on evaluating educational programs for the gifted, states that gifted children as a group possess some general characteristics which set them apart from most children and which require the formation of special programs. He echoes Ward's (1961) contention that

> the biological superiority of the gifted individual creates distinguishing behavioral processes which warrant a distinctively devised sequence of educational experiences [p. 80].

Vassar (cited in Tuttle, 1980) suggests that the gifted have special educational needs that include the need to use, develop, and understand higher mental processes; to have interchange and dialogue with their intellectual peers; to study and learn to appreciate diversity among individuals; and to learn to develop a lifestyle commensurate with their particular talents and abilities. Tuttle suggests that the gifted individual, given a program which provides instruction addressing these special needs, will reach far beyond the regular curriculum and achieve a higher level of life satisfaction.

Tuttle also suggests that a special program for gifted students benefits the entire curriculum and atmosphere of a school. At one level, many teachers experience a great deal of stress when faced with the responsibility of educating an intellectually gifted student. This stress is at least partially relieved by a special program designed specifically for the child. In theory, the reduction in stress contributes to an improved quality of teaching. Also, several educators have noted the increase in enthusiasm and positive attitude toward school in gifted students who participate in special programs. It is possible that this enthusiasm will spread to the rest of the students in a school and even to the teaching staff, countering the anti-academic tone of many schools

The benefits to society which may result from special programs for the gifted include improved leadership; advancements in science, education, and the arts; and a generally improved quality of life. Special programs designed around special abilities and needs can go beyond the acquisition of specific skills and bits of knowledge to focusing on problem-solving skills, strategies, and creative thinking. Ward (1961) points out that the adult roles of intellectually gifted children will typically involve the advancement of the culture rather than the mere participation in it. In regard to the desirability of special programs, Ward also states, "To occupy the gifted at lesser levels of [educational]

experience and in view of lower [social] expectations is to fail both the individual and society" (p. 81).

On a more pragmatic note, Kaplan and Lotsof (1968) insightfully note that giftedness is, technically, just one more category of exceptionality. They question the idealistic rationale for special educational provisions for the gifted given by such educators as Tuttle and Ward and suggest instead that giftedness has received the attention it has simply because the gifted present a problem in the education of the masses. They imply that the problem created by giftedness in the classroom is barely different from the problem created by retardation in the classroom. The average teacher, trained to deal with the average student, is threatened and scared by any student who is different, including the gifted student.

Regardless of whether the rationale for providing special services for the gifted is well-formulated and based on accurate data, education has been providing special services to the gifted since well before Terman's study. Many different approaches have been introduced over the years, each with unique strengths and weaknesses. The gifted students enrolled in these special programs have served as subjects for many research projects. The various methods of educating the gifted can be grouped into three categories according to the goal of the method and the administrative devices needed to implement it. These three categories are acceleration, segregation and enrichment.

Acceleration. Acceleration implies that a child with superior ability is promoted to higher classes or grades more rapidly than usual or that he is allowed to proceed through the steps of education at a faster rate than most children. Acceleration may be accomplished by a number of methods, including early school admission, more rapid movement through the first twelve grades, and advanced placement in classes traditionally offered to older students. When early school admission is the chosen method, students are admitted to kindergarten or first grade on the basis of their advanced intellectual, physical, and social maturity. In theory, permission for early admission may be granted to any child whose birthdate follows the official deadline for mandatory school attendance. In practice, early admission usually is limited to children who are no more than one year younger than their classmates.

More rapid movement through the first 12 grades may be accomplished either by grade-skipping or by grade-telescoping. Grade-skipping involves exactly what the term implies--the child skips over some grades or classes and is placed in a more advanced class. Grade-skipping usually is limited to skipping one year or a part of a year, usually at the elementary level. Grade-telescoping refers to the process of completing a given curriculum in less time than is usually allotted. The child does not by-pass some levels as in grade-skipping, nor does he ignore the "less important"

subjects. Rather, the rate at which new material is introduced is accelerated. Justman (1953) describes special classes in which gifted students complete the normal span of junior high in two rather than three years. Pressey (1962) describes an ungraded primary block as a way for some gifted children to complete the first three years of school in two years. Telescoping allows the superior student to use his ability to learn faster while covering the same academic material as his peers.

Advanced placement as a mode of acceleration includes both the school system's offering classes traditionally offered to older students (e.g., algebra at the junior high level or calculus at the senior high level) and the enrollment of gifted children in college classes full time. Stanley, Keating, and Fox (1974) have collected much data in the Study of Mathematically and Scientifically Precious Youth (SMSPY) as one example of a successful, advanced placement program which enrolls junior high school students in college classes. In the advanced placement option, the student either continues in school for the same number of years while studying advanced subjects or skips a number of years into a curriculum so advanced it is beyond the scope of the school. This option usually is offered at the junior high and high school levels.

Advocates of acceleration as an educational option include both Terman and Witty. Terman (1947) and his

associates concluded that accelerates are equal to or superior to non-accelerates in health and general adjustment and that many more accelerates were successful earlier in their careers. Terman also stated that "the influence of school acceleration in causing social maladjustment has been greatly exaggerated" (p. 275). Other advocates of acceleration base their support on the rationale that if a child has mastered basic skills in an academic area, it is both foolish and cruel to hold him back. Pressey (1963) points out that two years saved in elementary and high school may add two years to a professional career. He notes that most gifted students enter professional fields and thus spend a greater proportion of their lives enrolled in educational institutions. Many students do not complete their educations until they are in their late twenties or early thirties. The two years saved would allow them to embark on their hopefully illustrious careers two years earlier and begin contributing to society earlier. Lehman (1953) reports that a historical study of creative discoveries related to age reveals most creative work is done before the age of 35 and many important discoveries are made before the age of 30. This is further evidence against extending the length of training programs; the gifted individual's period of maximum creativity is being spent in school. Pressey, writing in 1949, also supports acceleration as a source of relief to crowded schools and suggests accelerating the top 20% of all students

in a school. Roth and Suchman (1974) join Pressey in supporting acceleration, pointing out that it is economically prudent to accelerate students. Acceleration does not require any additional staff and, in fact, reduces the total expenditure per child over the entire twelve years of education.

Critics of acceleration express concern that the gifted student's emotional and social adjustment will suffer as a result of his being accelerated. Although this concern is virtually always mentioned when acceleration is mentioned, research data indicate that the accelerate continues to enjoy excellent emotional and social adjustment.

Reynolds, Birch, and Tulseth (1962) in their review of the literature on early school admission state:

> It may be concluded, from the research . . . that early admission to school of mentally advanced children who are within a year of the ordinary school-entrance age and who are generally mature is to their advantage. Although there are needs for further research, there are few issues in education on which the research evidence now available is so clear and so universally favorable to a particular solution [p. 16].

Reynolds et al. cite numerous studies of early admission to school which use multiple criteria to judge the impact of acceleration. In all studies, admission was allowed only following individual psychological testing and careful evaluation of the child's general readiness for school, assessment of the child's social and emotional maturity, of the richness and extent of his preschool

experiences and of the attitudes of his parents towards education in general and early admission specifically. Hobson (1948) described the status of 550 underage children who graduated from high school between 1946 and 1955. There seemed to be no differences between the underage and other students in the extent of their extracurricular participation. Compared with their older classmates, the accelerated students were less often referred to school officials for emotional, social and personality adjustment problems. Mueller (1955) explored the idea that these students may have achieved even higher academic marks and may have become even better adjusted when their admission had been delayed. The results of his comparison of early admission students with students approved for early admission but who, in fact, entered school on schedule indicated that it is to the child's advantage to enter school at a younger age. Younger students achieved at a level equal to or better than students who entered school at the usual age on every measure.

Gallagher (1960), in a summary of research on acceleration, reported that it is

> difficult to find any study with negative effects of acceleration when such acceleration is part of a planned program and where the students' total program is reduced by two or less years [p. 113].

Bragda (1972) notes that teachers' attitudes toward acceleration are still unfavorable, regardless of the positive results of acceleration suggested by the research data. Bragda surveyed teachers on their attitudes toward early

admission and found that teachers feel early entrance students do not adjust as well to school as older students. Bragda pointed out the discrepancy between these teachers' expressed attitudes and the fact that they had rated all early admission students in their classes as well-adjusted. He suggests that this attitude is founded in part on teachers' lack of knowledge about the advanced social, emotional, and physical development of intellectually superior students.

Segregation. Segregation, or homogeneous grouping, refers to the grouping together of children of similar ability for instructional purposes. Segregation can be accomplished by grouping high ability students for part of the school day, for selected academic subjects, or for the entire school day. Segregation also can be accomplished through establishing special full-time classes in separate schools and through summer or Saturday classes.

Advocates of segregation claim that separate classes contribute to higher levels of academic achievement, relieve boredom, and encourage a healthier attitude toward one's own abilities. Ward (1961) states that grouping by ability for all or part of the day is highly desirable in that it increases the school's ability to help each child achieve academically at a level commensurate with his ability. Grouping, according to Ward, makes possible teaching and learning experiences that are not possible in heterogeneous classes.

Critics of segregation cite as their primary objection the lack of data indicating an advanced rate of academic achievement. They also express concern for the social adjustment of both the superior student and the average student. Specifically, critics cite the potential leadership vacuum created when the top students are siphoned off, the reduction in leadership opportunities for gifted students when they are segregated into one or two classes, the absence of peer role models for less talented students, the possible creation of an elitist society or an elitist attitude, and the negative influence on self-concept which may be experienced by the average and below-average student. Bettleheim (1965) even suggests that grouping inhibits social and personal growth as superior students must expend all their psychic energy in just keeping up.

If nothing else, research on homogeneous grouping is plentiful. Passow (1962) documents that the flow of studies about grouping began in the 1920's and reached a peak in the mid-1930's. During this era, segregation, or grouping, was the preferred educational intervention for both superior and slow students. Most of the studies concentrated on examining the academic achievement of heterogeneously and homogeneously grouped students.

Rock (1929), in an early critical analysis of the research on the effects of ability grouping on academic achievement, concluded that studies

> have failed to show consistent, statistically or educationally significant differences between the achievement of pupils in homogeneous groups and pupils of equal ability in heterogeneous groups [p. 6].

Gray and Hollingsworth (1931) used the Stanford Achievement Tests to add support to Rock's conclusions, demonstrating that the somewhat higher educational achievement was common to both unsegregated gifted students and segregated gifted students.

Some studies which appear to support acceleration were not well designed and present misleading information. Benson (1924), for example, compared a homogeneous class of gifted children with a heterogeneous class and found that the gifted class completed the work of three grades in two years. Freeman (1924), studying the same subjects, documented that levels of academic achievement were the same when students were matched on IQ and age. Freeman questioned the need for and the value of grouping to enhance academic achievement.

Turney (1931) reviewed 66 articles and books on ability grouping and concluded that most studies only added to our information on the nature and extent of individual differences. Turney indicates that the lack of differences reflects the fact that few educators had adapted instructional techniques to homogeneous populations. Turney states that there is fairly good evidence that differences in rate of academic achievement do occur when efforts are made to adapt instruction to the needs of different ability levels.

The White House Conference on the Education of the Gifted (1931) focused its study on the social adjustment of segregated gifted students. The conference summarized early research findings and presented data comparing high IQ students segregated by ability with high IQ students who were not segregated. Each student was rated by his or her teacher on leadership, self-assurance, desire for attention, seclusiveness, helpfulness, respect for self, respect for school, authority, sympathy for misfortune, and independence. No significant differences were found between the two groups on any trait. Consequently, the members of the conference concluded that segregation does not affect any of these traits in either a positive or negative direction.

Following more than ten years of research, the general conclusion was that segregation neither harmed nor helped the gifted student. At least one author had suggested that improvements in achievement could occur if teachers altered their teaching strategies to take advantage of the homogeneous nature of their segregated classes. Passow (1962) noted that research productivity dwindled sharply after the productive 1920-1930 period. Otto (1957) reports that he found no research studies on ability grouping published in the literature during the period between 1935 and 1950. Goodlad (1960), however, documents a sharp upswing in the publication of studies on grouping in the 1950's. He attributes this increase to renewed interest in gifted

education. Goodlad also comments, though, that the studies completed since the 1930's did not add to the precision of the conclusions or even to the clarification of the problem. Ekstrom (1959) published an extensive review of the literature published during the 1950's on ability grouping and concluded, as Rock (1929) and Turney (1930) had 30 years earlier, that improvements in achievement of students grouped by ability occurred only when the instructional methods were modified to match each level of ability.

In one of the few notable studies on academic achievement completed during the 1960's, Goldberg, Justman, Passow, and Hage (1961) compared broad range, medium range, and narrow range ability classes at the elementary levels by grouping together high, average, and low ability students in every possible single, double, and triple combination of the three categories. They collected data on academic achievement, learning patterns, social and personal relationships, motivation, self-concept, and attitudes toward others. Broad range classes (i.e., classes with all three ability levels) showed the largest average gains in achievement. When superior students were in the class, the academic gains of the average and below-average students were greater than the gains of the average and below-average students in classes without gifted students. Goldberg et al. note that segregating by ability may, however, have positive effects on academic variables not measured by standardized achievement tests.

Studies on social adjustment of segregated gifted students completed since the 1920's also confirmed earlier findings. Drews (1962) compared high, average, and low ability students' homogeneous and heterogeneous classes and found no differences in self-concept between any of the groups. Passow and Goldberg (1962) found that average students' attitudes toward themselves and toward more intelligent students were not affected by segregation. The gifted, on the other hand, tended to become more humble when working with students of similar ability. Their attitudes toward the less talented did not change.

The most recently published study on grouping echoes previous findings. Barker-Lunn (1970) found no differences in achievement in homogeneously or heterogeneously grouped English primary schools. She comments that this lack of difference may in part be due to the fact that at least half of the heterogeneously grouped classes' teachers conspicuously grouped their students by ability within the class. This practice, in effect, creates a homogeneous classroom environment and serves to negate any effects of heterogeneous grouping.

Enrichment. Although no single definition of enrichment is accepted by all educators, most would agree with Vernon, Adamson, and Vernon (1977) who define enrichment as the

> provision of some form of additional educational experience which supplements the regular classroom

> activities and is available for gifted students who are able to complete these (regular) activities more rapidly and competently than the majority of their classmates [p. 172].

Gallagher (1964) specifies that enrichment should be skill-oriented rather than content-oriented. Enrichment should develop the gifted child's special abilities, including the ability to associate and interrelate concepts, the ability to evaluate facts and arguments critically, the ability to create new ideas, and the ability to reason through complex problems.

Vernon et al. (1977) carefully point out that enrichment as an educational intervention differs from acceleration and segregation in that it is a teaching procedure rather than an administrative device. Enrichment can be introduced within the regular classroom as the primary mode of intervention, or it can be introduced as a teaching strategy within accelerated or segregated classes. Enrichment often is described as a "horizontal" approach to education, whereas acceleration and segregation are considered to be "vertical" approaches. A horizontal approach encourages students to explore topics at their own grade level in greater breadth than their peers do; a vertical approach encourages students to move through the steps of education more quickly.

At the simplest level, enrichment may mean nothing more than a shelf of books in the regular classroom to which the gifted child has access when he has finished his class

work. In its more complex form, enrichment may refer to a multidimensional, highly organized independent study project which encompasses all academic subjects in its scope and requires that the gifted child spend most of his time working on it. Whatever its format, enrichment may either be focused on a deeper study of the topics covered by all members of the class, or it may include study in areas not included in the general curriculum. Havighurst, Stivers, and DeHaan (1955) list ten points which represent the foundation for any enrichment program, regardless of complexity or focus:

1. There should be emphasis on creative and experimental activities
2. Emphasis on developing skills of investigating and learning
3. Independent work, involving initiative and originality
4. High standards of accomplishment
5. Opportunities for leadership and social adjustment
6. Individual attention from a teacher
7. First-hand experiences
8. Flexibility of organization and procedure
9. Extensive reading
10. Concern with community responsibility [p. 180].

Advocates of enrichment claim that it is the only educational strategy which is consistent with a multifaceted model of intelligence and which encourages the development of divergent thinking, independent work habits, creativity, and other non-academic abilities. These advocates state that if our definition of giftedness is multidimensional, our educational programs must address the various dimensions.

Advocates of enrichment often cite Bloom's (1956) Taxonomy of Educational Objectives as the rationale for their position. Bloom suggests a learning hierarchy categorized by cognitive, affective, and psychomotor tasks. The simplest learning involves stimulus-response patterns; learning becomes more complex when basic categorization is required and eventually progresses to high-level abstract reasoning and creative production. Enrichment advocates reason that gifted students, by virtue of their higher intellectual ability, can best learn through activities consistent with Bloom's most complex level of learning patterns.

Skeptics see enrichment as irrelevant to the general goals of education and imprecise in stating alternate goals. Gearheart (1972) claims that, in practice, the differentiation between enrichment and regular curriculum is minimal. He points out the teaching strategies are usually the same in both situations and that only the topics covered are different.

Stanley (1976) delineates four types of enrichment and presents arguments discrediting each type. He describes the first type of enrichment as "busy work," or enrichment that is merely a greater quantity of the same work required of the average student. He states that this type of enrichment is not enrichment at all but a behavior management technique used by teachers to forestall behavior problems. Stanley's second category is irrelevant academic enrichment.

This involves introducing special subjects or activities designed to enrich the gifted students' lives but which are irrelevant to the goals of education. Examples include a unit on Greek mythology or a special social studies class. Stanley concedes that irrelevant enrichment is better than busy work but points out that a class in Greek mythology does not necessarily alleviate a superior student's boredom in math class. The third category, cultural enrichment, introduces aspects of the performing arts or creative arts before they are generally available to the rest of the student population. Stanley claims that no defensible rationale exists for introducing such information at any particular educational level and again points out that a drama class does not alleviate boredom in math class. Stanley's final category, relevant enrichment, includes the introduction of advanced material or higher level treatment of in-grade topics in areas of the student's special aptitude. He admits that this option is markedly better than the other three in that it is purposeful, academic, and flexible enough to take into consideration individual needs. However, he criticizes the lack of an impact model describing the presumed effects of this type of enrichment against which programs can be evaluated.

In spite of educators' expressed support of enrichment as the preferred educational strategy to be used in educating gifted students, essentially no research on the

impact or the effectiveness of enrichment programs is reported in the literature. In 1961, Gallagher commented on this lack of evaluative research, commenting that he could find no evaluation studies at all. A review of Laubenfel's (1977) annotated bibliography reveals 36 articles on enrichment programs for the gifted, only 2 of which can be considered even quasi-evaluations. An extensive review of the literature from 1970-1981 likewise reveals no evaluation reports, other than those which give purely anecdotal data.

Renzulli (1976) attributes this lack of evaluation research to the absence of a defensible model of enrichment activities. He cites the lack of a model as an important contributing factor in the perpetuation of inappropriate learning activities and of programs which are not qualitatively different from the regular curriculum. Renzulli proposes the Enrichment Triad Model as a framework within which we can assess program effectiveness. Within this model, he proposes three learning levels, each with its own goals and objectives. Type I and Type II enrichment, General Exploratory Activities and Group Training Activities, respectively, are considered to be appropriate for all learners. These types of enrichment deal with strategies for expanding student interest and developing thinking processes. Type III enrichment, Individual and Small Group Investigations of Real Problems, is mainly appropriate for gifted students. Renzulli contends that the investigations

of real problems is the only way that gifted students can learn to apply the skills gained from Type I and Type II enrichment activities and thus gain practice in the roles they eventually will assume as society's creative problem solvers.

Several descriptions of enrichment programs that adhere to Renzulli's Enrichment Triad Model have been reported in the literature. These programs are evaluated only in terms of how well the program design conforms to the model. No information has yet been reported on the impact of participation in such a program on the students' general educational progress nor on their general social or emotional adjustment.

The Intellectually Gifted Child: A Composite Sketch

While each intellectually gifted child possesses many unique characteristics, he or she also shares with other gifted children a number of common traits and experiences. If it were possible to create a composite gifted child, choosing only these shared characteristics, he would be "the perfect child" by many people's standards.

This composite gifted child would be at least as tall and as heavy as most of his friends. He probably would be the oldest child in a small family. The probability is great that his father would be in professional or managerial work. His family would be described as middle- or upper-class and probably lives in an urban or suburban area. This

gifted child aspires to be a professional himself when he grows up.

The composite gifted child's academic achievement is above-grade level by several years or more. His achievement is excellent in spite of the fact that he may be among the youngest students in his class. He possesses an excellent vocabulary, which undoubtedly aids him in his school work, and possesses superior skills in abstract reasoning and critical analysis. Unlike the "bookworm" some adults expect him to be, the gifted child has more hobbies (especially collections) than the average child. His teachers rate him as average to above-average in physical skills.

The composite gifted child is emotionally intact and a social star. He has been described as emotionally mature for his years and as being of good moral character. He is more independent than the average child in that he is less influenced by peer pressure. Socially, he is both respected and well liked; many other students identify him as their friend.

In all likelihood, this composite child was identified as gifted following his teacher's referral to the school psychologist. His teacher first suspected that he may be gifted because he performed well on academic tasks and seemed to be very mature. Her suspicions were supported by his excellent performances on group intelligence and achievement tests. An individual intelligence test revealed that

his IQ is more than two standard deviations above average, confirming that he indeed is intellectually gifted by virtue of his high IQ.

The typical gifted child participates in some type of special educational program. He may be accelerated in one or more subjects, depending on his particular talents, and he may spend part of the school day in a class with other gifted students. He probably spends at least part of the school day working on enrichment activities. His teacher may provide him with special books and materials which are on a higher level than those given to his classmates, or he may be working on an independent study project on a topic not studied by his class. The gifted child will maintain his superior intellectual and academic skills and his good emotional adjustment on into his mid-life years.

This composite portrait represents more than half a century of research on the characteristics, identification, and education of the gifted child. Unfortunately, little of this research adequately addresses the importance of socio-economic level as a contributing factor in what we call "intellectual giftedness." Bonsall and Stefflre (1955) and Frierson (1965) demonstrated that clear differences between intellectually gifted children and intellectually average children fade when socioeconomic level is controlled. Their findings have implications for the conclusions psychology has made about the gifted child based on the research it has

done thus far. At the present time, Bonsall and Stefflre's caution that all of our information on the gifted child may actually be information about the upper-class child must be heeded. As Torrance and others continue to investigate the characteristics of gifted children in disadvantaged populations and continue to develop alternative identification procedures, we may be better able to interpret all available research data.

CHAPTER II

THE PRESENT STUDY

Statement of the Problem

The purpose of the present study is to explore differences in academic and non-academic functioning among intellectually gifted students enrolled in two different Special Education programs. The investigator will address these specific questions:

1. Do intellectually gifted students who participate in a special educational program emphasizing direct service to the child differ from intellectually gifted students who participate in a special program emphasizing indirect service (consultation) on measures of academic and non-academic functioning?

2. Do intellectually gifted children who participate in either special educational program differ from similar children who do not participate in a special program on measures of academic and non-academic functioning?

It is expected that children who participate in a program which emphasizes direct service will appear to be superior to students who participate in a program which emphasizes indirect service. It also is expected that children who participate in either special program will appear to be superior to children who do not participate in a special program on both academic and non-academic variables.

Rationale for the present study. A review of the literature on the education of gifted children reveals three major categories of special programming: acceleration, segregation and enrichment. Researchers have generated much data on the effects of participation in accelerated and segregated classes. These types of placement have been found to be generally beneficial to the gifted child's academic, social, and emotional adjustment. In contrast, virtually no studies are reported in the literature on the effects of participation in enrichment-oriented special programs (Gallagher, 1961; Renzulli, 1980). The few reports that do appear provide only descriptive information on the program's activities or compare students on such narrowly defined skills as math achievement or the ability to define science terms. As Renzulli (1980) points out, without data on the effects of enrichment programs, educators are hard-pressed to justify the continuation of special programs for the gifted.

In spite of this lack of data, many gifted children in Tennessee are being provided with various enrichment experiences within the public schools. This situation has come about, in part, because Tennessee Law 839, which mandates the free, public education of all handicapped students within the state, includes intellectual giftedness in the list of handicapping conditions which make a child eligible for Special Education services. The public schools are

required to provide intellectually gifted students, by virtue of their being "handicapped," with an appropriate educational program. Many school systems have interpreted "appropriate educational program" to mean "enrichment," or, at least, "enrichment-oriented programming."

The fact that Tennessee law requires school systems to provide these special services, along with the fact that a number of school systems choose enrichment as the appropriate educational strategy for their gifted students, creates in Tennessee a good opportunity to investigate the effects of participation in enrichment programs on intellectually gifted students. The present study was designed and implemented to take advantage of this opportunity and, in doing so, to begin answering the question of whether enrichment programs are beneficial to intellectually gifted students.

The Research Design

As often is the case in applied research, the design of the present study represents a compromise between an "ideal" design and some constraints of the real world. The ideal design for the present study would have been either true or experimental research. A true experiment would have answered the research question of whether students who participate in any special program differ from students who do not. This design would have randomly assigned students either to a group which was to receive special services or a

group which was to continue without special services. Differences between the groups could have been attributed to the effects of the program with reasonable confidence. A quasi-experimental design also would have been an appropriate way to investigate the research question of whether different special programs have differential effects. In this case, students would have been randomly assigned to one of two different programs, rather than randomly assigned to program or no-program options. Differences later found to exist between the two groups could have been attributed to differential program effects. The key to either a true or quasi-experimental design is the random assignment of students to a program.

The availability of suitable subjects in the greater Knox area, and the constraints placed on the investigator by state law, prevented the implementation of a true or quasi-experimental research design. Students in school systems which are committed to providing special programs for gifted students have been doing so for several years and generally are unwilling to alter their programs for the sake of research. These special programs originally were implemented with little thought given to assessing the effects of the programs on the participants. Thus, in order to answer the research question of whether different special programs have differential effects on gifted students, it was necessary to identify two similar groups of students who were already

participating in different programs. These two groups of students were found in the populations of gifted students enrolled in the Monroe County Schools and the Sevier County Schools.

In order to answer the question of whether participation in any special program is beneficial to gifted students (and also to interpret the comparison made between the two different programs), it was necessary to identify a group of gifted students who had not been participating in a special program. Ideally, this comparison group would have been comprised of already identified gifted students who had not received any Special Education services. In theory, such a group does not exist. The Tennessee Department of Education requires school systems to provide identified gifted students with a special program within 30 days of their being identified. Consequently, for the purpose of the present study, an alternative comparison group was identified which included students from both Monroe County and Sevier County who had been referred for individual testing for intellectual giftedness on the basis of teacher nomination and high group achievement test scores. These students, by virtue of their having been recognized as outstanding by their teachers, are probably more similar to the identified gifted students than the general school population is. Of course, in the present study, the students from each county were considered separately before being combined into one group.

In summary, the present study is a series of comparisons among pre-existing, non-equivalent groups of students. Two groups are comprised of students who have been certified, or confirmed, as intellectually gifted according to the guidelines established by the Tennessee Department of Education. All of these students have been participating in special programs for several years. The remaining two groups are comprised of students who have been referred by their teachers for evaluation for intellectual giftedness but who have not yet been confirmed as being intellectually gifted. Because their teachers have identified them as outstanding students, they are considered to be "unconfirmed gifted" for the purposes of this study.[1] Within this general structure, specific characteristics of the counties, the special programs, and the subjects determined what variables were to be research and what methods and materials were to be used to investigate them.

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[1]The unconfirmed students remained unconfirmed, even though it would have been desirable to determine their IQ's for research purposes. If any of the unconfirmed subjects had been found to be eligible for Special Education services following assessment for research purposes, the school systems would have been responsible for providing those children with special services within 30 days. At the time of the present study (early 1981), the Tennessee legislature was considering eliminating intellectual giftedness from the list of handicapping conditions. Neither school system's limited financial resources would be sufficient to provide quality services to newly identified students for the remaining few weeks of the school year. Also, both school systems preferred to have their own assessment specialists assess the referred students according to their already established schedules.

The counties. Monroe and Sevier Counties both are located approximately 40 miles south of Knoxville, in slightly different directions. Both are rural, mountainous counties, including small to medium sized towns and extremely isolated mountain communities. According to the Tennessee Statistical Abstract 1980 (5th edition), the population of Monroe County is 27,200. The population of Sevier County is 37,000. The largest town in each county has fewer than 5,000 residents. The per capita personal income in Monroe County is $4,291; in Sevier County, the per capital personal income is only slightly higher at $5,960. The total public school enrollment in Monroe County is 5,105 students; the total public school enrollment in Sevier County is 8,253. By virtue of its proximity to the Great Smokey Mountains National Park and by its claims to the towns of Gatlinburg and Pigeon Forge, Sevier County is more cosmopolitan than Monroe County. However, it still has many isolated communities. Monroe County has changed in recent years as the completion of the Tellico Dam has publicized the area and attracted new industry and new residents. Most residents in both counties work for or own small businesses, work in nearby factories, or commute to Knoxville. In Sevier County, tourism is an important industry.

In regard to education, both school systems are governed by elected school boards and elected superintendents. Administrators, including the Directors of Special Education,

are appointed by the school board on the recommendation of the superintendent. In regard to education of the handicapped, both counties comply with state law in actively screening their entire school populations for evidence of handicapping conditions. Both provide a variety of special services to handicapped children ranging from consulting services to placement in self-contained classrooms. Both counties actively seek to identify intellectually gifted students. Although all school systems in Tennessee are required to screen their populations for evidence of giftedness, the fact is that special services for gifted children are given a low priority in most rural school systems. In contrast, both Monroe and Sevier Counties actively seek to identify gifted students. Both counties have identified approximately 1% of their total enrollments as intellectually gifted.

When first designing special programs for gifted students, both counties faced the same limitations inherent to rural schools. Rural schools, because they tend to be relatively small when compared to urban or suburban schools, generally offer few advanced or highly technical classes. When only a handful of students are interested in and capable of understanding calculus or advanced French, it is not economically feasible to offer a class in either subject. For the same reason, schools can sponsor only a limited number of extracurricular activities. Few community

resources are available, limiting the intellectually gifted student's access to learning materials, community agencies, and professional role models. Although many learning opportunities unique to a rural setting exist for the gifted child, the scope and focus of the gifted student's education will differ from that offered to his/her urban peers. Any special educational program designed for intellectually gifted students must consider these limitations, as well as such limitations as the small number of gifted students in the school system, the lack of professionals trained in the education of the gifted, and the scarcity of local funds. Some types of programs, such as a separate school for the intellectually gifted, simply are not feasible.

In spite of these limitations, both the Monroe County and the Sevier County School Systems have devised truly creative ways of providing special services to their intellectually gifted students. Both counties are in compliance with state law, but each has opted to use a different service delivery model to meet their students' educational needs.

The programs. The Monroe County Schools provide Special Education to 62 intellectually gifted students through the services of two consulting teachers. The consulting teachers in Monroe County work with children with many different handicapping conditions, all of whom can function in the regular classroom full time when appropriate instructional materials are provided. The two consulting

teachers each work with approximately 50 handicapped students; slightly more than half of each teacher's caseload is comprised of intellectually gifted students. The consulting teachers provide gifted students with lesson plans and materials on advanced topics usually not taught in the regular curriculum. They help the students start on the assignments; then the students complete the assignments independently. In theory, the regular classroom teacher supervises this independent work. In fact, this supervision seldom occurs. Most gifted students work on their independent study projects at home or when they have finished their classroom assignments.

The consulting teachers also provide the gifted students with advanced reading materials, such as books from the high school and local college libraries. The consulting teachers plan and coordinate field trips for all the gifted students and arrange for some students to take special classes at the local college.

In all, the primary role of the consulting teacher is that of a coordinator of lesson plans, materials, and special learning opportunities. The gifted child maintains the primary responsibility for completing assignments, requesting and using special materials, and utilizing special learning opportunities. It is important to note that gifted students represent only a part of the consulting teacher's caseload. These teachers also are identified by teachers

and non-handicapped students as teachers who work with those less talented students in the school who need consulting services, including the learning disabled, the visually impaired, and the functionally retarded. Because of this administrative arrangement, education of the gifted in Monroe County is a well-integrated part of the county's total Special Education program.

The Sevier County Public Schools identify their 57 intellectually gifted students as Children with Special Abilities (CSA). Administratively, the CSA program is a part of the Special Education division with the county schools. CSA personnel must adhere to the regulations established by the state concerning the education of handicapped children. Technically, the gifted child is placed in the regular classroom for part of the day and in a resource program (CSA) for part of the day. The CSA option, however, is clearly defined as a program for gifted students and is clearly differentiated from the other Special Education services provided by the county. Two full-time teachers and a half-time supervising teacher, all of whom have special training in the education of the gifted, work with the 57 CSA students.

The CSA students receive two to three hours per week of small-group instruction. During this group time, the students work on lessons and activities which are more advanced than those usually taught in the regular classroom.

Although the students have homework assignments and some independent study assignments, most of their work is accomplished during their CSA time under the supervision of the CSA teacher.

The CSA supervising teacher plans several weekend activities each year in which all the students in the county participate. These activities include a play, a camping trip, or a retreat; all children participate in the planning stages as well as in the activity itself. The supervising teacher also coordinates an annual countywide screening program to identify suspected gifted children.

An active parent organization provides much support, both moral and monetary, for the CSA program. The parent organization sponsors a series of Saturday workshops on special interest topics as one fund-raising event; any student in the county may participate in the workshops, but CSA students are given priority for space in any individual class. The parent organization also sponsors other fund-raising projects. The proceeds from these projects enable the CSA program to fund the countywide weekend projects and provide supplemental funds for other special activities.

The subjects. The subjects in the present study are drawn from the population of intellectually gifted students enrolled in the two counties. The subjects represented 92 percent of the identified fourth through eighth grade gifted students and 94 percent of the referred, or

unconfirmed, students in these grades. The fact that these students are intellectually gifted must be emphasized. Even though most psychologists and educators define giftedness as exceptional talent in any one of a number of intellectual, academic, and artistic areas (Congressional Record, 1978), the State of Tennessee includes only the intellectually gifted in its list of handicapping conditions. The State Department of Education in its Rules, Regulations and Minimum Standards, 1978-79 has established specific criteria for determining whether a child is intellectually gifted and eligible for special educational services. Individual school systems must adhere to the following definition and criteria for eligibility:

(x) Intellectually Gifted

(I) Definition. - A child whose intellectual abilities and potential for accomplishment are so outstanding that they require a variety of special provisions to meet the established educational needs and who has an intelligence quotient at least two standard deviations above the norm as measured by an individual intelligence test is considered intellectually gifted.

(II) Criteria for Eligibility for Special Education Services. - A child must have one or more of the following characteristics:

I. Capabilities that exceed those of most children of the same chronological age range.

II. Abilities considered consistently remarkable.

III. Regular school curriculum barely approximates the demands of either learning capacity or the anticipated social roles of a child with this ability.

> IV. Advanced interests and psychological maturity.
>
> (III) Certification by Specialists. - Intellectual giftedness must be certified by licensed psychologist, certified school psychologist or certified psychological examiner. Documentation must be in writing [p. 81].

Although the State does not specify how the assessment specialist is to determine "advanced interests and psychological maturity," nor any of the other criteria for eligibility for special services, it does require that a child achieve an intelligence quotient "at least two standard deviations above the norm" before he or she is certified as intellectually gifted. The creative or talented child with an IQ in the high-average range, thus, is not eligible for special educational services.

The choice and measurement of the variables. The present study investigated differences among intellectually gifted students in both their academic and non-academic functioning. Some studies which investigate the effects of participation in a given educational program focus on one or two specific variables. The lack of information about the effects on gifted students of participating in an enrichment-oriented program dictated a more exploratory approach for the present study, including the investigation of a range of variables.

In the present study, academic functioning is defined as including the acquisition of basic skills, the understanding

of general academic concepts, and the demonstration of school-related competence. The acquisition of basic skills is the primary goal of general education; a study of the effects of a special program must ascertain that participation in the program helps, rather than hinders, the child's learning. The teaching of basic skills is not the sole purpose of education, however; teachers also strive to instill in their students an understanding of general concepts related to the skills. This is particularly true in the education of the intellectually gifted students who, by nature of their intellectual superiority, can more easily grasp the abstract concepts. A study of the effects of a special program on academic functioning must also consider whether the students are developing an understanding of general academic concepts.

School-related competence is included as a part of academic functioning because this concept refers to a child's ability to succeed in the regular classroom. Behaviors such as the ability to think for oneself, to work independently, to follow directions, and to participate actively in class discussions represent behaviors which seem to contribute to academic success. Educators identify these kinds of behaviors as essential to success in school, as separating the "excellent" student from the "good" student. The continuous development of school-related competence may be of greater importance to the gifted child in the long run than the

acquisition of any specific bit of knowledge or any academic skill. Patterns of learning behaviors developed in childhood probably continue into adolescence and adulthood. The process a child follows when approaching learning tasks contains the skills he can transfer to any learning situation. Becoming skilled in this process--that is, developing school-related competency behaviors--insures that the child will continue to be successful, even when special educational support no longer is available.

The measurement of academic knowledge was accomplished through the use of standardized group achievement test data, a word association test, and a teacher rating scale.

The use of group achievement tests is a reasonably common approach to the measurement of academic skill. Both school systems which participated in this study routinely administer the California Achievement Test, the Metropolitan, or the Gates-MacGinite Achievement Test to the entire school population. Achievement tests require the child to apply a range of academic skills to a variety of academic problems, and thus represent a good measure of academic skill for most students. As both grade equivalent scores and percentile scores are reported, standardized tests provide a means of comparing students at different grade levels.

Standardized achievement tests were designed for the average student, however, and are not as well suited for use with intellectually gifted students. Gifted students generally

perform quite well on these tests, often scoring near the upper limits of the scale. This tendency to score well makes it difficult to note progress--the students start out doing so well that there is little room for improvement. In addition, group achievement tests only require the student to recognize the correct response; seldom are students required to produce independent answers or to integrate ideas on their own. Thus, while group achievement tests assess basic skills fairly well, they do not adequately assess a child's understanding of the general concepts underlying the skills. A word association test is a more appropriate measure of concept formation.

The validity of word associations as a measure of concept formation is well documented in the literature (Brown & Berko, 1960; Deese, 1965; Entwisle, 1966; Rosanoff, Martin, & Rosanoff, 1918). Johnson (1964), Saeger (1975), and Verplanck, Saeger and Kremper (1974) have demonstrated the usefulness of word associations as a measure of specific knowledge. Each of these authors demonstrates that a student's ability to generate relevant responses to a given stimulus term accurately reveals the student's understanding or lack of understanding of the given concept. The rationale supporting the use of this technique follows the logic that if a student has a reasonable understanding of a concept, he should be able to produce a number of responses relevantly associated with the concept. The student's responses,

when considered as a unit, demonstrate his understanding of the term.

A teacher-completed rating scale was used to assess the subject's school-related competency behaviors. Teachers' ability to adequately and reliably assess a child's behavior in school-related situations is well documented in the literature. Most frequently, teachers are asked to rate a child's problem behavior; Getsen (1976) documented that teachers can accurately assess a child's competence as well. Of course, direct observation would have been the ideal medium for assessing a child's classroom behavior. In the present situation, however, direct observation was neither practical nor totally appropriate. Many of the events and behaviors associated with competence in classroom work habits, such as finishing one assignment, then starting another without being told to do so, occur infrequently. Others, such as asking questions to get attention, are subtle and represent a conclusion formed over time. Direct observation for a limited time may not produce a meaningful record of these events; direct observation over an extended time is impractical. Hence, the teacher, because she is in a position to accumulate informal observations over a longer period of time, is the logical person to provide information on a child's classroom behaviors. Even though rating scales may be subject to response set variations and "halo effects," scales constructed with these limitations in mind can provide useful data.

An original rating scale was developed because most published checklists and rating scales focus on "problem behavior" rather than competence. Given that relatively few gifted children display severe problem behaviors, it seems that an assessment tool which focuses on competency will provide more useful information about these students. Granted, some gifted children can be disruptive in the classroom; these children simply will appear to be less competent on a competency-oriented measure. Getsen (1976) has demonstrated that a teacher rating scale of primary-level children's competency-related behaviors discriminates between normal and disturbed children and differentiates competence levels within a normative sample. Whether a similar competence-behavior rating scale can differentiate competence levels within a generally competent population, i.e., gifted students, remains to be seen.

In the present study, non-academic functioning was defined as separate from academic functioning and limited to the range of a child's interests, evidence of his leadership skill, and the quality of his social interactions. These variables were chosen as representative of the skills and knowledge a gifted child needs to develop in order to fulfill the promise of his giftedness. Although other variables could have been included as part of non-academic functioning, these three variables were selected for their clearly non-academic qualities; a child does not have to possess a wide

range of personal interests to succeed academically; nor must he interact effectively with his classmates to learn math and reading. Also, behaviors related to these variables are observable in the school setting and related to school adjustment. Other areas of non-academic functioning, such as problem-solving skills, are not so distinct from academic functioning. For example, good academic functioning is evidence that a child is applying good problem-solving skills. Although not directly related to academic progress, interests, leadership skill, and social interaction represent the rationale for the provision of special programs for the gifted, and, thus, are defensible areas of study.

The measurement of non-academic variables was accomplished through an individual interview, a word association test, and a teacher-completed rating scale. All three of these research instruments were developed specifically for use in this study.

An individual interview was used as the primary source of information about a child's non-academic functioning. Kerlinger (1973) indicates that the interview can be used both as an exploratory research device to suggest hypotheses and to identify suitable areas of study, and it also can be the main instrument of the study. These two qualities made the interview a suitable research instrument for the present study, especially when the semi-exploratory nature of the research is considered.

Yarrow (1960) points out that the interview is a research tool especially suited to research with children. The interview does not require the subjects to read or write, it is flexible and adaptable to different styles of responding, and it permits the rephrasing of questions the child does not understand. In the present study, the interview also allowed the investigator to obtain information directly from the child. After all, in the upper elementary grades, the child is the best source of information on his own interests, activities, and friendships!

A word association test and a teacher-completed rating scale were developed in recognition of the empirical weaknesses inherent to the interview. Interviewer bias represents a major threat to the validity of interview findings; information from other individuals, i.e., teachers, and from an indirect source, viz., a word association test, can help confirm the interview findings. Also, an interview is essentially a self-report measure; information from teachers can provide a validity check on the information provided by the students. Data from the rating scale and the word association test provided collateral information about the non-academic variables.

The non-academic section of the word association test was developed to collect collateral information on subjects' interests. The validity of word associations as a measure of concept formation has been discussed in relation to the

measurement of academic variables. The rationale supporting the use of word associations in the assessment of interests follows the logic that a student who is interested in a given concept or topic will have acquired a familiarity with that concept through his readings and activities. Thus, he will be able to produce a number of relevant responses to related stimulus words. If the student is merely claiming an interest when, in fact, the interest is minimal or non-existent, his fund of information on the topic will be limited and he will not be able to produce relevant associations. Students who claim a wide range of interests in the interview situation should also be able to provide relevant associations to a wide range of non-academic stimulus words.

A teacher-completed rating scale will be used to corroborate the information obtained from the interview on students' leadership skills and social interactions. The rationale for the use of a rating scale in assessing these variables follows the rationale for using a rating scale to assess classroom competency behaviors. Many of the events associated with leadership, such as being elected committee chairman or successfully influencing a group decision, occur infrequently. The quality of a child's social interactions refers to many qualities which can best be observed in a variety of situations. Again, the teacher is in a position to observe the child on a day-to-day basis and can provide information on a child's typical functioning. The teacher

should be able to recognize the regular, frequent occurrence of some behaviors as well as the infrequent, but important, occurrence of other behaviors. Direct observation is neither practical nor necessarily appropriate in the present situation; indirect observation through the use of a rating scale is the logical measurement device.

CHAPTER III

METHODS

Subjects

The subjects were 62 fourth through eighth grade students enrolled in two rural school systems in the general Knoxville vicinity--the Monroe County Schools and the Sevier County Schools. Forty-six of the subjects were certified as gifted according to the criteria established in the Tennessee Department of Education's Rules, Regulations, and Minimum Standards, 1978-79. All of the gifted students were receiving Special Education services at the time of the study. Twenty-four of the gifted subjects were enrolled in the Monore County Schools and participated in a special program which emphasized indirect service provided by a consulting teacher. Twenty-two of the gifted subjects were enrolled in the Sevier County Schools and participated in a special program which emphasized direct service provided in a small group setting by a teacher who is a specialist in the education of gifted children. To be eligible for participation in the study as a gifted subject, a student had to be certified as intellectually gifted, enrolled in the fourth through eighth grades, and free of any other handicapping condition. The 46 gifted subjects represent 92% of the eligible population.

The remaining 16 subjects were students who had been

referred for individual assessment for intellectual giftedness on the basis of teacher nomination and high group achievement scores but who had not yet been confirmed as intellectually gifted. Of these unconfirmed gifted students, seven were enrolled in the Monroe County Schools and nine were enrolled in the Sevier County Schools. None had received any Special Education services.

The frequency distributions of the subjects by sex, family income, and grade level are presented in Tables 1, 2, and 3, respectively. Chi square tests comparing the proportions of males and females in each county, in the confirmed group, and in the unconfirmed group yielded no significant differences. Similar chi square comparisons yielded no significant differences in the distribution of family income groups. Chi square tests comparing the distributions of subjects by grade level yielded a significant difference: a higher percentage of the unconfirmed gifted subjects are fourth and fifth grade students.

Materials

Three research instruments were developed specifically for use in this study: the Interview Schedule, a Word Association Test, and the School Behavior Rating Scale.

Interview schedule. The interview schedule was designed to acquire information about the subjects' non-academic functioning, including each subject's interests,

TABLE 1

FREQUENCY DISTRIBUTION OF STUDENTS BY SEX

Sex	Confirmed Gifted		Unconfirmed Gifted	
	Monroe County (n = 24)	Sevier County (n = 22)	Monroe County (n = 7)	Sevier County (n = 9)
Males	12	9	2	4
Females	12	13	5	5

Note: Chi square tests comparing males and females within each county, within the confirmed group, and within the unconfirmed group yielded no significant differences.

TABLE 2

FREQUENCY DISTRIBUTION OF STUDENTS BY FAMILY INCOME

Income Group	Confirmed Gifted		Unconfirmed Gifted	
	Monroe County[a] (n = 24)	Sevier County (n = 22)	Monroe County (n = 7)	Sevier County (n = 9)
Less than $10,000	2	0	0	2
$10,000-$15,000	5	2	1	1
$15,000-$25,000	5	8	1	5
$25,000-$30,000	5	3	3	0
More than $30,000	5	9	2	1

Note: Chi square tests comparing income group within each county, within the confirmed group, and within the unconfirmed group yielded no significant differences.

[a]Two families did not provide information on income.

TABLE 3

FREQUENCY DISTRIBUTION OF STUDENTS BY GRADE

Grade	Confirmed Gifted		Unconfirmed Gifted		χ^2 (df = 12)
	Monroe (n = 24)	Sevier (n = 22)	Monroe (n = 7)	Sevier (n = 9)	
4	0	4	4	5	29.73*
5	5	7	3	2	
6	8	7	0	0	
7	7	4	0	2	
8	4	0	0	0	

Note: The unconfirmed group has a higher proportion of fourth and fifth grade students than the confirmed group. Chi square tests comparing the distribution of fourth and fifth grade students across groups yielded no significant differences.

*$p < .01$

social interactions, and leadership skills. The schedule was developed by the investigator following a series of pilot interviews with a small number of student volunteers. The investigator followed an unstructured format during these pilot interviews, encouraging the student to talk spontaneously about interests, school, friendships, etc. A list of interview topics or categories, was developed from the information acquired during these pilot interviews; then the list was revised to insure adequate coverage of non-academic variables. The final interview schedule was designed to permit a semi-structured interview format. The general categories covered in each interview are presented in Table 4. (See Appendix A for a copy of the actual interview schedule.)

Word Association Test. The Word Association Test (WAT) was developed to measure aspects of both academic and non-academic functioning. The WAT consists of 32 stimulus words. Half of the words were chosen to represent academic concepts commonly taught in the upper elementary grades; the remaining half were chosen to represent such non-academic concepts as current events, news, and sports.

"Academic words" were chosen by the investigator following a review of fifth through eighth grade textbooks of each major academic subject. The investigator attempted to choose words representative of major instructional units in each subject. Three classroom teachers reviewed the list of

TABLE 4

LIST OF INTERVIEW CATEGORIES BY NON-ACADEMIC VARIABLES

I. Interests

- Preferred free time activities
- Types of books read
- Hobbies
- Preferred television shows
- Special lessons taken outside of school
- Club memberships
- Career interests

II. Evidence of Leadership Ability

- Elected to class or school office
- Elected to club office
- Elected or appointed captain of sports team

III. Preference for Social Activities

- Club memberships
- Participates in team sports
- Enjoys board games, cards, checkers, etc.
- Enjoys just talking with friends

possible words and suggested changes. Only those words which also appeared on Rosanoff, Martin, and Rosanoff's (1918) original list of stimulus words were included in the final form of the WAT so that it would be possible to compare the students' responses within a set of norms.

"Non-academic words" were chosen by the investigator to represent categories of general knowledge usually not included in the standard upper elementary curriculum. Words referring to current events, politics, the arts, sports, and career fields were included in the non-academic list. Two independent reviewers and three classroom teachers suggested additions to and deletions from this list of words.

The 32 stimulus words were randomly ordered and prepared for presentation as a written test. The words were listed in vertical columns on the test protocol; each stimulus word was listed twice in succession for a total of 64 test items.

The list of academic and non-academic stimulus words is presented in Table 5. (See Appendix A for a copy of the actual WAT protocol.)

School Behavior Rating Scale. The School Behavior Rating Scale (SBRS) is an indirect observation measure developed to assess children's competency-related classroom behaviors, their social leadership skills, and their social interactions. The rating scale items were drawn from several sources, including other competency-oriented scales, scales

TABLE 5

WORD ASSOCIATION TEST STIMULUS WORDS BY CATEGORY

Academic Words	Non-academic Words
Continent	Jazz
Arithmetic	Physician
Vertebrate	Governor
Decimal	Picasso
Physics	Budget
Percentage	Drama
Biology	Handicapped
Equator	Lasar Beam
Fractions	Chess
Hydraulic	Nuclear
Retina	Iran
Peninsula	Congress
Federal	Secretary
Subtraction	Soccer
Molecule	Carburetor
Meteor	Lawyer

developed to identify gifted students, and behaviors suggested by teachers, school psychologists, and other professionals. A behavior was included if it was considered to be an important contributing factor in a child's ability to succeed in the classroom or if it was considered to be evidence of leadership skill or good social interaction.[1] Scale items included behaviors which could be observed at several times during the school day, including class time, free time, lunch, and recess.

In order to verify that the investigator's choice of rating scale items in fact represents behaviors related to classroom competence, leadership, and social skill, three classroom teachers, three Special Education teachers, and three school psychologists were asked to evaluate each item for its relevance to the variables. Those items judged by the majority of the reviewers to be only marginally related were eliminated. Of the original 108 items, 18 were eliminated.

Several precautions were taken to improve the inter-rater reliability of the rating scale and to reduce the influence of a "halo effect." First, the same professionals who reviewed the scale items for relevance also judged each item for clarity and ease of rateability. The items judged

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[1]Scale items were included on the basis of content validity only; the relatively small number of subjects prevented the confirmation of the interrelatedness of the subscale items by factor analysis.

to be confusing or difficult to rate were reworded or eliminated. Second, both descriptive and operational definitions were given for each of the numerical ratings. Kerlinger (1973) has presented evidence that this technique improves interrater reliability and adds precision to the interpretation of the responses. Thus, students were rated on each behavior on a scale of 1 to 4, with "1" defined as "does not describe the child at all; this behavior is never observed," and "4" defined as "describes the child very well; this behavior is observed daily." Finally, 24 of the 90 scale items were worded in such a way that a low score rather than a high score indicated frequent occurrence of the behavior. These reversed items were included to encourage teachers to think about the meaning of each item before assigning a numerical rating. (See Appendix A for a copy of the SBRS.)

Procedure

Data collection. The investigator contacted each subject's parents to explain the purpose of the study and to obtain written permission for their child's participation. Each parent also was asked to complete a questionnaire which requested information on family size, parents' occupations, and family income. Sixty of the sixty-two consenting parents returned the completed questionnaire.

The investigator began the data collection by

interviewing each subject individually at the subject's school. The interviewer informed each subject that the purpose of the interview was to learn about the student's ideas, lifestyle, interests, and activities. The investigator began the interview with a question about the student's favorite free-time activities, then followed a semi-structured format until all of the predetermined interview topics had been covered. The interviewer took notes during the interview but also tape recorded the session. The recordings were used to supplement the investigator's notes in order to create a complete record of the interview. A typical interview lasted approximately 40 minutes.

To insure that variations in the investigator's emphasis, approach, and enthusiasm were evenly distributed across all subjects, the subjects were interviewed in random order. To reduce interviewer bias, only minimal information (i.e., name, grade, and homeroom teacher) was collected on each student prior to the interview.

Following the interview, each student completed the Word Association Test. The investigator presented the student with the list of stimulus words and instructed him/her to write next to each stimulus word another word that related to the stimulus word. If the student did not understand the task, the investigator provided an example, using a word not on the test list. The investigator also instructed the student to ask the investigator to read aloud unfamiliar words

and to leave blanks if s/he did not know the meaning of a word. Most students required approximately 30 minutes to complete the WAT.

The investigator also asked each subject's homeroom teacher to complete the School Behavior Rating Scale (SBRS). The investigator delivered the SBRS to each teacher, explaining its purpose as a rating scale of classroom behavior. The investigator reiterated the directions printed on the form and reviewed the meaning of each number in the rating scale. The teachers recorded their answers on a separate answer sheet, and the investigator collected the completed rating scales approximately one week later. Four teachers declined to participate in the study, citing strong negative feelings about Special Education for gifted students. In two of these cases, one of the child's other teachers was asked to complete the SBRS. In the other two cases, no other teacher was available.

Finally, the investigator reviewed each subject's cumulative record and recorded his/her birthdate and his/her most recent achievement test scores in reading and math (percentile scores). Each gifted subject's intelligence test scores were recorded, along with year during which the student was certified as gifted.

Data analysis. The data generated by the interview were content-analyzed in order to develop for each general category a list of specific, descriptive sub-categories. The

investigator reviewed all the interview responses and compiled an exhaustive list of all activities and interests mentioned by the subjects for each general category. For example, under the category "Preferred Free-Time Activities," the content analysis yielded 25 separate sub-categories. Specific activities representative of a generic group were combined into one sub-category. For example, the games Monopoly, Clue, and Battleship were grouped as the sub-category "board games requiring strategy." A list of all the sub-categories for each general category is presented in Table 6.

Each subject's interview record was reviewed a second time and the presence or absence of activities related to every sub-category was recorded. With a general category, the total number of sub-categories mentioned by the student was recorded as was the total number of students mentioning a sub-category. For example, in the general category "Hobbies," seven different hobbies were identified as sub-categories. If a subject mentioned that he collects both stamps and coins, the sub-categories "collects stamps" and "collects coins" were marked. It was, thus, recorded that the student has two hobbies. The frequency of coin collecting and stamp collecting among all subjects was determined simply by counting how many subjects indicated that they collect stamps and coins. This process was repeated for each general category. (See Appendix B for the frequency

TABLE 6

LISTING OF INTERVIEW SUBCATEGORIES BY GENERAL CATEGORY

Preferred Free-Time Activities

- Board games with strategy
- Board games without strategy
- Card games
- Checkers, chess, backgammon
- Electronic and video games
- Imaginative play
- "Just talking"
- Listening to music
- Original game
- Practicing instrument
- Reading
- Individual sport
- Team sport
- Sleeping, eating
- Taking a walk
- Watching television
- Hunting, fishing
- Outdoor activity
- Pets
- Thinking
- Doing chores
- Creative endeavors
- Studying
- Riding bicycles
- Other activities

Favorite Television Shows

- Afternoon syndicates
- Situation comedy
- Drama
- Adventure drama
- Action-comedy
- Moral-comedy
- Sports events
- Cartoons
- Movies
- News/documentaries
- Pop non-fiction
- Other types of shows

Special Lessons

- Instrument lessons
- Dance lessons
- Other lessons

Club Memberships

- 4-H
- Scouts
- Church organizations
- Other clubs

Types of Books Read

- Mystery
- Science-fiction
- Sports stories
- Biography
- Juvenile fiction
- Adult fiction
- Non-fiction
- Animal stories
- Magazines

Hobbies

- Collecting coins
- Collecting stamps
- Collecting sports cards
- Collecting other items
- Collecting stuffed animals
- Creative endeavors
- Other hobbies

Evidence of Leadership

- Elected to class office
- Elected to school office
- Elected captain of team

distributions of the number of sub-categories mentioned by each student.)

Subjects' interview responses were compared on two dimensions: (a) the types of preferred activities and interests mentioned by the students in each group and (b) the variety of interests and activities mentioned by the students in each group.

To compare the types of activities mentioned, the sub-categories within each category were rank-ordered according to the number of students in the group who mentioned an interest in the topic of that sub-category. The sub-category mentioned most frequently was assigned a rank of 1, the sub-category mentioned second most frequently was assigned a rank of 2, and so on. Rank order correlations (Spearman R) were computed between groups to ascertain whether both groups' preferences for specific activities were the same or different (see Gibbons, 1976). A significant correlation was interpreted to mean that both groups prefer the same types of activities.

To compare the variety of interests mentioned, the groups were compared on the number of different activities mentioned by each student within each general category. For this comparison, no reference was made to the type of activities mentioned, only to the number of activities. For each category, the number of mentions was computed and the frequency distribution by group of the number of sub-categories

credited to each student was computed. Chi square tests were used to compare the group distributions to each other, with one group representing the expected distribution against which the other group's distribution was compared. The groups were compared to each other rather than to a random distribution because randomness was not the expected distribution. Monroe County was arbitrarily chosen to be the standard distribution for the computation of the expected frequency; no differences in the statistical probability of the resulting chi square statistics were found when Sevier County was used as the standard. The unconfirmed gifted students represented the standard against which the confirmed gifted students were compared. The unconfirmed gifted were chosen to represent the standard as they represent the "norm" which occurs without participation in a special program. A significant chi square test was interpreted to mean that the groups participated in a different variety of activities in the given category.

The Word Association Test (WAT) was scored according to a method suggested by Verplanck (1981). For each stimulus word, the investigator compiled a list of all the associations given by all subjects to that word. Two independent judges and the investigator then scored each response on a scale of 0-2, with "2" representing an accurate, clearly understandable association, "1" representing a partially accurate or ambiguous association, and "0"

representing an inaccurate or incomprehensible association. The score finally assigned to an individual association represented the median of all three judges' scores.

Each subject's test protocol was scored by assigning a "0," "1," or "2" to each response, according to the value assigned to that response by the judges. Blank response spaces were assigned a score of "0." The subject's total test score was computed by summing the individual response scores. Separate totals were computed for academic words and non-academic words.

The median group score on each section of the WAT represented the basis for the statistical comparisons between groups of subjects. The Mann-Whitney-Wilcoxon Test, a non-parametric test designed to compare the medians of two independent samples, was used to test for significant differences between the groups' average WAT scores. The Wilcoxon Test yields a test statistic T, which is converted to a z score to determine the probability that the two medians are, in fact, different.

The School Behavior Rating Scale was scored by comparing the average mean rating received by each group of subjects on three major categories of behavior measured by the scale. To accomplish this, the scale items first were sorted into behaviors related to classroom work habits, social interactions, and leadership skills. These three categories were considered as distinct and valid solely on

the basis of their content validity. The relatively small number of subjects prevented statistical confirmation of the items' interrelatedness. The scale items included in each category are presented in Table 7.

The subjects' average (mean) ratings for each category of behaviors were computed, as were the subjects' average ratings on all 90 scale items. Group means were compared within each category using the students' *t* statistic. Students' ratings on scale items not included in the three major categories were not analyzed in the present study, except to compute the overall mean rating for each subject.

TABLE 7

RATING SCALE ITEMS BY BEHAVIOR CATEGORIES

Classroom Work Habits	
- Figures out what to do by him/herself	- Asks questions checking on what the teacher has just said or just instructed the class to do
- Gets upset by difficult assignments but finishes them	- Gets back to work after recess easily
- Asks teacher for directions	- Seldom speaks up in class or raises hand to add comments to what the teacher has said
- Doesn't speak up in class loud enough to be heard	- Stays in seat; doesn't move around classroom except when asked to do so
- Asks teacher for help when not sure of what to do	- When one solution does not work, tries other solutions
- Doesn't hesitate to disagree with teacher but not argumentative	- Suspected of cheating
- Knows class schedule; always ready for change from one activity to another	- Resents criticism and suggestions; does not follow them
- Asks content oriented questions about the material presented in class	- Approaches teacher for directions frequently
- When finished with assignments, starts another activity without being told to	- Gets caught cheating

TABLE 7 (Continued)

Classroom Work Habits	
- Offers comments that are the same as what the teacher said	- Takes care of possessions
- Does own work	- Offers comments that are not repetitions of teacher's comments
- Paces self to get all work done within available time	- Always works on class assignments, even during recess
- Isn't bothered or distracted when other students are being disruptive	- Asks unnecessary questions.
- Finishes class assignments on time	- Follows directions given for an assignment
- Completes homework assignments on time	- Goes beyond assignments; finishes work, reflects extra time, thought, and/or effort
- When answering a question in class, gives more information than required by the question.	- Makes comments that connect two topics or subject area in an unusual, but acceptable way
- Keeps track of materials, e.g., books, pencils, etc.	- Seeks constructive criticism and suggestions
- Does best, and works hardest, when supervised by teacher	- Raises hand to give correct answer to hard questions
- Raises hand to volunteer answer in class	

TABLE 7 (Continued)

Leadership Skills	
- Chosen by classmates to be committee chairman or team captain	- Talks to other students; they listen attentively
- Suggests games for group to play; suggestions ignored	- Is a good team captain; chooses team tactfully; encourages team members; models fair play
- Suggests games for group to play; suggestions usually followed	- Volunteers to show other students how to do something
- Volunteers to be chairman or captain, but seldom chosen by other students to be chairman or captain	- Talks in class discussions; other children listen to his/her comments
- Has good athletic skills when compared to classmates	- Tries to help others without doing the work for them

Social Interactions	
- Shares toys, books, etc. with others	- Regularly talks with or plays with at least one other student
- Gets in verbal arguments with other students	- Listens attentively when other students are talking
- Plays jokes on other students	- Corrects other students when they make mistakes
- Resolves disagreements with friends without adult help	

TABLE 7 (Continued)

Social Interactions	
- Gets in verbal arguments with teacher	- Jokes with friends
- Waits turn in line or in playing games	- Gets in fights with other students
- Pokes fun at less intelligent students	- Starts conversations with other students
- Jokes with teacher	- Avoids play with other students

CHAPTER IV

RESULTS

Three separate analyses were conducted in order to fulfill the purpose of the present study. First, the two groups of confirmed gifted students were compared to address the question of differential effects of participation in different programs. Second, the two groups of unconfirmed gifted students were compared, primarily to justify combining the two groups into one group but also to add evidence to the hypothesis that the confirmed gifted subjects all are members of the larger population of intellectually gifted students residing in the rural Knoxville area. Finally, all confirmed gifted students were compared to all unconfirmed gifted students, without regard for county of residence, in order to more accurately interpret the other comparisons and to better answer the main research question.

Comparisons between Groups of Confirmed Gifted Students

Academic functioning. The two groups of confirmed gifted students did not differ on any measure of academic knowledge. The two groups' mean achievement test scores, median Word Association Test (WAT) scores, and mean School Behavior Rating Scale (SBRS) scores on classroom work habits are presented in Tables 8, 9, and 10, respectively. The two

TABLE 8

CONFIRMED GIFTED STUDENTS' MEAN PERCENTILE SCORES
ON GROUP ACHIEVEMENT TESTS

Academic Subject	Monroe County Program (n = 24)	Sevier County Program (n = 22)	t
Reading	94.39	90.14	1.30
Math	94.83	86.91	1.75

TABLE 9

CONFIRMED GIFTED STUDENTS' MEDIAN SCORES
ON WORD ASSOCIATION TEST

Word Category	Monroe County Program	Sevier County Program	z
Academic Words (Highest possible score = 64) (Range = 47)	51	56	-1.31
Non-academic Words (Highest possible score = 64) (Range = 43)	58	55	-1.16

TABLE 10

CONFIRMED GIFTED STUDENTS' MEAN SCORES ON SCHOOL BEHAVIOR RATING SCALE[a]

Rating Scale Category	Monroe County Program	Sevier County Program	t
Leadership Skills	2.87	2.95	-.38
Social Interaction	3.09	3.17	-.53
Classroom Work Habits	3.19	3.24	-.35
Total Rating (all 90 items)	3.14	3.23	-.76

[a]Scale items scored from 1 to 4, with 1 indicating behavior never occurs and 4 indicating behavior occurs daily.

groups of confirmed students achieved similar percentile scores on group achievement tests, similar accuracy scores on the academic section of the WAT, and similar average ratings of competence in classroom work habits.

Non-academic functioning. The two groups of confirmed gifted students differed little on the measures of non-academic functioning. Students' responses to the interview questions revealed few differences in either the type or the variety of their interests and activities. Rank-order correlation coefficients (Spearman R) comparing the types of activities mentioned by each group within each interview category are presented in Table 11. The correlation coefficients indicate the degree of similarity between the two groups in terms of the number of students who mentioned specific activities. (See Appendix B for the actual rank orders of the activities within each category by group.) Correlation coefficients were not computed if the category had fewer than five specific activities. The two confirmed groups mentioned similar types of preferred free-time activities, television shows, books, and hobbies and reported similar preferences for social activities over individual activities. The two groups of students may differ in the types of clubs to which they belong and in the types of special lessons they take outside of school, as different opportunities are available in each county.

Chi square statistics comparing the variety of

TABLE 11

COMPARISON OF CONFIRMED GIFTED STUDENTS' INTERVIEW RESPONSES WITHIN CATEGORIES

Interview Category	Type of Activities[a] (Degree of Similarity)		Variety of Activities[b] (Degree of Difference)	
	n	Spearman R	df	(χ^2)
Preferred free-time activities	25	.44*	3	11.69*[c]
Favorite television shows	12	.61*	2	3.13
Types of books read	9	.85**	3	1.37
Hobbies	7	.75*	3	4.37
Club memberships	4	--	4	4.08
Types of special lessons	3	--	2	.40
Evidence of leadership	4	--	3	14.56**[c]
Preference for social activities	12	.96**	4	.59

*$p < .05$ **$p < .01$

[a]Statistical significance implies no difference between groups; blank indicates correlation was not computed.

[b]Statistical significance implies significant difference between groups.

[c]Monroe County students participate in a wider variety of activities within this significantly different category.

activities mentioned within each category by subjects in each group also are presented in Table 11. The chi square statistic indicates the degree of difference between the two groups in the numbers of specific activities within each category mentioned by the students. (See Appendix B for the frequency distributions of the numbers of activities mentioned within the categories.) The two groups mentioned a similar variety of types of television shows watched, types of books read, and types of hobbies. The two groups indicated they belong to a similar number of clubs and take a similar number of special lessons. They also indicated that they participate in social and individual activities with similar frequencies. The Monroe County confirmed gifted students (who receive indirect Special Education services) mentioned a wider variety of preferred free-time activities ($\chi^2(3) = 11.69$, $p<.01$); they also indicated that they hold more formal leadership positions ($\chi^2(3) = 14.56$, $p<.01$). The difference in leadership positions may reflect the fact that the Monroe County Schools place greater emphasis on student government activities than the Sevier County Schools do, thus creating more opportunities for leadership as defined in this part of the study.

The similarities in non-academic functioning between the two confirmed groups suggested by the interview responses are corroborated by the results obtained on the non-academic sections of the Word Association Test (WAT) and the School

Behavior Rating Scale (SBRS). Median scores received by each group on the non-academic section of the WAT are presented in Table 9, page 108. According to their scores on this measure, the two groups do not differ in their familiarity with or knowledge of non-academic concepts. Mean SBRS scores on leadership skills and social interactions are presented in Table 10, page 109. The two groups received similar ratings in both categories.

Comparisons between Groups of Unconfirmed Gifted Students

Academic functioning. The two groups of unconfirmed gifted students did not differ on any measure of academic knowledge. The two groups' mean achievement test scores, median Word Association Test scores, and mean School Behavior Rating Scale scores on classroom work habits are presented in Tables 12, 13, and 14, respectively. The two groups of unconfirmed students achieved similar percentile scores on group achievement tests, similar accuracy scores on the academic section of the Word Association Test, and similar average ratings of competence in classroom work habits.

Non-academic functioning. The two groups of unconfirmed gifted students differed little on the measures of non-academic functioning. Students' responses to the interview questions revealed few differences in either the type or the variety of their interests and activities. Rank-order

TABLE 12

UNCONFIRMED GIFTED STUDENTS' MEAN PERCENTILE SCORES ON GROUP ACHIEVEMENT TESTS

Academic Subject	Monroe County (n = 7)	Sevier County (n = 9)	t
Reading	80.71	74.00	-.68
Math	88.00	90.67	-.44

TABLE 13

UNCONFIRMED GIFTED STUDENTS' MEDIAN SCORES ON WORD ASSOCIATION TEST

Word Category	Monroe County	Sevier County	z
Academic Words (Highest possible score = 64) (Range = 39)	27	30	-.37
Non-academic Words (Highest possible score = 64) (Range = 34)	40	41	-.63

TABLE 14

UNCONFIRMED GIFTED STUDENTS' MEAN SCORES ON SCHOOL BEHAVIOR RATING SCALE[a]

Rating Scale Category	Monroe County (n = 7)	Sevier County (n = 9)	t
Classroom Work Habits	3.38	3.36	- .16
Leadership Skills	3.02	3.52	-1.67*
Social Interactions	3.35	3.33	.11
Total Rating (all 90 items)	3.30	3.33	.30

*$p < .10$

[a]Scale items are scored from 1-4, with 1 indicating behavior never occurs and 4 indicating behavior occurs daily.

correlation coefficients (Spearman R) comparing the types of activities mentioned by each group within each interview category are presented in Table 15. As before, the correlation coefficients indicate the degree of similarity between the two groups in terms of the number of students who mentioned specific activities. (See Appendix B for the actual rank orders of the activities within each category by group.) Correlation coefficients were not computed if the category had fewer than five specific activities. The two unconfirmed groups mentioned similar types of preferred free-time activities, television shows, books, and hobbies, and reported similar preferences for social activities over individual activities. The two groups of students may differ in the types of clubs to which they belong and in the types of special lessons they take outside of school, as different opportunities are available to students in each county.

Chi square statistics comparing the variety of activities mentioned within each category by the subjects in each group also are presented in Table 15. The chi square statistic indicates the degree of difference between the two groups in the number of specific activities mentioned within each category by the students. (See Appendix B for the frequency distributions of the numbers of activities mentioned within the categories.) The two unconfirmed groups mentioned a similar variety of types of preferred free-time activities, types of television shows, types of books, and

TABLE 15

COMPARISON OF UNCONFIRMED GIFTED STUDENTS' INTERVIEW RESPONSES WITHIN CATEGORIES[a]

Interview Category	Type of Activities[a] (Degree of Similarity)		Variety of Activities[b] (Degree of Difference)	
	n	Spearman R	df	(χ^2)
Preferred free-time activities	25	.61**	3	1.88
Favorite television show	12	.45*	2	1.37
Types of books read	9	.46*	3	2.54
Hobbies	7	.54*	3	.95
Club memberships	4	--	4	5.26
Types of special lessons	2	--	2	4.83
Evidence of leadership	4	--	3	16.49**[c]
Preference for social activities	12	.81**	4	8.48

*$p < .20$ **$p < .001$

[a]Statistical significance implies no difference between groups; blank indicates correlation was not computed.

[b]Statistical significance implies significant difference between groups.

[c]Monroe County students participate in a wider variety of activities within this significantly different category.

types of hobbies. The two unconfirmed groups indicated that they belong to a similar number of clubs and take a similar number of special lessons. They also indicated that they participate in social and individual activities with similar frequencies. The Monroe County unconfirmed students, like the Monroe County confirmed students, indicated that they hold more formal leadership positions ($\chi^2(3) = 16.49$, $p < .001$). As before, the difference in number of leadership positions may reflect the school systems' different stances on student government activities.

The similarities in non-academic functioning between the two unconfirmed groups suggested by the interview responses are corroborated by the results obtained on the non-academic sections of the Word Association Test (WAT) and the School Behavior Rating Scale (SBRS) in regard to the students' interests and social interactions. Median scores received by each group on the non-academic section of the WAT are presented in Table 13, page 114. According to their scores on this measure, the two unconfirmed groups do not differ in their familiarity with or knowledge of non-academic concepts. Mean SBRS scores on leadership skills and social interaction are presented in Table 14, p. 115. The two groups received similar ratings on their social interactions, but the Sevier County students received somewhat higher ratings of leadership skills ($t(14) = -1.67$, $p < .10$). This difference between the two unconfirmed groups in leadership

skill contrasts with the interview finding that the Monroe County students hold more leadership positions.

Comparisons between All Confirmed and All Unconfirmed Students

Academic functioning. The confirmed gifted students differed from the unconfirmed gifted students in their basic academic skills and in their understanding of abstract academic concepts. The two groups' mean achievement test percentile scores and their median Word Association Test (WAT) scores are presented in Tables 16 and 17, respectively. The confirmed gifted group achieved a significantly higher average percentile score in reading ($t(31) = 3.90$, $p < .001$), suggesting that the confirmed gifted students are better readers than the unconfirmed students. The two groups did not differ in their math achievement. The confirmed gifted students also demonstrated a more accurate understanding of general academic concepts, as measured by the WAT, than did the unconfirmed gifted students ($z = -3.02$, $p < .001$). Because the quality of word associations changes with level of education (Brown & Berko, 1960; Deese, 1965; Rosanoff, Martin, & Rosanoff, 1918), the comparisons were repeated, controlling for the markedly different distributions of grade levels within the two groups. When only the fourth and fifth grade students from each group were compared, the confirmed group still achieved a significantly higher median score of 32.5 on the academic section of the WAT, compared to the

TABLE 16

CONFIRMED AND UNCONFIRMED GIFTED STUDENTS' MEAN PERCENTILE SCORES ON GROUP ACHIEVEMENT TESTS

Academic Subject	Confirmed (n = 46)	Unconfirmed (n - 16)	t
Reading	92.31	76.94	3.90*
Math	90.96	89.50	.41

*p<.001

TABLE 17

CONFIRMED AND UNCONFIRMED GIFTED STUDENTS' MEDIAN SCORES ON WORD ASSOCIATION TEST

Word Category	Confirmed Gifted (n = 46)	Unconfirmed Gifted (n = 16)	z
Academic Words (Highest possible score = 64) (Range = 47)	50	27	-3.02*
Non-academic Words (Highest possible score = 64) (Range = 43)	56	41	-4.15*

*p<.001

unconfirmed students' median score of 27.5 ($z = -2.64$, $p < .001$).

Mean School Behavior Rating Scale scores of competence in classroom work habits are presented in Table 18. According to the ratings they received, the two groups do not differ in their classroom work habits.

Non-academic variables. The confirmed gifted students and the unconfirmed gifted students differed on all three measures of non-academic functioning. Students' responses to the interview questions revealed few differences in the types of interests and activities preferred, but revealed several differences in the variety of activities preferred within each category. Rank-order correlation coefficients (Spearman R) comparing the types of activities mentioned by each group are presented in Table 19. The correlation coefficients indicate the degree of similarity between the confirmed and unconfirmed students in terms of the number of students who mentioned specific activities. Correlation coefficients were not computed if the category had fewer than five specific activities. The confirmed and unconfirmed students mentioned similar types of preferred free-time activities, television shows, and books, and reported similar preferences for social activities over individual activities. The two groups of students may differ in the types of hobbies they prefer, the types of clubs to which they belong, and in the types of special lessons they take outside of school.

TABLE 18

CONFIRMED AND UNCONFIRMED STUDENTS' MEAN SCORES ON SCHOOL BEHAVIOR RATING SCALE[a]

Rating Scale Category	Confirmed Students (n = 46)	Unconfirmed Students (n = 16)	t
Classroom Work Habits	3.21	3.37	-1.53
Leadership Skills	2.91	3.24	-1.70*
Social Interactions	3.13	3.34	-1.62*
Total Rating (all 90 items)	3.18	3.32	-1.32

*$p < .10$

[a]Scale items are scored from 1-4, with 1 indicating behavior never occurs and 4 indicating behavior occurs daily.

TABLE 19

COMPARISON OF CONFIRMED AND UNCONFIRMED STUDENTS' INTERVIEW RESPONSES WITHIN CATEGORIES

Interview Category	Type of Activities[a] (Degree of Similarity)		Variety of Activities[b,c] (Degree of Difference)	
	n	Spearman R	df	(χ^2)
Preferred free-time activities	25	.77***	3	15.76**
Favorite television show	12	.69**	2	2.71
Types of books read	9	.60*	3	24.04***
Hobbies	7	.41	3	2.19
Club memberships	4	--	4	20.06***
Types of special lessons	2	--	2	12.08**
Evidence of leadership	4	--	3	13.07**
Preference for social activities	12	.88**	4	5.59

*$p < .10$ **$p < .01$ ***$p < .001$

[a]Statistical significance implies no difference between groups; blank indicates correlation was not computed.

[b]Statistical significance indicates significant difference between groups.

[c]Confirmed gifted students participate in a wide variety of activities in all significantly different categories except types of special lessons.

Chi square statistics comparing the variety of activities mentioned within each category by the subjects in each group also are presented in Table 19. The chi square statistic indicates the degree of difference between the confirmed and unconfirmed students in the number of specific activities mentioned within each category by the students. (See Appendix B for the frequency distributions of the numbers of activities mentioned within the categories.) The confirmed and unconfirmed students mentioned a similar variety of types of television shows watched and types of hobbies. Both confirmed and unconfirmed students indicated a preference for social activities over individual activities. The confirmed gifted students indicate that they participate in a wider variety of free-time activities ($\chi^2(3) = 15.76$, $p < .01$), that they read a wider variety of books ($\chi^2(4) = 24.04$, $p < .001$), that they belong to more clubs ($\chi^2(4) = 20.06$, $p < .001$), and that they hold more leadership positions ($\chi^2(3) = 13.07$, $p < .01$). The unconfirmed gifted students, however, indicated that they take more special lessons outside of school than the confirmed gifted students do ($\chi^2(2) = 12.08$, $p < .01$).

The results of the non-academic sections of the Word Association Test and the School Behavior Rating Scale present a different picture of the confirmed and unconfirmed students than the results of the interview. The median scores achieved by both confirmed and unconfirmed students on the

Word Association Test are presented in Table 17, page 120. The confirmed gifted group achieved a higher average score than the unconfirmed group when all students are included in the analysis ($z = -4.15$, $p < .001$). As was noted in the analysis of the academic words, however, grade level must be considered when interpreting these results. When only the fourth and fifth grade students in each group are compared, the confirmed gifted students achieved a median score of 38.5, which is not significantly different from the unconfirmed gifted students' median score of 39.5 ($z = 1.24$, $p > .20$).

Mean ratings on the leadership skill and social interaction sections of the School Behavior Rating Scale are presented in Table 18, page 122. The unconfirmed gifted students were rated somewhat more competent than the confirmed gifted students, both in leadership skills ($t(9) = -1.70$, $p < .10$), and in social interaction ($t(14) = -1.62$, $p < .10$). These results suggest superiority on the part of the unconfirmed gifted students and differ from the interview finding which indicated that the confirmed students hold more formal leadership positions, implying superior leadership skills, and that no difference exists between the two groups in their preference for social activities.

CHAPTER V

DISCUSSION

The purpose of the present study was to investigate differences in academic and non-academic functioning among intellectually gifted children enrolled in different special educational programs. Specifically, the investigator attempted to discern if confirmed intellectually gifted students in a program which provides Special Education through direct service are superior to confirmed gifted students in a program which provides Special Education through indirect (consultation) services. Also, the investigator attempted to determine whether children who had been identified as intellectually gifted and enrolled in either special program are superior to children who had not been formally identified as intellectually gifted nor enrolled in a special program.

Discussion of the Results

The two groups of confirmed gifted students in the present study are remarkably similar to each other on all measures of academic and non-academic functioning. One inference that can be made based on this similarity is that being identified as intellectually gifted and participating in either type of special educational program is equally beneficial to students. At the least, no clear benefits

were identified which could be associated with a specific program.

The design of the present study, however, precludes a definite conclusion regarding the effects of the two programs on students. Hypotheses not related to program effects could explain the research findings. The most obvious alternate hypothesis concerns the groups' similarity or dissimilarity to each other before beginning their respective special programs. It is possible that the two groups of students were not similar to one another in academic and non-academic functioning and progressed at different rates or in different directions to reach their current status of similarities. If this were true, one could infer that each type of program has very different effects on the students.

While it is not possible to confirm the two groups' similarity prior to their beginning their respective programs, evidence does exist to support their relative similarity. First, Monroe and Sevier Counties are similar to each other on several general dimensions. The two counties are approximately the same size, they are located in the same geographic area, and the residents of the two counties enjoy a similar standard of living. The two counties' school systems are similar not only in size but also in educational philosophy. The counties' relative similarity becomes clear if one compares either county to a more suburban county, like Knox County, or to a city, like Knoxville

or Maryville. The students' similarity to one another probably increased as a function of the criteria used to identify them as gifted: high IQ. Documented characteristics associated with high IQ, including socioeconomic level, increase the probable homogeneity of the two groups of confirmed gifted students. In the present study, the similarity between the groups of confirmed gifted students on the research measures is repeated in the comparisons of the unconfirmed gifted students. The two groups of unconfirmed students also are remarkably similar to each other on virtually all measures, even though the unconfirmed gifted differ from the confirmed gifted. If the confirmed gifted were noticeably different from one another before beginning the special programs, one would expect the unconfirmed gifted, who have not participated in special programs, to reflect this difference. Finally, the confirmed gifted students are similar to each other on a number of variables, measured by several methods. The likelihood that the two groups of students could start out being different from each other, then achieve similarity on all measures, does not seem to be very great.

Of course, a more stringent research design would be required before any conclusive statement could be made about the effects on the students of participating in either type of special program. This research could be accomplished by introducing both types of programs into each county, then

randomly assigning students to a program. If the similarity between students enrolled in the two programs persists, it would be possible to state with more conviction that the two programs have similar effects on the students.

It is important to note that the results of the present study also indicate that the confirmed intellectually gifted subjects do better than the unconfirmed gifted subjects in some ways but not in all ways. Their superiority is most evident in their academic functioning. Confirmed gifted students, according to their achievement test scores, are better readers than the unconfirmed gifted students. They have a better understanding of general academic concepts, as measured by a word association test. The confirmed gifted students' superiority is not as clear in their non-academic functioning. The confirmed gifted students' interview responses indicated that they possess a wider variety of personal interests and that they hold more formal leadership positions. They are indistinguishable from the unconfirmed gifted, however, in the types of activities they prefer, in their knowledge of non-academic concepts, and in their preference for social activities. In contrast to the interview data, the unconfirmed students are superior to the confirmed students in leadership skills and social interactions, when these skills are measured by a teacher-completed rating scale.

The pattern of similarities and differences among the

confirmed and unconfirmed students suggests that high IQ--not participation in special programs--is the primary factor differentiating the confirmed from the unconfirmed in academic functioning. It is interesting to note that the confirmed gifted students are not only similar to each other but also very similar to Terman's (1925) original group of intellectually gifted subjects. Like the confirmed subjects in the present study, Terman's subjects also were academically talented, especially in the more abstract subjects, and were described as having a variety of interests, as reading a variety of books, and of having a variety of hobbies. Terman's subjects included a high proportion of students from middle and upper-level socioeconomic groups, similar to the high proportion of upper-level students in the present study. One major difference between Terman's subjects and the subjects of the present study seems to be that Terman's subjects had not had the benefit of one to four years of Special Education!

Specific differences between the confirmed and unconfirmed subjects strengthen the "high IQ" hypothesis. Virtually all of the measures on which the confirmed gifted appear to be superior are measures which are logically and statistically related to performance on "intelligence tests." The individual intelligence tests most frequently used to obtain an intelligence quotient are heavily biased in favor of verbal skills, especially vocabulary skills (Anastasi,

1968; Torrance, 1971). Successful performance on the tests requires an extensive vocabulary and fluent expressive skills. Also, the tests are highly correlated with academic success (Anastasi, 1968).

The confirmed gifted students in the present study demonstrate the superior verbal and academic skills implied by their high IQ's in several ways: superior reading skills, a preference for reading in a wider variety of topic areas, excellent knowledge of academic concepts as measured by a word association test (a vocabulary test of sorts), and formal leadership skills (including, one assumes, the ability to express ideas clearly). On measures which do not depend so heavily on academic and verbal skills, the confirmed gifted group's superiority fades.

The confirmed and unconfirmed groups' performances on the Word Association Test serve as an example of how academic and non-academic talents interact with "IQ" or "intelligence" defined as the IQ. Although the investigator proposed the word association test only as a measure of knowledge, Rosanoff, Martin, and Rosanoff (1918) originally designed and validated a word association test as a measure of "higher-order mental functioning"--an alternative to Binet's and Terman's "intelligence" tests and, indeed, to their concept of "intelligence." As the academic section of the present study's word association test includes only words from Rosanoff et al.'s (1918) original list, it can be

considered a test of such functioning as well as a measure of academic knowledge. The confirmed gifted students perform better on this measure than the non-unconfirmed students, consistently with superior "test-intelligence" that determines their status as intellectually gifted. Successful performance on the academic section of the Word Association Test requires many of the same verbal skills required for successful performance on more contemporary intelligence tests. (See Appendix C for a detailed analysis of selected Rosanoff words, including comparisons with Rosanoff's norms.) On the other hand, successful performance on the non-academic section of the Word Association Test used in the present study requires adequate verbal skill but also requires an interest in and understanding of the world beyond school. When grade level is controlled, confirmed intellectually gifted students do not differ from unconfirmed gifted students in non-academic knowledge. Apparently, unconfirmed gifted students are equally talented in their non-academic knowledge, even though they are less talented in their academic knowledge.

While the differences in academic functioning among the confirmed and unconfirmed students cannot be ignored, the similarities between the two groups in non-academic functioning must be stressed. "High IQ," "excellent academic skill," and "intelligence" are not synonymous--a fact apparently ignored in the Tennessee State Department of

Education, despite the evidence produced by such researchers as Guilford, Witty, Torrance, and Renzulli, when the eligibility criteria were chosen. The unconfirmed gifted's similarity to the confirmed gifted on some measures of non-academic functioning, and their superiority on at least one measure, raises some question about potential effects of labeling a child "not gifted," and suggests that schools need to consider developing a different model for educating talented children.

The Effects of Labeling

The unconfirmed gifted students in the present study seem to represent a sub-population of gifted who are at least as talented as the confirmed gifted students but in different ways. In spite of their "gifted" characteristics, however, as many as half of these unconfirmed gifted students will be excluded from special programs because their IQ scores will not be high enough to make them eligible for participation (Arnold, 1981). In other words, many of these unconfirmed students will be arbitrarily excluded from special programs regardless of any special non-academic talent they may have, because they lack the verbal skill and/or the academic potential needed to achieve a high IQ score. If these unconfirmed gifted students are in fact "gifted" in ways other than "test-intelligence," arbitrarily excluding half of them from special programs hardly seems consistent with the rationale and purpose for

providing these students with special educational programs.

The positive and negative effects of labeling, i.e., categorizing students according to a convenient similarity, have been well documented in the literature (Rosenthal & Jacobson, 1968). Although Tennessee state law makes it difficult to investigate the effects of labeling separately from the effects of placement in a special program, it would seem that being labeled as intellectually gifted would be beneficial to a student's self-image and to his relationship with most teachers. However, the fact that a number of talented students are, in effect, labeled "possible gifted" when they are referred for assessment, then later labeled as "not gifted," raises an important question: What happens to the referred students who are not confirmed as intellectually gifted? By the same logic that being identified as "intellectually gifted" is beneficial, being identified as a child who is "not bright enough to be really gifted" can hardly be anything but discouraging. Both the student and the teacher must feel the impact of such a label. To this author's knowledge, no data have been collected on the educational careers of these excluded children. If sufficiently discouraged (or sufficiently convinced of their lack of talent), these students could simply stop trying to succeed. If the long-range goal of the identification of gifted students is to develop and encourage all potential, squelching potential by labeling it "unworthy of special

attention" or "not the right kind of potential" hardly seems consistent.

While the problem of discouraging rather than encouraging talent can be addressed through changes in the identification procedures used to determine eligibility, it seems that the service delivery model which de-emphasizes identification of potential talent and stresses the growth and development of existing talent deserves to be re-evaluated.

An Alternative Educational Model

As an alternative to educational models which stress proper identification of eligible gifted students, the author proposes that so-called enrichment activities in a wide variety of topic areas be made available to all students regardless of "intelligence" or "potential." Within this model, students themselves, rather than teachers or psychologists, would decide what learning to pursue and would develop their skills in whatever areas interest them. This idea is based on the rationale that talent, not potential, is the concept that educators need to consider and that the focus of educators' efforts needs to be on developing an environment which will encourage the emergence of talent.

In spite of extensive efforts made by some school systems over the past 50 years to identify intellectually gifted students, no data exist to indicate that these identified persons are fulfilling the promise of their

intellectual talent in ways that Terman, Hollingsworth, and others expected. As a group, Terman's original subjects were described at mid-life (Terman, 1959) as well-adjusted and happy--but the label "genius" could not be applied to many of them. In spite of the possibilities for early intervention introduced by Terman's intelligence test, time and research have demonstrated that many personal characteristics, including but not limited to "test intelligence," contribute to the realization of genius.

Albert (1971) reminds us that genius comes about only through the interaction of intelligence, creativity, productivity, ambition, luck, and good-timing. He contends that no amount of one attribute will suffice without adequate amounts of all the others. He also suggests that the precise interaction of the many characteristics needed for exceptional success may be impossible to identify. Instead, he suggests that society can only ask that individuals be encouraged to identify their own special interests and capacities early in life and that they be encouraged to begin work on possible enterprises and contributions at as early an age as possible. The rationale for providing virtually all students with an "enriched" curriculum rests on the logic that it may not be possible to identify students with the right combination of "gifted" attributes, but it is possible to structure the learning environment to maximize the emergence and development of talent.

The proposed model addresses some of the criticism levied against the models of education of the gifted which emphasize the identification of students who can "best" profit from enrichment. Discrimination in the selection of participants and the irrelevant content of many enrichment programs are two frequently heard criticisms. By including all interested children, the proposed model prevents the arbitrary exclusion of talented students within minority and disadvantaged populations. Because students would choose activities based on their own interests and special talents, educators can prevent the expensive mistake of providing irrelevant enrichment to disinterested students. Renzulli (1971) suggests a similar model in his Enrichment Triad Model. In his model, all children participate in an enriched curriculum; then those who show particular talent are encouraged to apply their skills to real-world problems. Renzulli's model has the added advantage of allowing talented students to actually practice the skills they will need as adults if they are to have a lasting, positive effect on society.

While skeptics immediately will point out all the reasons why such a model as the proposed one could not be implemented, e.g., the expense, the administrative confusion, teachers' reluctance, etc., the model is offered primarily as a vehicle for questioning both the <u>way</u> we educate gifted children and also the reasons <u>why</u> we educate

them. In spite of Terman's hopes, no data exist to demonstrate that it is possible to predict who will make a meaningful contribution to society and who will not. The current rationale for identifying, studying, and educating the so-called "gifted child" is based on the assumption that it is possible to identify potential for contribution accurately. Time has shown that this rationale is questionable. Perhaps educators could better spend scarce resources improving the educational programs available to all children, basing their action on the rationale that each child is gifted in some way and that each child has the potential to influence society. The individualized educational programs designed for gifted students are appropriate for many other students as well.

In summary, although the results of the present study indicate that identified gifted students are superior to other students on measures of academic functioning, educators and psychologists must raise the question of whether this is the area of superiority which society wants to recognize and in which society wants to encourage growth. It seems that society could benefit more from encouraging all students to explore topics of special interest and to strive to develop in all students an appreciation for excellence and a desire for lifelong learning experiences.

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APPENDIXES

APPENDIX A

RESEARCH MATERIALS

March 9, 1981

Dear Parent:

Your child has been referred to me by his/her Special Education teacher as a potential participant in a study of intellectually gifted students. As you already know, Tennessee law requires that public schools provide a free, appropriate education to all intellectually gifted students. The purpose of this research project is to learn more about the effects of different types of Special Education programs on gifted children. As a doctoral student in School/Community Psychology at The University of Tennessee, Knoxville, I am conducting this research as one of the requirements for the Doctor of Philosophy degree.

If you agree to allow your child to participate in this study, I will interview him/her about his/her interests and activities. This interview will include such questions as "What is your favorite television program?" and "What games do you like to play?" Your child also will be asked to complete a word association test. This test consists of a list of words; the student is asked to give several responses to each word to demonstrate his/her understanding of the word. In addition to the interview and the word association test, each student's teacher will be asked to rate the student on behaviors teachers often observe in the classroom. Also, your child's permanent record will be reviewed to obtain needed test scores and information about his/her individual educational plan.

Every effort will be made to schedule the interview and the test administration at a time during the school day when your child can best afford to be absent from the classroom for a brief time. I will be working closely with teachers and principals to insure that no interviews are scheduled during classroom tests, important lectures, or lunch.

Please note that your child's participation in this project is completely voluntary and s/he may withdraw from the project at any time. Neither his/her grades nor his/her educational standing will be affected if s/he participates or refrains from participating.

To protect your child's privacy, s/he will be assigned an identification number early in the research, and his/her name will be removed from all research records. The master list matching names and numbers will be kept strictly confidential. Similar precautions will be taken to keep all family information confidential as well.

If you agree to your child's participation, please sign the enclosed permission form, complete the brief questionnaire, and return both forms to me. I have provided an addressed, stamped envelope for your use. Because I cannot begin this study until I receive your written permission, I would appreciate your returning these forms as soon as possible.

I would like to remind you that all information about your child and your family will be kept completely confidential.

I will contact you again before the end of the school year to inform you of the research findings. If you have any questions about this research, please contact me. My address is:

Deborah A. Hino
Department of Psychology
Austin Peay Building
The University of Tennessee
Knoxville, TN 37916
or
507 Hollywood Road
Knoxville, TN 37919
1-588-6694 (call collect evenings)

Thank you for your help on this project. I am looking forward to being able to share some interesting research findings with you in a few weeks.

Sincerely,

Deborah A. Hino

Deborah A. Hino
Graduate Student in Psychology
The University of Tennessee, Knoxville

CONSENT FORM

I give permission for my child/guardian, _____, to participate in the research project, A Study of Differences among Intellectually Gifted Students Enrolled in Different Special Education Programs. I have received a fair explanation of the purpose of the study and the procedures to be used, including a review of my child's records, a structured interview, a word association test, and a teacher-completed rating scale. I understand that my child's participation in this project is voluntary and that s/he may withdraw from the project at any time. The data from my child's participation in this project may be combined with other data for publication.

_____
SIGNATURE

_____
RELATIONSHIP TO CHILD

_____
ADDRESS

_____
TELEPHONE

_____
DATE

FAMILY INFORMATION QUESTIONNAIRE

Child's name_____ Birthdate_____

Parents' names_____

Parents' occupations: Mother_____

Father_____

Family Income (check one):

_____ less than $10,000

_____ $10,000 - $15,000

_____ $15,000 - $25,000

_____ $25,000 - $30,000

_____ more than $30,000

Total number of brothers and sisters _____

Number of older brothers and sisters_____

Number of younger brothers and sisters_____

Does your child belong to any school-sponsored clubs or organizations? Please list:

Does your child belong to any other clubs or organizations, such as Scouts or church groups? Please list:

Does your child participate in organized sports, such as soccer, Little League, or gymnastics? Please list:

Does your child take any special lessons outside of school? Please list:

To the best of your knowledge, has your child ever held a leadership position in any of these organizations such as club officer or team captain? Please indicate the organization and the position held:

INFORMATION SHEET

Child's name _____

Identification number _____ Male Female

County _____

School _____

Grade _____

Teacher _____

Birthdate _____

Date entered program _____

Program option _____

Teacher _____

IQ _____ WISC-R Binet

Achievement Test scores:

Reading _____ Test _____

Arithmetic _____ Date _____

Other _____

_____

Parents' occupation(s): _____

_____

Family income: ___less than $10,000 ___$25,000 - $30,000

___$10,000 - $15,000 ___more than $30,000

___$15,000 - $25,000

OTHER INFORMATION:

STRUCTURED INTERVIEW--STUDENT

Identification number_____

Introduction: "I am talking to some students here at _____ School to learn about the different things students like you like to do, both here at school and out of school. I am going to be asking you a lot of questions--some will be about you, some will be about things you like to do, some will be about your ideas. There are no right or wrong answers to these questions, and you won't be graded on your answers, so please try to answer as honestly as you can."

When you have time to do just as you please, say on a Saturday or after school, what do you do?

Do you think you spend more free time alone or with your friends?

What do you usually do when you are by yourself to pass the time?

Who are your three best friends?

What do you do together with these friends?

Some games are best played outdoors and some games are best played indoors. What are some outdoor games or activities you enjoy?

What indoor games and activities do you enjoy?

Whom doyou play these games with?

What do you like about these games?

Do you play on any sports teams?

Do you play one position more than any other position?

Does your team have a captain? Are you or have you ever been captain?

What new sport would you learn to play if you had the opportunity?

Does your class or school have officers? Have you ever run for office or held office?

Do you take any special lessons outside of school?

How did you first get started taking these lessons?

Do you have a hobby (building models, needle point, cooking, art, collecting stamps)?

How did you first become interested in this hobby?

What do you want to be when you grow up? What other careers are you considering?

What about these careers appeals to you? How did you first learn about these careers?

Many students watch television. What is your favorite television show?

What do you like about this show?

What other television shows do you watch?

Do you like to read? Name some books you have read recently.

What kinds of books are these (fiction, biography, science-fiction, non-fiction)?

Did you borrow these books from the library or did you buy them?

How often do you go to the library here at school?

How often do you go to the public library?

What kinds of books do you borrow from the public library? Are these books similar to or different from the books you borrow from the school library?

Do you belong to any clubs (school clubs, scouts, church groups)?

Are you or have you ever been a club officer?

If you could take a trip any place in the world, where would you go? Why?

If you were planning a field trip to Knoxville, what would you like to see or do?

If President Reagan came to visit your school, what would you want to tell him?

What do you think is the biggest problem facing our country today?

What other problems do we face that you feel are important?

What are some of the problems facing your community today?

Is there anything else about you that you would like to tell me?

WORD ASSOCIATIONS

Identification _____

continent	decimal	chess	Congress
continent	decimal	chess	Congress
arithmetic	physics	fractions	secretary
arithmetic	physics	fractions	secretary
jazz	percentage	hydraulic	subtraction
jazz	percentage	hydraulic	subtraction
physician	biology	nuclear	soccer
physician	biology	nuclear	soccer
governor	drama	retina	carburetor
governor	drama	retina	carburetor
vertebrate	handicapped	peninsula	lawyer
vertebrate	handicapped	peninsula	lawyer
Picasso	equator	federal	molecule
Picasso	equator	federal	molecule
budget	lasar beam	Iran	meteor
budget	lasar beam	Iran	meteor

SCHOOL BEHAVIOR RATING SCALE

Student's Name _____

Directions: The items listed below refer to student behaviors often observed by teachers in the classroom. Please indicate how well each item describes the student whose name appears above using the following scale:

1 = does not describe the student at all; the behaviors associated with this item are never observed

2 = somewhat describes the student; the behaviors associated with this item are observed once or twice a month

3 = describes the student well; the behaviors associated with this item are observed once or twice a week

4 = describes the student very well; the behaviors associated with this item are observed daily

? = no information; no opportunity to observe this behavior

1.	Figures out what to do by him/herself	1	2	3	4	?
2.	Is competitive; will do anything to win, including cheating	1	2	3	4	?
3.	Gets in verbal arguments with other students	1	2	3	4	?
4.	Plays jokes on other students	1	2	3	4	?
5.	Resolves disagreements with friends without adult help	1	2	3	4	?
6.	Sent on errands because s/he always goes willingly	1	2	3	4	?
7.	Doesn't need much supervision by teacher	1	2	3	4	?

8.	Gets upset by difficult assignments but finishes them	1	2	3	4	?
9.	Asks teacher for directions.	1	2	3	4	?
10.	Doesn't speak up in class loud enough to be heard.	1	2	3	4	?
11.	Checks out library books that are not assigned reading	1	2	3	4	?
12.	Asks teacher for help when not sure of what to do.	1	2	3	4	?
13.	Doesn't hesitate to disagree with teacher but not argumentative.	1	2	3	4	?
14.	Knows class schedule; always ready for change from one activity to another.	1	2	3	4	?
15.	Asks content oriented questions about the material presented in class	1	2	3	4	?
16.	Jokes with teacher	1	2	3	4	?
17.	When finished with assignments, starts another activity without being told to.	1	2	3	4	?
18.	Asks questions checking on what the teacher has just said or just instructed the class to do.	1	2	3	4	?
19.	Speaks too loudly indoors.	1	2	3	4	?
20.	Creates original games/activities, using materials designed for other purposes or activities.	1	2	3	4	?
21.	Shares toys, books, etc. with others	1	2	3	4	?
22.	Creates own games without special equipment or materials.	1	2	3	4	?

23.	Throws ball skillfully and in the right direction.	1	2	3	4	?
24.	In competition, is a good loser.	1	2	3	4	?
25.	Follows other students' suggestions of games and activities. . .	1	2	3	4	?
26.	Gets back to work after recess easily.	1	2	3	4	?
27.	Has good athletic skills when compared to classmates	1	2	3	4	?
28.	Seldom speaks up in class or raises hand to add comments to what the teacher has said	1	2	3	4	?
29.	Gets upset by difficult assignments and fails to finish them	1	2	3	4	?
30.	Stays in seat; doesn't move around classroom except when asked to do so	1	2	3	4	?
31.	Asks questions to get attention.	1	2	3	4	?
32.	Chosen by classmates to be committee chairman or team captain.	1	2	3	4	?
33.	Uses materials purposefully in unique ways	1	2	3	4	?
34.	Loses temper with slight provocation	1	2	3	4	?
35.	Suggests games for group to play; suggestions usually followed	1	2	3	4	?
36.	Gets in verbal arguments with teacher.	1	2	3	4	?
37.	When one solution does not work, tries other solutions	1	2	3	4	?
38.	Tries to help others without doing the work for them	1	2	3	4	?

39.	Carries cafeteria tray without spilling food	1	2	3	4	?
40.	Volunteers to be chairman or captain but seldom chosen by other students to be chairman or captain	1	2	3	4	?
41.	Jokes with friends	1	2	3	4	?
42.	Keeps track of own money	1	2	3	4	?
43.	Corrects other students when they make mistakes	1	2	3	4	?
44.	Suspected of cheating	1	2	3	4	?
45.	Resents criticism and suggestions; doesn't follow them	1	2	3	4	?
46.	Talks in class discussions; other children listen to his/her comments	1	2	3	4	?
47.	Approaches teacher for directions frequently	1	2	3	4	?
48.	Gets caught cheating	1	2	3	4	?
49.	Volunteers to show other students how to do something	1	2	3	4	?
50.	Plays jokes on friends	1	2	3	4	?
51.	In art, paints/draws picture exactly like that of student next to him/her	1	2	3	4	?
52.	Does own work	1	2	3	4	?
53.	Paces self to get all work done within available time	1	2	3	4	?
54.	Isn't bothered or distracted when other students are being disruptive	1	2	3	4	?

55.	Doesn't eat dishes the first time they are offered in the school cafeteria	1	2	3	4	?
56.	Gets in fights with other students	1	2	3	4	?
57.	Finishes class assignments on time	1	2	3	4	?
58.	Suggests games for group to play; suggestions ignored	1	2	3	4	?
59.	Completes homework assignments on time	1	2	3	4	?
60.	Regularly talks with or plays with at least one other student	1	2	3	4	?
61.	Listens attentively when other students are talking	1	2	3	4	?
62.	When answering a question in class, gives more information than required by the question	1	2	3	4	?
63.	Picky eater; only eats one or two things on the cafeteria plate	1	2	3	4	?
64.	Talks to other students; they listen attentively	1	2	3	4	?
65.	Keeps track of materials, e.g., books, pencils, etc	1	2	3	4	?
66.	Does best, and works hardest, when supervised by teacher	1	2	3	4	?
67.	Is a good team captain; chooses team tactfully, encourages team members, models fair play	1	2	3	4	?
68.	Raises hand to volunteer answer in class	1	2	3	4	?
69.	Distracts other students with avoidable noises or conspicuous fidgeting	1	2	3	4	?

70.	Takes care of possessions	1	2	3	4	?
71.	Offers comments that are not repetitions of the teacher's comments	1	2	3	4	?
72.	Asks "Why?" too much	1	2	3	4	?
73.	Feelings easily hurt	1	2	3	4	?
74.	Willing to try new games/stunts	1	2	3	4	?
75.	Starts conversations with other students	1	2	3	4	?
76.	Seen throwing food in cafeteria	1	2	3	4	?
77.	Always works on class assignments, even during recess	1	2	3	4	?
78.	Asks "Why?" questions	1	2	3	4	?
79.	Asks unnecessary questions	1	2	3	4	?
80.	Waits turn in line or in playing games	1	2	3	4	?
81.	Follows directions given for an assignment	1	2	3	4	?
82.	Goes beyond assignments; finished work reflects extra time, thought, and/or effort	1	2	3	4	?
83.	Avoids play with other students	1	2	3	4	?
84.	Seeks constructive criticism and suggestions	1	2	3	4	?
85.	Raises hand to give correct answer to hard question	1	2	3	4	?
86.	Pokes fun at less intelligent students	1	2	3	4	?

87. Questions adults' rules or decisions that seem to be unreasonable . . . . . 1 2 3 4 ?

88. Eats everything on the cafeteria plate . . . . . 1 2 3 4 ?

89. Makes comments that connect two topics or subject areas in an unusual, but acceptable, way. . . . . 1 2 3 4 ?

90. Offers comments that are the same as what the teacher said . . . 1 2 3 4 ?

91. Compared to other students you have taught, how competent is this student in regard to his/her ability to succeed in the classroom? (Circle one.)

1 2 3 4
one of least competent — one of most competent

92. Compared to other gifted students whom you have taught, how competent is this student in regard to his/her ability to succeed in the classroom? (Circle one.)

1 2 3 4
one of least competent — one of most competent

93. How likeable do you find this child? (Circle one.)

1 2 3 4
not likeable — very likeable

APPENDIX B

DETAILED ANALYSIS OF INTERVIEW RESPONSES

TABLE B-1

TYPES OF PREFERRED FREE TIME ACTIVITIES CONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. Team sports	1. Team sports
2.5 Watching TV	2.5 Outdoors activities
2.5 Board games with strategy	2.5 Board games with strategy
4. Reading	4. Reading
5.5 Individual sport	5. Watching TV
5.5 Card games	6. Checkers, backgammon, chess
8. Imaginative play	7. Creative endeavors
8. "Just talking"	8.5 Electronic/video games
8. Listening to music	8.5 Individual sport
11. Outdoors activity	11.5 Imaginative play
11. Pets	11.5 "Just talking"
11. Chores	11.5 Listening to music
14. Board games--no strategy	11.5 Riding bikes
14. Other activities	14. Board games--no strategy
14. Hunting, fishing	15. Other activities
16. Electronic/video games	16.5 Chores
18. Sleeping, eating	16.5 Sleeping, eating
18. Thinking	19. Practicing instrument
18. Original game	19. Taking a walk
22. Checkers, backgammon, chess	19. Pets
22. Practicing instrument	21. Card games
22. Taking a walk	22. Original games
22. Studying	23. Studying
22. Riding bikes	24. Hunting, fishing
25. Creative endeavor	25. Thinking

Rank order correlation coefficient: 0.44 ($p < .05$)

Note: Activites are rank ordered, beginning with most preferred.

TABLE B-2

TYPES OF PREFERRED FREE-TIME ACTIVITIES
UNCONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. Board games--strategy	1. Watching TV
2.5 Team sports	2.5 Board games--with strategy
2.5 Card games	2.5 Team sports
6. "Just talking"	4. Outdoor activity
6. Individual sports	5. Reading
6. Watching TV	8. Individual sports
6. Outdoors activity	8. Board games--no strategy
6. Pets	8. Taking a walk
10. Board games--no strategy	8. Imaginative play
10. Imaginative play	8. Creative endeavors
10. Reading	12. "Just talking"
14.5 Checkers, backgammon, chess	12. Listening to music
14.5 Listening to music	12. Riding bikes
14.5 Thinking	15.5 Card games
14.5 Creative endeavor	15.5 Electronic/video games
14.5 Studying	15.5 Practicing instrument
14.5 Riding bikes	15.5 Hunting, fishing
14.5 Other activities	19. Checkers, backgammon, chess
21.5 Original games	19. Studying
21.5 Practicing instrument	19. Other activities
21.5 Sleeping, eating	23. Original games
21.5 Taking a walk	23. Sleeping, eating
21.5 Hunting, fishing	23. Pets
21.5 Chores	23. Thinking
25. Electronic/video games	23. Chores

Rank order correlation coefficient: .61 ($p<.001$)

Note: Activities are rank ordered from most preferred to least preferred.

TABLE B-3

VARIETY OF PREFERRED FREE-TIME ACTIVITIES
PER STUDENT BY SUBJECT GROUP

Number of Different Activities Mentioned	Number of Students Per Group			
	Confirmed		Unconfirmed	
	Monroe (n = 24)	Sevier (n = 22)	Monroe (n = 24)	Sevier (n = 22)
4- 6 Activities	1	4	0	1
7- 8 Activities	8	7	5	4
9-10 Activities	10	7	0	3
11-13 Activities	5	4	2	1

Confirmed gifted: $\chi^2(3) = 11.69$, $p < .01$

Unconfirmed gifted: $\chi^2(3) = 1.88$

Confirmed versus unconfirmed: $\chi^2(3) = 15.76$, $p < .01$

TABLE B-4

TYPES OF FAVORITE TELEVISION SHOWS
CONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1.5 Situation comedy	1. Situation comedy
1.5 Drama	2. Action comedy
3. Moral-comedy	3.5 Drama
4. Action-comedy	3.5 Sports
5. Afternoon syndicated	6. Afternoon syndicated
6. Adventure drama	6. Moral comedy
7. Movies	6. Other
8.5 Sports	9. Adventure-drama
8.5 Pop non-fiction	9. Pop non-fiction
10. News/documentaries	9. Cartoons
11. Other shows	11. Movies
12. Cartoons	12. News/documentaries

Rank order correlation coefficient: .61 ($p < .05$)

Note: Shows are rank ordered, beginning with most popular show.

TABLE B-5

TYPES OF FAVORITE TELEVISION SHOWS
UNCONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. Afternoon syndicated	1. Situation comedy
3.5 Situation comedy	2.5 Afternoon syndicated
3.5 Drama	2.5 Action comedy
3.5 Moral comedy	4.5 Moral comedy
3.5 Movies	4.5 Adventure drama
7.5 Action comedy	7. Movies
7.5 News/documentaries	7. Pop non-fiction
7.5 Other shows	7. Drama
7.5 Cartoons	10.5 Cartoons
10. Adventure-drama	10.5 Other shows
11. Sports	10.5 Sports
12. Pop non-fiction	10.5 News/documentaries

Rank order correlation coefficient: .45 ($p < .15$)

Note: Shows are rank ordered, beginning with most popular show.

TABLE B-6

VARIETY OF TELEVISION SHOWS PREFERRED BY SUBJECT GROUP

Number of Different Types of Shows Mentioned	Number of Students in Group			
	Confirmed		Unconfirmed	
	Monroe (n = 24)	Sevier (n = 22)	Monroe (n = 7)	Sevier (n = 9)
1-2 Types	8	10	3	5
3 Types	12	7	2	3
4-5 Types	4	5	2	1

Confirmed gifted: $\chi^2(2) = 3.13$

Unconfirmed gifted: $\chi^2(2) = 1.37$

Confirmed versus unconfirmed: $\chi^2(2) = 2.71$

TABLE B-7

TYPES OF BOOKS READ BY CONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1.5 Child fiction	1. Child fiction
1.5 Mystery	2. Mystery
3. Science-fiction	4.5 Science-fiction
4. Non-fiction	4.5 Non-fiction
5.5 Sport	4.5 Sports
5.5 Animal stories	4.5 Biography
7.5 Biography	7.5 Animals stories
7.5 Adult fiction	7.5 Adult fiction
9. Magazines	9. Magazines

Rank order correlation coefficient: .85 ($p < .01$)

Note: Book types are rank ordered, beginning with most popular type.

TABLE B-8

TYPES OF BOOKS READ BY UNCONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. Mystery	1. Juvenile fiction
2.5 Juvenile fiction	3. Mystery
2.5 Biography	3. Biography
4. Animal stories	3. Science-fiction
5.5 Adult fiction	5.5 Adult fiction
5.5 Non-fiction	5.5 Sports
8. Science fiction	8. Non-fiction
8. Sports	8. Animal stories
8. Magazines	8. Magazines

Rank order correlation coefficient: .46 ($p < .20$)

Note: Book types are rank ordered, beginning with most popular type.

TABLE B-9

VARIETY OF BOOKS READ PER STUDENT
BY SUBJECT GROUP

Number of Different Types of Books	Number of Students in Group			
	Confirmed		Unconfirmed	
	Monroe (n = 24)	Sevier (n = 22)	Monroe (n = 7)	Sevier (n = 9)
No books read	0	1	0	0
1 Type	2	2	0	1
2 Types	16	11	5	4
3 Types	25	7	2	3
4 Types	0	1	0	1

Confirmed gifted: $\chi^2(3) = 1.37$

Unconfirmed gifted: $\chi^2(3) = 2.54$

Confirmed versus unconfirmed: $\chi^2(3) = 24.04$, $p < .001$

TABLE B-10

TYPES OF HOBBIES OF CONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. Stamp collection	1. Other collections
2. Creative endeavors	2.5 Creative endeavors
3.5 Coin collections	2.5 Sport card collection
3.5 Other collections	4.5 Coin collections
5.5 Stuffed animal collection	4.5 Other hobbies
5.5 Other hobbies	6.5 Stamp collection
7. Sports card collection	6.5 Stuffed animal collection

Rank order correlation coefficient: .75 ($p < .05$)

Note: Hobbies are rank ordered, beginning with most popular.

TABLE B-11

TYPES OF HOBBIES OF UNCONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. Other hobbies	1. Other hobbies
2.5 Other collections	2.5 Coin collection
2.5 Stamp collections	2.5 Stamp collection
4.5 Creative endeavors	4.5 Creative endeavors
4.5 Stuffed animal collection	4.5 Other collections
6.5 Coin collection	6.5 Stuffed animal collection
6.5 Sports card collection	6.5 Sports card collection

Rank order correlation coefficient: .54 ($p < .20$)

Note: Hobbies are rank ordered, beginning with most popular.

TABLE B-12

VARIETY OF HOBBIES PER STUDENT
BY SUBJECT GROUP

Number of Hobbies Per Student	Number of Students Per Group			
	Confirmed		Unconfirmed	
	Monroe (n = 24)	Sevier (n = 22)	Monroe (n = 7)	Sevier (n = 9)
0 Hobbies	2	3	0	0
1 Hobby	14	10	5	3
2 Hobbies	6	5	2	4
3 Hobbies	2	4	0	2

Confirmed gifted: $\chi^2(3) = 4.37$

Unconfirmed gifted: $\chi^2(3) = .95$

Confirmed versus unconfirmed: $\chi^2(3) = 2.19$

TABLE B-13

TYPE OF CLUB MEMBERSHIPS
CONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. 4-H	1. 4-H
2. Church organizations	2. Scouts
3. Scouts	3. Church organizations
4. Other clubs	

Rank order correlation coefficient: .63 ($p < .40$)

Note: Clubs are rank ordered, beginning with the most popular.

TABLE B-14

TYPE OF CLUB MEMBERSHIPS
UNCONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. 4-H	1. 4-H
2. Church organizations	2. Scouts
3. Scouts	3. Church organizations
4. Other clubs	

Rank order correlation coefficient: .65 ($p < .50$)

Note: Clubs are rank ordered, beginning with the most popular.

TABLE B-15

VARIETY OF CLUB MEMBERSHIPS PER STUDENT
BY SUBJECT GROUP

Number of Club Memberships	Number of Students Per Group			
	Confirmed		Unconfirmed	
	Monroe (n = 24)	Sevier (n = 22)	Monroe (n = 7)	Sevier (n = 9)
No Clubs	3	4	0	2
1 Club	9	10	3	7
2 Clubs	4	5	2	0
3 Clubs	6	3	1	0
4 Clubs	2	0	1	0

Confirmed gifted: $\chi^2(4) = 4.08$

Unconfirmed gifted: $\chi^2(4) = 5.26$

Confirmed versus unconfirmed: $\chi^2(4) = 20.06$, $p < .001$

TABLE B-16

TYPE OF LESSONS TAKEN OUTSIDE OF SCHOOL
CONFIRMED GIFTED STUDENTS

Monroe County Program (n = 24)	Sevier County Program (n = 22)
1. Instrument	1. Instrument
2. Other lessons	2. Dance
3. Dance	3. Other lessons

Rank order correlation coefficient: .50 ($p < .50$)

Note: Lessons are rank ordered from most popular to least popular.

TABLE B-17

TYPE OF LESSONS TAKEN OUTSIDE OF SCHOOL
UNCONFIRMED GIFTED STUDENTS

Monroe County Program (n = 7)	Sevier County Program (n = 9)
1. Instrument	1. Instrument
2. Other lessons	2. Dance lessons

Rank order correlation coefficient: .50 ($p < .50$)

Note: Lessons are rank ordered from most popular to least popular.

TABLE B-18

NUMBER OF SPECIAL LESSONS TAKEN OUTSIDE OF SCHOOL PER STUDENT BY SUBJECT GROUP

Number of Lessons Per Student	Number of Students Per Group			
	Confirmed		Unconfirmed	
	Monroe (n = 24)	Sevier (n = 22)	Monroe (n = 7)	Sevier (n = 9)
No Lessons	5	4	1	3
1 Lesson	19	15	3	5
2 Lessons	0	3	3	1

Confirmed gifted: $\chi^2(2) = .40$

Unconfirmed gifted: $\chi^2(2) = 4.83$

Confirmed versus unconfirmed: $\chi^2(2) = 12.08$, $p < .01$

TABLE B-19

NUMBER OF LEADERSHIP POSITIONS PER STUDENT
BY SUBJECT GROUP

Number of Positions Per Student	Number of Students Per Group			
	Confirmed		Unconfirmed	
	Monroe (n = 24)	Sevier (n = 22)	Monroe (n = 7)	Sevier (n = 9)
No Positions	3	7	2	8
1 Position	7	10	4	1
2 Positions	10	5	0	0
3 Positions	4	0	1	0

Confirmed gifted: $\chi^2(3) = 14.56$, $p < .01$

Unconfirmed gifted: $\chi^2(3) = 16.49$, $p < .001$

Confirmed versus unconfirmed: $\chi^2(3) = 13.07$, $p < .01$

TABLE B-20

PREFERENCE FOR SOCIAL ACTIVITIES
CONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. Team sports	1. Team sports
2. Board games with strategy	2. Board games with strategy
3. Card games	3. Checkers
4. Just talking	4. Just talking
5. Board games without strategy	5. Board games without strategy
6. Checkers	6. Card games

Rank order correlation: .96 ($p < .01$)

Note: Activities are rank ordered from most preferred to least preferred.

TABLE B-21

PREFERENCE FOR SOCIAL ACTIVITIES
UNCONFIRMED GIFTED STUDENTS

Monroe County Program	Sevier County Program
1. Board games with strategy	1.5 Board games with strategy
2. Team sports	1.5 Team sports
3. Just talking	3. Card games
4. Board games without strategy	4. Board games without strategy
5. Card games	5. Just talking
6. Checkers	6. Checkers

Rank order correlation: .44 ($p < .20$)

Note: Activities are rank ordered from most preferred to least preferred.

APPENDIX C

ANALYSIS OF SELECTED WORD ASSOCIATION TEST RESPONSES

TABLE C-1

FREQUENCY DISTRIBUTIONS OF RESPONSES TO SELECTED ROSANOFF WORDS

Stimulus Word	Response[a]	Frequency of Response				
			Confirmed		Unconfirmed	
		Total (n = 124)	Monroe (n = 48)	Sevier (n = 44)	Monroe (n = 14)	Sevier (n = 18)
Physics	Activities	1	1			
	Atoms	1				1
	Balls	1		1		
	Books	1			1	
	College*	1	1			
	Doctor	1		1		
	Exercise	6	1	1	2	2
	Fun	1		1		
	Games	5	1	1	2	1
	Gym	4	1	2		1
	High School*	2	2			
	Health	3	1	2		
	Math*	7	4	3		
	Medicine*	1			1	
	Nice	1		1		
	Nuclear	2	2	2		
	Phys. Ed.	2	1	1	1	
	Pills	1				1

TABLE C-1 (Continued)

Stimulus Word	Response[a]	Frequency of Response				
			Confirmed		Unconfirmed	
		Total (n = 124)	Monroe (n = 48)	Sevier (n = 44)	Monroe (n = 14)	Sevier (n = 18)
Physics	Playing	2	1	1		
	School*	4	2	2		
	Science**	9	4	5		
	Scientific Principles	1				1
	Something	1	1			
	Sports	3		2	1	
	Supernatural	1	1			
	Study*	5	3		1	1
	Subject	4	3	1		
	Upper Grades	1	1			
	Theory	1				
	Thinking	1		1		
	Uncle R.	1	1			
	Universe	1	1			
	Unnecessary	1	1			
	Work Out	1	1			
	Blanks	45	12	18	6	9
Hydraulic	Air Power	3	3			
	Bombs	1	1			
	Brakes	1		1		
	Bulldozer	1	1			
	Cars	2		11		
	Dams	1		1		
	Drill	1		1		
	Energy	5	3	1	1	

TABLE C-1 (Continued)

Stimulus Word	Response[a]	Frequency of Response				
			Confirmed		Unconfirmed	
		Total (n = 124)	Monroe (n = 48)	Sevier (n = 44)	Monroe (n = 14)	Sevier (n = 18)
Hydraulic	Engine*	3	1	1		1
	Fan	1		1		
	Forklift	1	1			
	Fuel	2	2			
	Hose	1			1	
	Jack	2	2			
	Jets	1		1		
	Lift	7	6	1		
	Machines*	4	1	2		1
	Needle	1	1			
	Pressure**	2	1	1		
	Power**	4	3	1		
	Power Tool	1	1			
	Pump**	1	1			
	Push	2	1	1		
	Science	1		1		
	Squeeze	1	1			
	System	2	1			1
	Water**	4		3		1
	Blank	68	17	25	12	14
Subtraction	Addition**	5	2	1	1	1
	Boring	1		1		
	Decrease	1				
	Division**	1		1		1
	Easy	3	1	11		
	Equals	1		1		

TABLE C-1 (Continued)

Stimulus Word	Response[a]	Frequency of Response				
			Confirmed		Unconfirmed	
		Total (n = 124)	Monroe (n = 48)	Sevier (n = 44)	Monroe (n = 14)	Sevier (n = 18)
Subtraction	Fun	2			2	
	Less Than*	1				1
	Math**	36	14	14	5	3
	Minus**	12	7	3		2
	Numbers**	3		1	2	
	Opposite of Addition	6	1	4		1
	Problems	3			1	2
	Remove	2	2			
	Subtract	1	1			
	Take Away*	27	13	9	1	4
	Tax Deduct.	1		1		
	5 - 3 = 2 (ex.)	5	1	4		
	Blanks	13	6	3	1	3
Decimal	Dewey	1	1			
	Dollars*	1		1		
	Dot*	14	5	7		2
	Dot in Time	1		1		
	English	1			1	
	Explanation	1		1		
	Eye	1			1	
	Fraction**	9	6	2	1	
	Fun	2		1		1
	Hard	2		2		
	Homework	1		1		
	Hundredths*	1	1			

TABLE C-1 (Continued)

Stimulus Word	Response[a]	Frequency of Response				
			Confirmed		Unconfirmed	
		Total (n = 124)	Monroe (n = 48)	Sevier (n = 44)	Monroe (n = 14)	Sevier (n = 18)
Decimal	Math**	29	17	10	2	1
	Money*	3		2		1
	Not Whole	1	1			
	Number(s)**	5	3	1	1	
	Period	6	2	4		
	Point**	11	5	3	1	
	Percent*	2	2			
	Round	1		1		
	Sentence	1			1	
	Something	1			1	
	Something You Put	1				1
	Ten**	1				1
	Tenth**	2	2			
	Tonight in Middle Grade	1	1			
	What We're on in Homework	1		1		
	Word	1	1			
	.2, .4, 5.03	3	2	1		
	$32.40	1	1			
	Blank	21	1	4	5	11
Peninsula[b]	Area	2	1	1		
	Canal	1		1		
	California	1	1			

TABLE C-1 (Continued)

Stimulus Word	Response[a]	Frequency of Response				
			Confirmed		Unconfirmed	
		Total (n = 124)	Monroe (n = 48)	Sevier (n = 44)	Monroe (n = 14)	Sevier (n = 18)
Peninsula[b]	Cen. Amer.	1		1		
	Drugs	1		1		
	Extension of Land	8	6	2		
	Florida**	12	5	4	2	1
	Hospital	5		3		2
	Iberian*	1	1			
	Inlet	1	1			
	Island**	5	2	2	1	
	Lake	1	1			
	Land**	11	4	5	1	1
	Large	1	1			
	Medicine	3	1			2
	Ocean*	1	1			
	People	1			1	
	Place	1			1	
	Social Stud.	1	1			
	Straight**	1	1			
	Three-sided	12	7	3		2

TABLE C-1 (Continued)

Stimulus Word	Response[a]	Frequency of Response				
			Confirmed		Unconfirmed	
		Total (n = 124)	Monroe (n = 48)	Sevier (n = 44)	Monroe (n = 14)	Sevier (n = 18)
Peninsula[b]	Water**	15	6	8	1	
	Waterway	1	1			
	Blanks	36	6	13	7	10

*Denotes Rosanoff, Martin, and Rosanoff (1918) common response without high standard.

**Denotes Rosanoff, Martin, and Rosanoff (1918) common response with high standard.

[a]The WAT used requires two written responses; Rosanoff requires one spoken response.

[b]Note that Peninsula Hospital is a widely publicized private psychiatric facility near both counties.

TABLE C-2

CONFIRMED AND UNCONFIRMED GIFTED STUDENTS' INDIVIDUAL RESPONSE FREQUENCIES COMPARED TO ROSANOFF'S INDIVIDUAL FREQUENCY NORMS

Stimulus Word	Individual Response Frequencies						
	Present Study					Rosanoff, Martin, Rosanoff (1918)	
		Confirmed		Unconfirmed			
	Total (n = 124)	Monroe (n = 48)	Sevier (n = 44)	Monroe (n = 14)	Sevier (n = 18)	With High Standard (n = 100)	Without High Standard (n = 1,000)
Physics	20	9	6	2	3	23	147
Hydraulic	14	7	6	1	0	10	56
Subtraction	7	1	4	0	2	17	55
Decimal	17	5	6	4	2	18	58
Peninsula	14	9	3	2	0	17	68

Note: Individual response frequencies are based on the total number of possible responses, not the total number of subjects.

Source: A. J. Rosenthal, H. E. Martin, & I. A. Rosanoff. A higher scale of mental measurement and its application to cases of insanity. Psychological Monographs, 1918, 25, (3, whole No. 109).

VITA

Deborah A. Hino was born in Washington, D.C., on September 21, 1954. She attended Westhampton College of the University of Richmond, Virginia, and, in May 1976 was awarded the Bachelor of Arts degree magna cum laude in Psychology and Early Childhood Education. She was elected to Phi Beta Kappa, Mortar Board, and Omicron Delta Kappa.

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Ms. Hino was employed as a school psychologist with the Little Tennessee Valley Educational Cooperative during her professional training. She completed an internship in child clinical psychology at the University of Louisville School of Medicine in the Department of Psychiatry. Her professional interests include the interface between the public schools and community mental health agencies and the development of preventive intervention strategies.