

GIFTEDNESS: An Exceptionality Examined

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ABSTRACT

The study of giftedness has practical origins. High-level performance intrigues people. Theoretically, the study of giftedness is related to the psychology of individual differences and has focused on the constructs of intelligence, creativity, and motivation. At a practical level, the research is largely related to school and family contexts, which develop gifts and talents in children and youth. Although broadened definitions of giftedness have emerged, the most extensive body of research available for review concentrates on intellectual giftedness. The varying definitions of giftedness and the impact of social context and diversity on the development of talent pose significant challenges for the field. Finally, the study of exceptionally advanced performance provides insight into basic psychological processes and the school contexts that develop talents in children and youth.

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INTRODUCTION

The study of giftedness has practical origins. People are intrigued by high-level performance and wish to inspect both the performance and the performers more closely. A novel well written, a basketball maneuver well executed, a blues riff well played, an endgame well concluded, or a high school science project well designed attract attention. Fine writers, exhilarating basketball players, memorable musicians, canny chess prodigies, or youthful scientists are examples of giftedness made observable.

Theoretically, the study of giftedness is related to the psychology of individual differences. Historically, the constructs of intelligence and creativity and, to a lesser extent, motivation provided the psychological foundations for investigations of giftedness. The study of giftedness encompasses both adults and children and the development of talents across many different domains—for example, the academic content areas, the performing arts, or entrepreneurial pursuits. It involves the investigation of both cognitive and affective variables. Both retrospective and prospective studies form its research lexicon.

At a practical level, the study of giftedness is primarily concerned with issues related to the education and upbringing of children with gifts and talents. The field of gifted education generally attracts researchers and school practitioners whose interests and whose research programs are applied. Thus, the corpus of research in the field has been largely related to schooling and to family contexts that develop gifts and talents in children and youth.

The focus of this chapter is on intellectual giftedness, its description, and the nurture of such gifts and talents in the elementary and secondary school setting. Although the development of giftedness in the visual arts and in music are also productive areas of interest for the field (Clark & Zimmerman 1983, Winner & Martino 1993), the greatest body of extant research available for review remains largely in studies in which intellectual giftedness is a key variable. Definitions of intellectual giftedness, however, have evolved substantially away from equating it with IQ scores. Current research includes a richer array of variables in defining and describing giftedness.

GIFTEDNESS AND GIFTED CHILDREN

Definitions of Giftedness and Talent

Theorists, researchers, and practitioners have grappled with the definition of giftedness and talent. In the modern literature, early definitions ranged from conservative ones such as Terman's (1925) use of the top 1% of general intellectual ability to Witty's (1958) liberal conceptualization that giftedness is displayed by a child "whose performance, in a potentially valuable line of human activity, is consistently remarkable." A decade ago, Sternberg & Davidson (1986) edited a collection in which 17 conceptualizations of giftedness were discussed by the researchers who proposed them. Again, the range of conceptualizations was diverse, with some concentrating primarily on the psychological aspects of intellectual giftedness (Sternberg 1986) and others including social context in which the development of giftedness is culturally fostered in some domains, but not recognized in others (Csikszentmihalyi & Robinson 1986, Tannenbaum 1986).

Of those conceptualizations focusing on the psychological aspects, theories and definitions tended to include the constructs of intelligence, creativity, and motivation either singly or in combination. For example, Feldhusen (1986) specifically includes general intellectual ability and achievement motivation in his conceptualization of giftedness. Jackson & Butterfield (1986) concentrate primarily on variables that contribute to superior cognitive performance in children. Renzulli (1978, 1986) proposes a three-ring definition in which above average intellectual ability, creativity, and task commitment interact to produce giftedness.

An important challenge articulated by Gallagher & Courtright (1986) is that the field applies the term "gifted" to definitions that emerge out of the study of individual differences in psychology and also to definitions that are developed by policy makers and by practitioners in order to develop and deliver services to gifted children. The two kinds of definitions overlap, but according to Gallagher & Courtright (1986) they serve different functions and can cause confusion. An example of a definition developed by policy makers is found in *Education of the Gifted and Talented*, a report to Congress by Marland (1971). The definition from the Marland Report states: "Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and services beyond those normally provided by the regular school program in order to realize their contribution to self and society (pp. I-3 to I-4)."

The report went on to enumerate six areas of giftedness: general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts, and psychomotor ability.

Later, the domain of psychomotor ability was dropped as a separate category. The Marland definition served to increase awareness beyond strict psychometric definitions like Terman's. It was criticized, however, for presenting unparallel categories and for possible misinterpretations, for example, leading practitioners to believe that a particular child would exhibit high performance in all areas (Renzulli 1978). As stated earlier, Renzulli (1978) proposed his own definition, which suggested that giftedness was an interaction among three clusters of traits: above-average general or specific abilities, task commitment, and creativity. Both the definition from the Marland Report and the definition proposed by Renzulli affected the development of educational programs for able students with the concentration being on developing services that provide general academic or creative enrichment.

More recently, Feldhusen & Jarwan (1993) reviewed the definitions of giftedness and talent and noted that they fell into six categories: psychometric definitions, trait definitions, definitions focused on social needs, educationally oriented definitions, special talent definitions, and multidimensional definitions. Their categories were not exclusive; some definitions of giftedness could be classified in more than one way. Psychometric definitions focus on attaining certain scores usually on intelligence tests. The operational definition of an IQ score of 140 used by Terman (1925) is an example of the psychometric definition. Trait definitions are those that focus on the psychological characteristics of able children and youth, although whether these definitions assume that characteristics such as motivation are stable traits rather than states is not clear. In contrast to state-trait definitions, definitions that focus on social needs include statements that giftedness is defined by what society values. Tannenbaum's (1986) conceptualization of talents emerging in response to popular demand is an example of this kind of definition. Educationally oriented definitions include statements about the need for special provisions, and in some cases use a local norm-referenced approach. For example, state or district definitions may explicitly note a percentage of the school population to be served, usually ranging from the top 20% to top 5%. Special talent definitions are those that focus on specific domains such as mathematics, the arts, and the sciences. The language used in the 1993 federal report, *National Excellence: A Case for Developing America's Talent* (Ross 1993), is an example of a definition that crosses several categories: "These children and youth exhibit high performance capability in intellectual, creative, and/or artistic areas, possess an unusual leadership capacity, or excel in specific academic fields. They require services or activities not ordinarily provided in the schools."

Giftedness and talent are often used interchangeably; however, Gagné (1985, 1991) has differentiated between the two concepts by defining giftedness as above-average competence in human ability, and talent as above-average performance in a particular field. That is, giftedness refers to human aptitudes such as intellectual or creative abilities. Talent is demonstrated in an area of human activity such as mathematics, literature, or music.

SUMMARY OF DEFINITIONS There is no one agreed-upon definition of giftedness or talent that dominates the field. Robinson & Olszewski-Kubilius (1996) note this diversity reflects the substantial variability among exceptional children who deviate positively from the norm. Most definitions, whether they are psychologically based or educationally driven, have moved away from equating giftedness with intelligence as defined by general IQ tests. Several current definitions are broadened in terms of the constructs they consider constituents of giftedness—creativity and motivation, for example. Others are broadened by enumerating specifically the fields or domains in which high performance may be observed. And finally, some definitions are broadened by explicitly considering the societal or cultural context in which gifts and talents develop.

Social Context and Diversity

The social context of giftedness includes the cultural values and therefore the opportunities that make it possible for gifts and talents to develop. An extreme example of the importance of social and cultural context is found in child prodigies. Feldman (1991) has proposed co-incidence theory to explain the appearance of remarkable, adult-level performance in children before the age of ten. According to Feldman, prodigies occur when the extraordinary abilities of the child, the development of the domain in which the prodigy excels, and the context of the family and learning opportunities “co-incide” to provide optimal conditions. Prodigies are generally born into families that recognize and value the talent when it emerges; they are schooled by master teachers, and their talent area is culturally valued and also accessible to children. For example, chess prodigies appear in cultures where chess is appreciated and available to the child. Thus, for Feldman (1993) the existence of a well-developed domain, its cultural acceptance, and the child’s opportunity to engage with the domain are crucial determinants of the development of prodigious performance.

DIVERSITY Social and cultural context operate in other ways as well. The definitions reviewed in the preceding section noted that acknowledging cultural context has broadened conceptualizations of giftedness. For example, children from diverse ethnic backgrounds may display their gifts and talents in

areas particularly valued by members of the culture but not easily recognized by members of other cultural groups. Frasier & Passow (1994) reviewed the literature on the characteristics or attributes of gifted children from various ethnic minority groups and concluded that across all groups there were some shared attributes such as motivation, intense interests, and problem solving ability but that other distinct behavioral indicators were specific to each ethnicity.

One of the most pervasive concerns in the field is that children and youth from diverse cultural backgrounds (Harris & Ford 1991, Maker 1996) and from low-income homes (Borland & Wright 1994) or children who have learning (Whitmore & Maker 1985) or physical disabilities are less likely to be recognized as gifted (Willard-Holt 1994).

In each case, adaptations to the usual means of identifying students for specialized services have been suggested or investigated. For example, Scott and her colleagues (1996) used a series of open-ended cognitive tasks with kindergarten children and were able to identify both Black/non-Hispanic and White/Hispanic youngsters missed by more traditional identification measures and procedures. Borland & Wright (1994) used a case study approach to locate young gifted children from extremely impoverished homes. They engaged in extended observation periods in classrooms with multicultural enrichment activities and used portfolio assessment and teacher nomination to formulate a pool of children for further consideration. A second phase included nontraditional and standardized assessment and resulted in two cohorts of children being identified over the course of two years. Mills & Tissot (1995) report that the Ravens Progressive Matrices shows promise as a screening measure for culturally diverse gifted learners.

SUMMARY OF SOCIAL CONTEXT AND DIVERSITY The development of gifts and talents in diverse populations has been addressed in at least two substantive ways. First, the conceptions of giftedness have been broadened to include explicit acknowledgment of social and cultural influences on behavioral indicators of giftedness. Second, school-based procedures for the identification of gifted and talented learners have been adapted to take diversity into account by including formal and informal measures other than standard IQ tests.

PSYCHOLOGICAL CHARACTERISTICS OF GIFTED CHILDREN

In his classic longitudinal studies of the gifted, Terman (1925) investigated various characteristics of a high IQ (over 140) sample, followed from childhood through adulthood. He found that members of his sample, who also tended to be above average on socioeconomic and physical characteristics,

generally scored average or somewhat above average on a wide variety of psychological characteristics. The fact that SES was not controlled for in Terman's studies is one of the biggest hurdles in applying his research to today's gifted students. Current broadened conceptions of giftedness are more valid for the provision of educational services, but they make it more of a challenge to create a coherent picture of the psychological characteristics of the gifted.

Definitions of giftedness vary considerably in recent research on psychological characteristics. Researchers in cognitive and metacognitive areas still tend to use a high IQ definition, probably as a way of holding constant at least some general aspects of cognitive functioning within their samples. Researchers in nonintellective areas are more likely to use whatever definition has been used to identify gifted students by the participating school systems. There is some validity to this approach: Not only does it mean that a more diverse group of students is being studied, but also it may be that the social and emotional experience of being gifted is due as much to the label as to internal psychological factors.

One more complicating factor in studying the psychological characteristics of the gifted is that underachieving gifted students may be quite different from high achievers. Some authors (Ford 1993, Luthar et al 1992) address these differences in their research, but for other studies it is not always clear whether underachieving gifted students are included in the sample.

Cognitive Characteristics

Most research on the cognition of the gifted has investigated in what way gifted individuals (usually children) are different from others in the ways they think. While there is some overlap in the literature between what are considered cognitive skills and what are considered metacognitive skills, the research can be separated into the investigation of simpler individual cognitive skills, and processes that are more complex, strategic, and executive.

COGNITIVE DIFFERENCES In a review of the cognitive differences between intellectually gifted (high IQ) children and others, Rogers (1986) concludes that the gifted are generally different in degree, not kind, of cognition. That is, gifted students tend to acquire and process information and solve problems better, faster, or at earlier ages than other students. However, they are probably not employing qualitatively different, unique thinking abilities, at least in the high IQ groups reviewed by Rogers.

Wilkinson (1993) analyzed the Wechsler Intelligence Scale for Children-Revised (WISC-R) profiles of 456 third grade students, all of whom had full-scale IQs of 120 or above. Compared to the norm, these students showed greater variability in their profiles. There was a greater frequency of extreme subtest scores, larger verbal-performance discrepancies (in both directions),

and more scatter among subtest scores. These students scored highest on subscales reflecting more complex reasoning (for example, similarities and block design) and lowest on scales measuring lower-level thinking skills (coding, digit-span).

Butterfield & Feretti (1987) list several kinds of cognitive differences that various authors have shown distinguish between people of like ages but different IQs. Higher IQ persons have been found to: have larger, more efficient memories; have larger and more elaborately organized knowledge bases; and use more, more complex, and more active processing strategies.

Davidson (1986) measured the performance of gifted students on mathematical and verbal insight problems. Insight was defined as the selective or novel encoding, combining, or comparing of information. Gifted upper elementary school children not only scored better than others on the insight problems, they were more likely to employ selective encoding, combination, and comparison spontaneously in solving the problems. Other children were more likely to need cues in order to use these processes.

Some authors have investigated the cognition of extremely high IQ children. Lovecky (1994) focused on the cognitive differences between "moderately gifted" (IQ 140–159) and "highly gifted" (170 and above) children. From clinical testing and observation, she concluded that highly gifted children tend to make simple tasks more complex, have a need for extreme precision, understand complex patterns quickly, reason abstractly at an earlier age, and have exceptional memory. Gross (1994) adds to these characteristics of the highly gifted an early ability to transfer knowledge across domains, a verbally sophisticated sense of humor, and intuitive leaps.

A review by Sternberg & Davidson (1985) lists several cognitive abilities at which the gifted are exceptional: They tend to have both high general intelligence and specific ability in their area of expertise, they capitalize on their patterns of abilities, they shape their environment, they demonstrate problem-finding ability, and they can conceive higher-order relations. This begins to take us into the realm of metacognition.

METACOGNITIVE DIFFERENCES Metacognition, or thinking about one's own thinking, may be an important component of giftedness. A recent review of research in this area (Alexander et al 1995, Carr et al 1996) looked at three aspects of metacognition: factual knowledge about thinking strategies, use of strategies, and cognitive monitoring. The authors conclude that gifted students show better performance than other students on only some aspects of metacognition. For instance, gifted children seem to have more factual knowledge about metacognition than other children, and this advantage seems to be present consistently across age levels. They also seem to be better at far transfer,

using strategies in contexts far different from that in which strategies were learned. These authors concluded that there was limited support for the idea that gifted students are more spontaneous in their strategy use than other students, although there was some evidence for this in upper elementary age and young adolescent students. Finally, they concluded that there is no evidence that gifted children are better than other children at consistently using better strategy, monitoring their strategy use (evaluating and changing strategies as needed), or in maintenance and near transfer (using strategies in situations similar to those in which the strategy was taught).

Cheng (1993), in addition to reviewing some of the empirical research on metacognition and the gifted, notes the importance of case studies and naturalistic research in order to see more clearly the developmental path of metacognitive skills in gifted individuals. She speculates that metacognition within a particular talent domain becomes important after the early learning years, after children have learned the basics of their field and become immersed in strategy and self-analysis. Shore et al (1994) illustrate the complexity of research in this area. In a reanalysis of an earlier study comparing gifted and other students, the authors examined the problem-solving results of a group of gifted students who originally had not met the criterion for inclusion in the study (solving the first few of nine problems correctly). In contrast to their conclusions in the earlier study (that gifted students performed better metacognitively than others), it was found that these “noncriterion” gifted actually made more metacognitive (strategy) errors than the other students who did not meet the criterion, and that they seemed to be drawing on imaginary data to help solve the problem. Shore et al (1994) warn against jumping to conclusions about the overall abilities of individuals who do not perform well on specific tasks, and speculate about the role of motivation and creativity in metacognition as did Cheng (1993).

SUMMARY OF COGNITIVE CHARACTERISTICS Gifted elementary or secondary age children, who in this research are usually defined as those with high IQ scores, show some advantages over other students particularly in quantity, speed, and complexity of cognition. They know more about metacognition and can use strategies better in new contexts, but they may not use a wider variety of metacognitive strategies than other students, and they do not apparently monitor their strategies more than other students. Several authors caution that both creativity and motivation probably influence the results of research on cognitive and metacognitive characteristics.

Social-Emotional Characteristics

There has always been a fascination with the social and emotional characteristics of the gifted. This may be due, in part, to an anti-intellectual desire to find

something “wrong” with this group. Some of the research on nonintellective characteristics compares gifted and other students; other approaches describe these characteristics in various subgroups of the gifted, or look for differences among groups of gifted seventh through ninth graders. In general, the research indicates that the stereotyped view of a maladjusted child with poor social skills is far from the truth. In a review of the literature on psychosocial development, Janos & Robinson (1985) conclude that “Being intellectually gifted, at least at moderate levels of ability, is clearly an asset in terms of psychosocial adjustment in most situations.” (p. 181).

How do gifted students see their own noncognitive characteristics? Kunkel et al (1995) used a concept-mapping technique: This involved asking gifted students about their experience of being gifted, developing questionnaire items from the responses, and presenting graphically the main themes that emerged. The strongest noncognitive themes included receiving respect from others, feeling a sense of social stress, and generally feeling satisfied with themselves. These themes are found in other studies as well.

SOCIAL SKILLS AND RELATIONSHIPS How do gifted students get along with their peers? Maysless (1993) reports on several studies indicating that pre-adolescent and adolescent gifted students tend to be at least as popular as other students their age, but that gifted adolescents may self-report lower popularity than others. Kline & Short (1991a,b) found that both gifted girls and gifted boys scored very high on a self-report measure of “relationship with peers.” However, while girls found relationships to be more important as they developed through the school-age years, boys seemed to value relationships less as they grew older. Maysless (1993) compared the friendship styles of gifted and other students. Ninth grade gifted students reported lower levels of intimacy with their best same-sex friend than did other ninth graders (girls reported higher levels than boys). The author speculates that this may be due to higher standards of ideal friendships on the part of the gifted students, or to gifted students being more activity- and task-oriented (instrumental) than person-oriented (expressive) in their relationships.

What factors serve to assist gifted students in their social relationships? In an investigation of the social support of gifted adolescents (VanTassel-Baska et al 1994), students of higher socioeconomic status reported higher levels of support than students of lower socioeconomic status. There were significant differences between these groups on support from friends, classmates, parents, and teachers. Males overall reported more support from friends than females overall. In a factor analytic study of social coping strategies, Swiatek (1995) found three statistically reliable strategies used by highly gifted adolescents, strategies that help them deal with the social consequences of being gifted. The

strategies were denial of giftedness, popularity/conformity, and peer acceptance. Swiatek found no gender differences in the strategies; she did find that the most highly gifted students were those most likely to deny being gifted, and that students who were predominantly gifted in verbal domains reported lower levels of peer acceptance than did students who were predominantly talented in mathematics. It may be that students with extremely high intellectual gifts are most concerned with living up to others' expectations, and so deny their giftedness more often. Verbal talents may be more visible to peers than mathematical talents, and so verbally gifted students may feel more "different" from peers than the mathematically gifted.

EMOTIONAL CHARACTERISTICS Studies of the emotional and personality characteristics of the gifted generally show, like the Terman studies, that gifted students are somewhat better adjusted than students on average. However, recent research on the affect of gifted students has investigated finer distinctions within types of variables such as self-concept, and has highlighted some of the gender differences in gifted students with respect to emotion and personality.

In a review of the literature on personality and gifted children, Olszewski-Kubilius et al (1988) found that gifted students were generally at least as well adjusted as norm groups and comparison groups, and possessed more personality characteristics ordinarily considered to be favorable than comparison groups. They also found that gifted children may display personality functioning, in some domains, similar to that of older students. High IQ elementary school students tended to display lower levels of anxiety than other children, especially anxiety about school. Gifted adolescents scored within normal ranges or higher on almost every scale of major personality inventories. The authors note that the generalization of research comparing gifted and other students is hampered by lack of information on socioeconomic status and other demographic information.

Research on the self-concept of gifted children has presented conflicting results. Some studies using global measures of self-esteem indicate that gifted students score higher on these measures than other students, whereas other studies show no difference between groups or, occasionally, that gifted students score lower (Olszewski-Kubilius et al 1988). More informative are studies that look at various types of self-concept, and that investigate gender differences. Hoge & McSheffrey (1991) gave the Self-Perception Profile for Children (Harter 1985) to 280 students in grades five through eight. They found that gifted students scored slightly lower than the norm group on Social and Athletic Competence, but higher on Scholastic Competence and Global Self-Worth. They also found that academic performance seemed to be a more important factor in global self-worth for girls than for boys. Similarly, Pyryt &

Mendaglio (1994) administered a multidimensional self-concept measure and found that gifted students scored higher, on average, than their age peers, with academic self-concept contributing most to the difference. However, the gifted students scored slightly higher on social, athletic, and evaluative subscales as well.

In a study of the psychological adjustment of gifted early adolescents (Luthar et al 1992), these students were found to be more similar to college students (matched to the gifted students on cognitive maturity) than to students their own chronological age. Measures of cognitive ability, depression, anxiety, locus of control, and real and ideal self-image were administered. Gifted students were generally high on psychological adjustment and had less depression and better self-image than same-age students. The authors speculate that previous inconsistencies in the research on the adjustment of the gifted may be due to differences in achievement: that is, that underachieving gifted students may be less well-adjusted than both achieving gifted students and an unselected group of same-age students.

In contrast to most of the research presented above, Roberts & Lovett (1994) found that after experimentally induced scholastic failure, gifted adolescents demonstrated more negative emotional reactions than did two groups of their age peers: high academic achievers who had not been labeled gifted, and a randomly selected group of students. After failing to solve extremely difficult anagrams, gifted students showed greater irrational beliefs and self-oriented perfectionism, greater negative affect, and more physiological stress than students in the other two groups.

In a pair of developmental studies of social and emotional characteristics of gifted students (Kline & Short 1991a,b), it was found that gifted girls in high school had significantly less self-confidence, more perfectionism, and more discouragement than younger gifted girls. There were no age differences in hopelessness, but means were above the norms. In contrast, for gifted boys the authors found that gifted high school boys felt less discouragement and hopelessness than younger boys; there were no age differences in self-confidence or perfectionism. Scores were similar for high school girls and boys on self-confidence and perfectionism, but girls scored higher on discouragement and hopelessness.

Motivational Characteristics

Research on the motivational characteristics of the gifted can be classified into three main categories: studies that compare gifted students to the norm on motivation, studies that describe motivation patterns of gifted students, and studies that investigate motivational differences between gifted students who perform up to potential (“achieving”) and those who do not (“underachieving”).

Olszewski-Kubilius et al (1988) reviewed several studies showing that gifted elementary students generally score significantly higher on internal locus of control than comparison students. High IQ students tended to score higher on measures of intrinsic motivation and autonomy than average IQ students, and are more likely to demonstrate positive attributions for success and failure, for example, attributing success to their own ability and effort, and attributing failure to bad luck or inappropriate strategy choice. Csikszentmihalyi et al (1993), in a longitudinal study of ninth and tenth grade students through their high school years, found that when compared with average students, intellectually talented adolescents showed more intrinsic motivation for reading, thinking, and solitude. They also found that the students who were the most committed to their own talent domain at the end of this longitudinal study were those who had displayed the strongest intrinsic motivation for that domain.

Benbow et al (1991) investigated correlates of educational achievement in a sample of mathematically precocious youth. They found that motivation (as measured by quantity of academic activities and participation in optional contests and exams in high school) was the third most useful predictor of educational achievement and aspiration at age 23, behind quality of instruction and home environment. Ford (1993) found that several motivational factors distinguished between achieving and underachieving gifted Black students. Achievers were less concerned with peer pressure and reported high effort and no test anxiety. Underachievers had a more external locus of control, were more ambivalent about trying hard, and reported that they felt test anxiety. Emerick (1992) identified motivational factors that led to the reversal of underachievement in several gifted adolescents. Factors included a strong intellectual or creative interest pursued outside of school, school classes that allowed for advanced and independent study, and an ability to relate school success to personal goals.

SUMMARY OF SOCIAL-EMOTIONAL AND MOTIVATIONAL CHARACTERISTICS
Gifted students (usually defined by a wide variety of school definitions in this research, including intellectual, creative, and leadership characteristics) tend to have better psychosocial adjustment than other students. They are at least as popular, though they may have different friendship styles. Their self-concepts, while heavily weighted with their academic abilities, are generally high, and they tend to score at normal or above levels on personality measures. They tend to be more internally motivated and have more positive attributions for success and failure; however, they may have more trouble coping when they do encounter failure.

These positive findings may not be true for various subgroups of the gifted. Sex differences have been found such that through adolescence, females tend

to decrease and males tend to increase on several positive emotional characteristics. In addition, these psychological advantages may start to disappear as the level of giftedness increases. Students who are extremely far from the norm intellectually seem to have more trouble fitting in socially and emotionally as well. Gifted students who are underachievers may demonstrate considerably different psychological profiles. Finally, students from cultural or ethnic groups where the identification of giftedness has not been traditional have not been thoroughly investigated.

RECOMMENDED PRACTICES IN EDUCATING CHILDREN WITH GIFTS AND TALENTS

Recommended Practices as a Framework

The relationship between theoretically driven research and educational practice in developing students' gifts and talents is frequently less direct and useful than either researchers or practitioners would like it to be. Assessments of a knowledge base in psychology or education generally take the form of an expert review of the empirical literature on a specific topic. Depending upon the topic and the personal interests of the reviewer, the connections among theory, research, and practice are suggested openly or they may go begging. When the connections are not clearly made, the researcher looking for current trends or future directions is disappointed; the practitioner looking for validation of daily educational practice finds little of immediate value. To aid the connection between research and practice in giftedness, Shore et al (1991) proposed that the knowledge base be examined from the practitioner's point of view. Shore and his colleagues recommended using the considered expert advice generally accessible to a concerned parent or teacher as the bridge between researcher and practitioner. According to the authors, there are five important elements to the notion of a recommended practice as a way of organizing the knowledge base. First, it refers to specific advice given in the form of "do," "don't," or "should" statements; for example, "Career counseling is needed, especially for girls." Second, recommended practices signal a level of agreement among experts in the field, but more narrowly so than standards that are generally endorsed by some organization for the purpose of certification or accreditation. Third, recommended practices are sufficiently broad to be generic. For example, a practice proposing the use of rigorous curriculum with able learners does not specify particular curricular materials. Fourth, recommended practices should be viewed as hypotheses—tested or untested—in the field. Fifth, the term recommended practice does not imply that the practice is thoroughly researched and validated. Although they may have the initial appearance of received wisdom, recommended practices are to be held up to scrutiny.

Shore and associates made the pragmatic decision that the compilation of recommended practice should not only be based on the best information on a topic but also on the information that is most widespread and most likely to be available by parents and practitioners. In fact, very durable but scantily researched practices have found their way into the knowledge base on giftedness. The use of the recommended practice as a framework for review provides a means for determining the areas most in need of research and suggests the direction the inquiry might take.

The process used to develop the recommended practices has been fully described elsewhere (Robinson 1992, Shore et al 1991, Shore & Delcourt 1996). Briefly, from an examination of 100 textbooks, handbooks, yearbooks, and collections of readings, Shore and associates identified 101 recommended practices organized into four main groups with several subgroups. The headings provide a signpost and overview for the research subsequently reviewed in relation to each of the practices:

Noncurricular Issues

1. Advocacy and Administration
2. Identification and Assessment

Curricular and Teaching Strategies

3. Curricular and Program Policies
4. Advice to Educators

Family, Counseling and Personal Adjustment

5. Advice to Parents
6. Advice to Professionals
7. Social and Emotional Adjustment

Special Groups

8. Special Groups

Books rather than journal articles or other types of research reports were selected as the source for recommended practices because texts become the repository for widely held assumptions and shared information.

In the next phase of the investigation, the research reported in general education and gifted education journals relevant to each of the 101 practices was reviewed. Each review included an expanded statement of the practice, a summary of the current research on the practice, a set of implications for action derived from the current knowledge, and a section suggesting needed research on the practice.

School Practices with Support

When the reviews of the individual practices were completed, an overall picture of the state of the knowledge base on giftedness emerged. In the initial as-

assessment of 1991, approximately 40% of the recommended practices were supported by research. The practices with the most complete research support were in the area of identifying students for specialized services and in the special needs of particular groups, notably gifted girls and gifted learners with physical disabilities. The developed research base in both of these areas reflects the psychometric roots of the field and the sustained interest in special groups of gifted learners.

In 1991, those recommended practices with the least well-developed knowledge base and therefore most in need of attention from researchers tended to cluster in curricular and program policies. Thus, as the authors (Shore et al 1991) noted, some very important and widespread practices were without solid empirical support. A subsequent review by Shore & Delcourt (1996) updated the status of several of the practices related to curricular and program policies. Combining the initial review, the recent update and several large-scale studies undertaken with federal support, two major practices with research support are reviewed here.

ACCELERATION In both the 1991 and the 1996 review, research support was found for the practice of acceleration for able learners. Although popular notions of acceleration envision only grade skipping in which a student is moved ahead of his or her age mates in grade placement, there are various forms. Southern et al (1993) compiled a list of 17 different types of educational acceleration, only 4 of which depend upon changing the classroom grade placement of students. In addition to grade skipping, these include: early entrance to kindergarten or first grade, early entrance to junior or senior high school, and early graduation from high school, typically in 3.5 years rather than 4 years. Continuous progress, concurrent enrollment programs, or Advanced Placement courses are also examples of acceleration used with gifted learners, but they do not require grade skipping.

The available literature on acceleration has been reviewed regularly over the decades (Benbow 1992, Daurio 1979, Kulik & Kulik 1984, Pollins 1983, Southern & Jones 1991). In a meta-analysis of acceleration studies, Kulik & Kulik (1984) analyzed 26 different studies in 21 reports. One set of studies compared accelerants with same-age controls; the second set compared accelerants with older-age controls on measures of achievement. In order to be included in the meta-analysis, the study had to control for aptitude between the accelerated and nonaccelerated groups. The comparison of same-age accelerants and non-accelerants resulted in a mean effect size of $+0.88$. In the studies comparing accelerants with older age students, the mean effect size was $+0.05$. The authors concluded that on measures of achievement, accelerated students do not differ from older aged control students of similar aptitude (Kulik & Kulik 1984).

Shore & Delcourt (1996) characterized certain kinds of acceleration as clumsy. For example, grade skipping was not always accompanied with adaptations to the curriculum to meet the educational needs of the accelerated students.

Although research that clearly identifies and controls for the different features of the various types of acceleration is in the beginning stages (Rogers 1991), the kinds of accelerative opportunities with the greatest positive impact on student achievement are likely to be those that modify the curriculum with subject matter acceleration or with fast-paced instruction. Simply changing grade placement recognizes the prior achievement of students (Southern et al 1993), but it does not necessarily guarantee that appropriate curriculum experiences will occur in the new placement.

Acceleration is generally a response to a particular child in the classroom or school setting. That is, it is practice applied on a case-by-case basis to an individual child or adolescent rather than a practice applied regularly to large groups of children in the school. Southern et al (1993) note that because of its individual nature and the concerns many practitioners have about the grade skipping forms of acceleration, it is used conservatively by schools.

In contrast, accelerative, fast-paced content classes are more likely to be offered to students on a volunteer basis in the college or university setting. These programs, called Talent Searches, offer accelerated instruction in content areas in after-school, Saturday, or summer venues. Students with high academic performance and high aptitude scores related to the academic area in which they are studying are selected to participate in accelerated courses. The Talent Search programs have been documented extensively and provide a good deal of the research support for acceleration as a practice uniquely suited to gifted and talented learners (VanTassel-Baska 1997).

LEVEL OF CURRICULAR MATERIALS The use of rich and varied curriculum materials has been an admonition voiced by educational reformers for a broad range of students. The practice has particular salience for students with advanced reading capabilities for two reasons. First, evidence exists that the reading levels of regular classroom texts have dropped over the past few decades (Chall 1994). Thus, capable readers are being exposed to what has been identified as “dumbing down” of textbooks. Second, students with advanced reading capability respond positively to interventions that raise the level of the material they encounter in the classroom.

McCormick & Swassing (1982) surveyed reading programs nationally and reported that educators regarded high-level reading materials an important feature of appropriate services for talented students. They noted that the Junior Great Books program was the most frequently used program of curricular ma-

materials when particular specialized materials were reported. Martin & Crumond (1983) also reported agreement that reading instruction should be taught creatively at a high level with challenging materials; however, they also report that such experiences are infrequent for students.

Recently, two large-scale federally funded studies indicate that adapting curriculum and instruction to minimize exposure to low-level materials and to increase exposure to high-level ones have benefits for academically talented students. Reis et al (1993) investigated classrooms in which teachers had condensed the grade level curriculum materials for talented learners and compared them with classrooms in which no such adaptations were made. Compacting, as this adaption is called, includes documenting, generally through pretesting or work samples, a student's knowledge and skills in the grade level curriculum. If students demonstrate mastery of the material about to be taught, they are provided with extended curriculum activities or alternatives during the time that set of skills or curriculum topic is being covered in the classroom. Reis and her colleagues demonstrated that with training, regular classroom teachers can adapt the curriculum for students with positive impacts on both student attitudes and learning.

The second investigation was an evaluation study of language arts curriculum for advanced learners in grades four through six (VanTassel-Baska et al 1996). Outcome measures included a reading assessment that focused on literary analysis, a persuasive writing assessment, and an objective assessment of grammatical understanding. In all three areas, able learners who received the specialized advanced curriculum outperformed comparison groups. The effect sizes for literary analysis, writing, and grammatical understanding were .11, .99, and 1.57, respectively. The authors note that two key curricular elements emerged as important from qualitative data provided by teachers. First, the reading levels of the selections were advanced for the grade levels in which they were introduced. Second, the curriculum emphasized abstract concepts in literary analysis: theme, motivation, tone, and mood. Again the treatment of these concepts was advanced beyond the traditional expectations for elementary students in grades four through six.

In conclusion, the practice of using high-level reading materials with academically gifted students is supported. While social justice demands that all children be given rich curricular fare that interests them, the practice, when applied to academically talented learners, implies that the materials be substantially above grade level norms.

School Practices to be Used with Caution

Although gifted students tend to do well academically, not all school practices are beneficial for them. One example of a popular school practice that has

modest positives and significant negatives for gifted students is cooperative learning. Among the general population of students, cooperative learning advocates have documented many positive outcomes for the model (Slavin 1991). A number of these positive outcomes are social ones. There are reported increases in cross-ethnic friendships (Warring et al 1985) and in acceptance for students with disabilities (Madden & Slavin 1983). However, for achievement outcomes, the picture requires a finer lens. A recent study by Kenny et al (1994) concludes that cooperative learning is a relatively weak pedagogical strategy in terms of achievement for gifted students. They noted that the absence of a gifted student in a heterogeneous cooperative learning group did not negatively affect the learning of other students in the group. A study by Lando and Schneider (1997) provides further support for the caution with which standard cooperative learning models should be used. They found differences in the types of verbal interactions among homogeneously and heterogeneously constituted cooperative learning groups. Higher-level discourse and more positive interactions occurred when gifted students were in cooperative learning groups with other high-ability students. These studies and a recent meta-analysis on small group learning within classrooms indicate that group composition on the basis of ability or prior achievement does not have consistent effects for high, average, and low attaining students (Lou et al 1996). In addition, a study by Mulryan (1992) that documents that passivity, and therefore possible disengagement from learning, occurs in heterogeneous cooperative learning groups by both high- and low-attaining members lends support to the caution with which this educational practice should be used with academically talented learners (Robinson 1997).

SUMMARY Educational practices with research support include the use of various forms of acceleration and the use of high-level and rigorous curriculum materials. The relatively stronger research base in these areas is in part due to the use of focused identification measures that are closely related to the services provided to the students on the basis of them. For example, mathematically talented students are located on the basis of prior mathematics achievement and aptitude and provided with accelerated and enriched instruction in that content area. In contrast, other popular educational practices like cooperative learning do not provide consistently positive outcomes for gifted learners.

FUTURE DIRECTIONS FOR RESEARCH

Research on the Psychology of Giftedness and Talent

Although intriguing in itself, the study of an exceptionality like giftedness which deviates from the norm in a positive way can inform our understanding

of human potential generally. The examination of cases of advanced development and instances of precocious performance provide a window on the conditions and processes that help children and youth maximize their potential.

In terms of research on the psychology of giftedness and talent, the most promising directions are those that take a finer-grained look at the variability among talented children and adolescents, in other words, within-group differences. The comparisons made between talented youth and the general cohort are useful, but they are not the sole standard by which exceptionality can be examined. At present, the study of these within-group differences would be most fruitfully pursued descriptively rather than comparatively. For example, studies of talented performance outside the general intellectual domain would provide empirical information about the richer array of variables that broadened definitions of giftedness include. Studies of talent development in different domains, among culturally diverse populations, and in youth with disabilities are among the most promising.

In addition to informing our understanding of human potential, the study of psychological variables in groups of gifted students allows the researcher to hold constant the effects of ability or achievement. For example, for variables that are correlated with intellectual ability such as motivation and self-esteem, it is possible to examine how they operate in depth, over time, and across age and gender without the confounding effects of differential ability. Although ability can be controlled as an independent variable, it could be fruitful to examine other variables in depth within a group of high intellectual functioning.

Finally, the study of students with high ability but low achievement (often termed “gifted underachievers”) is a unique opportunity for the intensive, perhaps longitudinal, investigation of motivational variables. With intellectual ability not a factor, how do expectancy and value, competence, and control operate to depress achievement? Investigations of this sort shed light on the psychological characteristics of talented youth, but they also inform our understanding of basic psychological processes.

Research on School Practices

One of the key interests to the field of gifted education is to determine which of its practices are uniquely suited to talented children and adolescents; which are practices defined as good in general for all learners. Additional work is needed to illuminate the distinction. Practices that are good general education can be advocated for talented learners from that context. In other words, it is no less important to advocate for such services for talented learners, but the link between general and specialized education should be acknowledged. Practices that are uniquely suited to academically talented students will benefit from fur-

ther and finer grained analyses to determine under which conditions they are best implemented to develop students' gifts and talents.

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