



What We Know About Academically Talented Students

Research Topics

Ability Grouping and Acceleration

Parents

Social, Emotional, and Personality

Self-Perception, Motivation, and Metacognition

Gifted Students with Learning Disabilities

Under-Represented Students

Benefits of the CTY Summer Experience

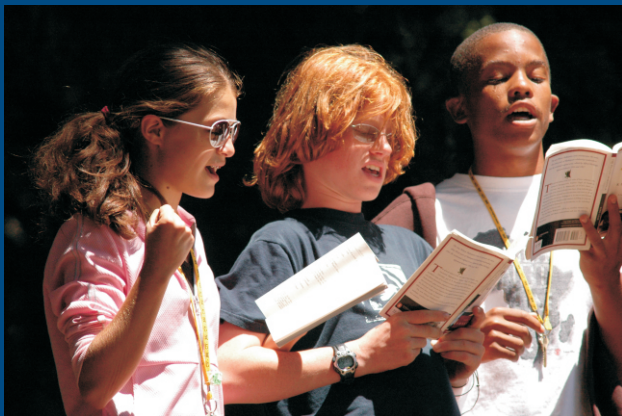


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ability grouping and acceleration

Ability Grouping has been shown to be an appropriate and effective way to meet the academic needs of highly able students.

This article clarifies some of the issues and research on cooperative learning (CL) and ability grouping (AG) in education. CL means students working together on a school-related task, and AG is the grouping of students for instruction by ability or achievement to reduce group heterogeneity. Educators should focus their energies and attention on ensuring the quality and appropriateness of curriculum and instruction for all learners. CL has been embraced by schools as a way of addressing many of the ills faced in education and it has been pitted against AG. Used appropriately and optionally, either in combination or alone, CL and AG are both useful educational practices. However, a more balanced, critical approach to meeting the varied needs of students is advocated. Mills, C. J., & Durden, W. G. (1992). Cooperative learning and ability grouping: An issue of choice. *Gifted Child Quarterly*, 36, 11-16.

This article discusses the issues surrounding the use of ability grouping, with particular attention to the impact on academically talented students. In many schools, cooperative learning has become the preferred teaching method. Contrary to popular belief, however, this need not exclude the possibility of ability grouping. Durden, W. G., & Mills, C. J. (1993). Talent derailed: The education establishment's assault on ability grouping. *Wisconsin Interest*, 2(1), 43-50.

This article examines the literature on ability grouping and cooperative learning. Solid research evidence supports both. Ability grouping and cooperative learning should be used to address particular student needs. Selecting a variety of educational options to match the needs of each student would be the best way to serve all students. Mills, C. J., & Tangherlini, A. E. (1992). Finding the optimal match: Another look at ability grouping and cooperative learning. *Equity and Excellence*, 25(2-4), 205-208.

Many highly able students have never been placed in ability grouped classes in their regular school despite the fact that the majority of the students report that they learn more when grouped with like ability peers.

Only about one-half of CTY's talent search participants report that they have been ability grouped in their schools at any time during elementary or middle school. Ability grouping in this investigation included participation in a gifted and talented program, placement into advanced courses (higher than the student's grade level), or special ability grouping within the classroom for targeted content instruction. The majority of these students (80%) reported that they prefer to be in academic classes with other bright students. They indicated that they learn less in classes where there are students with a wide range of abilities. Ablard, K. E., Hoffhines, V. L., & Mills, C. J. (1998). The Developmental Study of Talented Youth (DSTY): Sixth Grade to Ninth Grade (Tech. Rep. No. 19). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

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After attending a CTY summer course in math and/or science, the majority of students were appropriately placed in an advanced-level course at their home school. The overwhelming majority of these students earned an A or B in the advanced-level “placement” course.

This study is a replication of an earlier study conducted 10 years earlier. We surveyed 328 students who took the Individually Paced Mathematics Sequence or any of three Fast-Paced science courses (Biology, Chemistry, or Physics). Most (about two-thirds) of the students who discussed placement with their schools received accommodations. The majority (over 80%) of these students reported positive effects of placement. Ablard, K. E. (2005). Credit and Placement for CTY Math and Science Courses: Trends Over Time (Tech. Rep. No. 32). Baltimore, MD: Johns Hopkins University, Center for Talented Youth

Students (n=570, aged 12-16 years) who attended university-sponsored science and mathematics summer classes reported on their subsequent status at their regular schools pertaining to credit and placement issues. Advanced placement was given more often than credit, although in most cases both were awarded, particularly for high school level course work. Lynch, S. J. (1990). Credit and placement issues for the academically talented following summer studies in science and mathematics. *Gifted Child Quarterly*, 34, 27-30.

This study of 905 academically talented students (ages 12-16 years) who completed a one-year course in high school biology, chemistry, or physics in a three-week summer program found that the fast-paced courses effectively prepared students to accelerate in science and that talented students could begin high school sciences earlier than generally allowed. Lynch, S. J. (1990). Fast-paced science for the academically talented: Issues of age and competence. *Science Education*, 74(6), 585-596.

After participating in a 3-week individually paced precalculus or science course, 892 academically talented high school students were surveyed about academic credit and/or course placement for their independent work. Findings indicated that most students received credit or placement or both, with more awards for placement than credit. Mills, C. J., & Ablard, K. E. (1993). Credit and placement for academically talented students following special summer courses in math and science. *Journal for the Education of the Gifted*, 17, 4-25.

Nine months after participating in a 3-week individualized, flexibly-paced precalculus course, 218 academically talented students who received placement into a subsequent advanced math course completed a questionnaire assessing perceived preparation for advanced level work, grades received in the placement course, and perceived challenge of the individually-paced (IP) course relative to the placement course. The students experienced greater challenge in the IP precalculus course than in their school placement course. Self-reported grades, as well as perceptions of preparation for advanced level study, suggest that IP courses prepare students to be successful in placement courses in their school. Mathematics courses which allow students to proceed at a pace of learning matched to their abilities, followed by appropriate placement in their schools, provide an educational

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opportunity to meet the special academic needs of talented students. Mills, C. J., Ablard, K. E., & Lynch, S. J. (1992). Academically talented students' preparation for advanced-level coursework after an individually-paced precalculus class. *Journal for the Education of the Gifted*, 16, 3-17.

Acceleration has been shown to be an appropriate practice for meeting the needs of academically talented students; as a way to keep these students motivated and appropriately challenged. (CTY has a long history of conducting research on acceleration. Following are three articles that represent some of this work.)

Third-through sixth-grade mathematically talented students who participated in a flexibly paced, accelerated mathematics course showed achievement gains during a one-year course that far exceeded the normative gains expected during this period of time. These students also showed a high level of retention of the material over the summer. Mills, C.J., Ablard, K.E., & Gustin, W.C. (1994). Academically talented students' achievement in a flexibly paced mathematics program. *Journal for Research in Mathematics Education*, 25, 495-511.

43 college students who were identified at an early age as demonstrating extremely high ability in mathematical reasoning were quite accelerated, taking Calculus on average 2.5 years earlier than is typical. With few exceptions, students performed well in all courses, including college courses taken in high school. Kolitch, E. R., & Brody, L. E. (1992). Mathematics acceleration of highly talented students: An evaluation. *Gifted Child Quarterly*, 36(2), 78-85.

Some students need to advance in more than one area, and this may lead to skipping grades. Whether the grade skips occur in the early grades or later, students who skip grades are likely to be ready to enter college at a younger than typical age. There is strong research support for the effectiveness of this practice for selected students. This chapter also discusses a variety of alternatives for acceleration and enrichment that do not place students in a full-time college setting at a young age. Brody, L. E., & Stanley, J. C. (1991). Young college students: Assessing factors that contribute to success. In W. T. Southern and E. D. Jones (Eds.), *The Academic Acceleration of Gifted Children*. New York: Teachers College Press.

There is no evidence to support the notion of negative social and emotional consequences of acceleration for talented students as a whole.

The major purpose of this study was to examine the extent to which academically talented students are being appropriately challenged by their current educational programs and accommodated according to their advanced abilities. This study examined different types of acceleration experienced by students who completed an individually-paced Precalculus or Fast-Paced Science course at CTY. A major question was whether these acceleration experiences were perceived as positive or negative, or both. Major findings were: Some types of acceleration (e.g., grade skipping and math course

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skipping) occur more frequently than others (e.g., AP credit, science course skipping, special programs). The large majority of students (95%) felt that acceleration was positive, that is, acceleration increased interest, challenge, and movement through the educational system. These reports reflect students' ability to handle the challenge of more difficult coursework. The overwhelming reports of the positive effects of acceleration were accompanied by some reports of negative effects (e.g., feeling isolated from age mates and being uncomfortable when placed in classes with older students). These social difficulties, however, did not have a great impact as reported by students because the opportunity to be intellectually challenged far outweighed any social disadvantages. Ablard, K. E., Mills, C. J., & Duvall, R. (1994). Acceleration of CTY math and science students (Tech. Rep. No. 10). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

This study of early entrants to college focused on a key adjustment period, the freshman year of college. Students participating in this study were identified as extremely able mathematical reasoners by scoring 700 or above on the SAT-M before age 13, and had entered college full-time two or more years earlier than is typical. Most of the students were extremely successful, both academically and socially. Those few students who encountered academic problems lacked some particular combination of experiences and/or study skills that were needed for the particular college environment that they entered. Academic bridging experiences seem to be particularly important (e.g., experience with college level work through part-time college courses, Advanced Placement courses, and fast-paced summer programs). Brody, L. E., Lupkowski, A. E., & Stanley, J. C. (1988). Early entrance to college: A study of academic and social adjustment during the freshman year. *College and University*, 63(4), 347-359.

This study assessed academic achievements, extracurricular activities, aspirations, and social and emotional development of 470 mathematically or verbally talented students who accelerated to varying degrees during the high school years and 40 talented students who had been non-accelerates. Subjects were identified by the staff of the Study of Mathematically Precocious Youth at Johns Hopkins University. After graduation from high school, subjects completed a follow-up questionnaire and other tests, including the Adjective Check List. No discernible negative effects of various accelerative strategies were found. Brody, L. E., & Benbow, C. P. (1987). Accelerative strategies: How effective are they for the gifted? *Gifted Child Quarterly*, 31, 105-110.

See **Topical Series #1** online integrating the above research.

Most academically talented students have positive feelings about their families.

Based on data from a six-year study of over 800 families of academically talented students, the large majority of sixth-grade students (i.e., 98%) indicate that their family is usually caring and supportive. Most importantly, this finding was consistent three and even six years later. Students not only felt that their parents were supportive, the majority (i.e., 86% or more) also felt that parents' approval was important. This finding was consistent over the six-year period. Ablard, K. E. (2004). The Developmental Study of Talented Youth (DSTY): Six-Year Trends (Tech. Rep. No. 31). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Although parents of academically talented students generally have high expectations for their child to achieve, students report that they can meet these expectations and do not feel unduly pressured.

In a multi-year, longitudinal study of about 800 families of academically talented students, a large majority (85.5%) of parents reported being either somewhat involved (45.5%) or very involved (40%) in their child's school. The majority of parents felt that it was very important for their child to attend a top-level college/university (73%) and be highly successful in his/her profession (81%). However, only 39 percent of students reported that they feel "a lot of pressure from their parents to always be an exceptional student." This relatively low percentage appears to be related to the fact that so many of the students (99%) felt confident of their academic abilities, that is, they believed they could meet the high expectations of their parents. Ablard, K. E., Hoffhines, V. L., & Mills, C. J. (1996). Parents' Values and Children's Perceived Pressure (Technical Report No. 13a), Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Sixty percent of parents of academically talented students emphasize internal (i.e., relative to the individual) standards or both internal and external (i.e., relative to peers) standards for academic success. A focus on internal standards such as enjoyment, attaining personal goals, or trying one's best can weaken feelings of pressure to perform at a high level.

This study examined whether parents' conceptions of academic success fostered feelings of pressure in their children. Findings reveal that 56 percent of the parents defined academic success with external standards; e.g., performance beyond one's peers or attainment of socially recognized achievements such as college admission and employment in a high-status job. Emphasis on external standards appears to have its advantages, such as encouraging students to demonstrate high performance in school through good grades and test scores, leading to future college admission, and eventually employment in a prominent career. Although many of the parents evaluated academic success by external standards, one-half of this group simultaneously emphasized internal standards. In other words, they also defined academic success as relative to the individual: enjoyment, setting and attaining personal goals, motivation, working toward one's potential, being curious and

inquisitive, and trying one's best. By emphasizing both types of standards, parents convey to their children that outstanding performance is important to success, but personal satisfaction and trying one's best are also important, a balance that appears to alleviate feelings of pressure. Ablard, K. E. (1997). Parents' conceptions of academic success: Internal and external standards. *The Journal of Secondary Gifted Education*, 8(2), 57-64.

Few parents have an achievement goal (for their children) that focuses only on competence and attainment of socially-set standards (e.g., high grades and high test scores). Children of this minority are more likely than other academically talented children to be overly concerned about mistakes, parental expectations and criticisms, and they have more doubts about their actions.

Parents were asked to list goals they had for their child's achievement and the responses were classified as pertaining to a learning goal, a performance goal, both, or neither. A learning goal was assigned if parents predominantly focused on their child's understanding of material and improvement in performance. Twenty-eight percent of all parent pairs (both mother and father) had a learning goal. A response was classified as a performance goal if parents predominantly focused on their child's competence and attainment of socially set standards (e.g., high grades and test scores). Eleven percent of all parent pairs had a performance goal. The remaining sixty-one percent of parent pairs consisted of one parent with a learning goal and the other parent with a performance goal. Children for whom both parents had a performance goal were more likely than children for whom both parents had a learning goal to have a combination of high concern about mistakes, parental expectations, and parental criticism as well as doubts about their own actions. Given the low percentage of parent pairs with a performance goal alone for their children, the findings of this study help to refute the popular belief that the majority of parents of academically talented children unrealistically push their children to excel. Ablard, K. E., & Parker, W. D. (1997). Parents' achievement goals and perfectionism in their academically talented children. *Journal of Youth and Adolescence*, 26, 651-667.

See **Topical Series #4** integrating the above research.

social, emotional, and personality

Most academically talented students feel socially successful and happy with their friendships.

Based on data from a six-year study of over 800 families of academically talented students, the belief that students who are above their peers in academic abilities are below their peers in social abilities, appears to be more of a myth than fact. Academically talented high school students on average felt that they were socially successful and rated themselves as an 8 overall on a scale from 0 (not at all successful) to 10 (very successful). None of the students felt that they were not at all successful and 89 percent of students rated themselves at least as moderately socially successful (i.e., rating higher than a 5). The large majority of students were also happy with their friendships (91%) and happy with the number of friends they had (95%). Ablard, K. E. (2004). The Developmental Study of Talented Youth (DSTY): Six-Year Trends (Tech. Rep. No. 31). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Academically talented students have a variety of friends.

There has been great focus on the academic achievement and development of our brightest youth. However, relatively little is known about their friendships. In a longitudinal study, academically talented students were asked to provide information about their closest friends. The majority (58%) of students reported that their closest friends were of the same age. Students indicated that they had as many male friends as female friends, with females tending to have slightly more female than male friends. Closest friends were from a variety of places: in students' classes, in school but not in students' classes, and/or from extracurricular activities. Ablard, K. E. (2004). The Developmental Study of Talented Youth (DSTY): Six-Year Trends (Tech. Rep. No. 31). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Most academically talented students are satisfied with their physical abilities and physical appearance.

Based on data from a six-year study of over 800 families of academically talented students, the majority of students were satisfied with physical aspects of themselves. Most students (80%) were satisfied with their physical abilities and this satisfaction was consistently high over a span of six years. Most students (88%) also indicated that they would not change their appearance, although physical appearance was personally important to 82 percent of students. These percentages were consistent over the six-year period. Ablard, K. E. (2004). The Developmental Study of Talented Youth (DSTY): Six-Year Trends (Tech. Rep. No. 31). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

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Encouraging high standards for gifted students does not promote the development of negative forms of perfectionism. CTY students look very similar to a national comparison group of students in terms of the incidence of perfectionism.

Parents of academically talented students have been accused of pushing their children to attain high levels of achievement, as well as fostering performance anxiety and perfectionism in their children. Parents' achievement goals for their children, in terms of the focus on high performance (performance goal) or learning for understanding (learning goal), were examined in relation to children's perfectionism. Parents (127 sets) and their sixth-grade academically talented children (56% boys) completed the Multidimensional Perfectionism Scale and parents reported their achievement goals for their children. Most parents reported learning goals, suggesting that emphasis on meeting external standards is not predominant among parents of talented students. Children of performance goal parents were significantly more likely to exhibit dysfunctional perfectionism than children of learning goal parents, reporting a combination of high concern about mistakes, doubts about actions, parental expectations, and parental criticism. Parents' achievement goals can help predict which students might be at risk for adjustment problems and future underachievement. Ablard, K. E., & Parker, W. D. (1997). Parents' achievement goals and perfectionism in their academically talented children. *Journal of Youth and Adolescence*, 26, 651-667.

Using the Multidimensional Perfectionism Scale, perfectionism scores were compared between a group of 600 students identified as academically talented and a group of 418 peers from the general cohort. In this nationally gathered sample, all students were sixth graders and of similar socioeconomic status. Findings indicated little difference between the mean scores of the two groups. Comparisons were also made between the gifted students and the general cohort using an empirical typology of perfectionism. This analysis did not indicate a statistically significant difference in the frequency of perfectionistic types between gifted students and the general cohort. These findings suggest that the frequent anecdotal reports of greater perfectionism among the gifted may be a product of differential labeling patterns of similar behaviors when demonstrated by gifted students and the general cohort, or may represent a relationship with socio-economic level rather than intellectual level. A greater distinction between perfectionistic strivings which stimulate excellence and those perfectionistic strivings which frustrate and inhibit achievement needs to be made. Parker, W. D., & Mills, C. J. (1996). The incidence of perfectionism in gifted students. *Gifted Child Quarterly*, 40, 194-199.

Academically talented students do not report lower social self-perceptions overall than other adolescents. However, high verbal students may be at some risk for social problems because as verbal ability increases so do the students' feelings of being unpopular.

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Perceptions of self-esteem, locus of control, popularity, depression (or unhappiness), and discipline problems as indices of social and emotional adjustment were investigated in high verbal or mathematically talented adolescents. Compared to a group of students who are much less gifted, the highly gifted students perceive themselves as less popular, but no differences were found in self-esteem, depression, or the incidence of discipline problems. The gifted students reported greater internal locus of control. Comparisons between the mathematically talented students and the verbally talented students suggested that the students in the latter group perceive themselves as less popular. Within both the gifted and comparison groups, there were also slight indications that higher verbal ability may be related to some social and emotional problems. Brody, L. E., & Benbow, C. P. (1986). Social and emotional adjustment of adolescents extremely talented in verbal or mathematical reasoning. *Journal of Youth and Adolescence*, 15, 1-18.

The Brief Symptom Inventory was administered to 274 mathematically gifted secondary students identified by a national talent search and enrolled in a summer precalculus program. Results indicated that these students were significantly better adjusted than the adolescent normative group. Parker, W. D. (1994). Psychological adjustment in mathematically gifted students. *Gifted Child Quarterly*, 40, 154-157.

The majority of students report a social benefit, as well as an academic benefit, from taking a CTY summer course with other academically talented students. Many of the students maintain long distance relationships with other CTY students long after the program.

Approximately 500 CTY and CAA students have been surveyed after the completion of their summer program experience to evaluate the benefits of summer program participation. The vast majority of those students feel very strongly that one of the benefits of participation was that they were able to become friends with other bright students.

Due to the fact that CTY students form close friendships during their three-week summer program experience, many students keep in contact throughout the normal academic year. In order to assist students with this correspondence, CTY manages an alumni network where current and former CTY students can keep in touch via email and a listserv.

Information concerning the Summer follow-up survey can be found in CTY's yearly Goldman Sachs Scholars report; an internal document.

In 1998, CTY's Research staff collaborated with an independent researcher to develop a questionnaire that was subsequently completed by a group of 192 students in CTY's summer programs. Of these students, 90% reported that the most positive aspect of their experience at CTY was making friends of equal ability and with similar interest. In addition, 75% of the students reported that (for the first time) they experienced a "sense of belonging." Jessamy Hoffmann & Carol Mills (1998). Student Perception Questionnaire, CTY Internal Evaluation Report.

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When compared to normative groups of adolescents, highly able students are more open to new experiences and learning; the majority tend to prefer looking for patterns and possibilities rather than concentrating on facts and details; like to play with ideas and are more intuitive.

Collapsing data from several independent studies, clear personality differences were found for several hundred academically talented students when compared to a general population of same age students. On the Myers-Briggs Type Indicator, the academically talented students differed significantly from the comparison group on all four psychological type dimensions. Specifically, the academically talented group expressed greater preferences for introversion, intuition, and thinking. Although there were more judging types in this group than in the comparison group, overall, more academically talented students expressed a preference for a perceptive style. They also tended to be higher on achievement motivation and lower on interpersonal and social concerns. In particular, a cognitive style that emphasizes thinking over feeling appears to mediate gender differences in mathematics ability and achievement. Mills, C. J. (1993). Personality, learning style and cognitive style profiles of mathematically talented students. *European Journal for High Ability*, 4, 70-85.

These differences were also found in a group of gifted Irish adolescents.

The Myers-Briggs Type Indicator (MBTI) was administered to 1247 gifted adolescents from the United States and a comparable sample of 309 gifted Irish adolescents, all of whom were attending summer programs for the academically talented. Strikingly similar patterns of cognitive and psychological styles were found for the gifted students in both Ireland and the U.S. These patterns are quite different than those found in normative samples of U.S. students. The most consistent finding was that the majority of gifted students score highly on N (Intuition), indicative of a preference for the abstract and theoretical. This is in contrast to studies showing the majority of U.S. students from the general population have a preference for the factual and pragmatic. Many of the gifted students from both societies showed preferences for modes of thinking and learning that may be at odds with typical instruction styles. Implications for educational practices and policy are suggested. Mills, C. J., & Parker, W. D. (1998). Cognitive-psychological profiles of gifted adolescents from Ireland and the U.S.: Cross-societal comparisons. *International Journal of Intercultural Relations*, 22(1), 1-16.

Not all gifted students are alike in their learning styles.

Although there are clear differences between academically talented adolescents and a normative group of students, it is important to remember that there are also strong within-group differences. Students exhibit all possible types of cognitive style, as assessed by the Myers-Briggs Type Indicator. More specifically, the mathematically talented students with high verbal scores are those students with the strongest preference for introversion and intuition. Introverts with an intuitive preference tend to use their minds in a way that is advantageous for dealing with the intricacies of thought and language. On the other hand, the mathematically talented students with the lowest verbal scores had the largest number of sensing types and almost 70 percent of them were thinking types. Sensing-

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thinking types tend to prefer impersonal, logical analysis with an emphasis on facts; they tend to be practical and matter-of-fact. We may find that individual differences such as these are related to “how” an individual uses and develops his/her ability. Mills, C. J. (1993). Personality, learning style and cognitive style profiles of mathematically talented students. *European Journal for High Ability*, 4, 70-85.

When compared to a normative population of adolescent women, highly able young women more frequently express a preference for making decisions through rational analysis and objective standards.

In a longitudinal follow-up study of 124 young persons between the ages of 24 and 26 years of age who had been identified as academically talented as seventh graders, personality factors were found to be related to long-term, high-level achievement in the fields of mathematics and the sciences. This was particularly true for highly talented young women, who were more likely to possess the psychological preferences of talented young men when compared to normative samples. Mills, C. J. (1997). Gender differences in math/science achievement: The role of personality variables. Paper presented at the 20th Annual Conference of the Eastern Educational Association, Feb. 1997, Hilton Head, South Carolina.

See **Topical Series #2** and **Topical Series #3** online integrating some of the above research.

self-perception, motivation, and metacognition

Academically talented students vary widely in their beliefs about intelligence; students' views of the stability of intelligence parallels a normal distribution with high school students more likely than elementary students to believe that intelligence is stable.

Academically talented students have been identified by teachers, parents, and peers as being intelligent; therefore their views about intelligence should be highly salient and potent factors affecting their achievement-related behaviors. One-hundred and fifty-third through eleventh grade academically talented students rated their beliefs on the stability of intelligence from “stays the same” to “changes a lot.” They also rated themselves on similar scales for how smart and hardworking they thought they were, and how much they liked hard tasks. Approximately 9% of these bright students were at risk for underachievement based on their self-perceptions of relatively low ability and the belief that intelligence is stable. In addition to a developmental trend, females described themselves as being harder workers than males. Findings may account for the differing academic experiences and performance of academically talented students over time. Ablard, K.E. & Mills, C.J. (1996). Implicit theories of intelligence and self-perceptions of academically talented adolescents and children. *Journal of Youth and Adolescence*, 25, 137-148.

Not all gifted students are alike in their use of metacognitive learning strategies. The more students endorse an achievement goal of mastery (i.e., want to understand the material rather than just perform well), the more likely they are to use self-regulated strategies.

The use of self-regulated learning (SRL) strategies can proactively facilitate academic progress. Variation in SRL among high achievers suggests that some of these students will continue to excel, whereas others may be at risk for underachievement. In this study, 222 high ability seventh-grade students described their use of SRL strategies and rated their achievement goals (mastery/understanding and performance). Despite high ability, they ranged widely in their use of SRL strategies, variation that was related to achievement goals and gender. As goals for understanding and learning material (versus just performing well) increased, so did the use of SRL strategies. Girls reported greater use of SRL strategies involving 1) doing something to optimize the environment and 2) completing difficult homework or engaged in reading and writing. Ablard, K.E., & Lipschultz, R.E. (1998). Self-regulated learning in high-achieving students: Relations to advanced reasoning, achievement goals, and gender. *Journal of Educational Psychology*, 90(1), 94-101.

gifted students with learning disabilities

Despite common perception, there are a number of gifted children who have a specific learning disability or attention problems. They are often not identified in their school and are often under-served. With appropriate accommodations and interventions they are able to reach their full potential.

Many people have difficulty comprehending that a child can be gifted and also have learning disabilities. As a result, children with special needs that result from both their high abilities and their learning problems are rarely identified and are often poorly served. This article explores the current policies and practices with regard to defining, identifying, and educating this population. Recommendations are included that would help ensure that students who are gifted and have learning disabilities receive the intervention needed to help them achieve their full potential. Brody, L. E., & Mills, C. J. (1997). Gifted children with learning disabilities: A review of the issues. *Journal of Learning Disabilities*, 30, 282-296.

The concept of a child with exceptionally high abilities also having learning disabilities is difficult for many educators to accept. This book brings together experts from both the fields of giftedness and learning disabilities who explore the question of how to characterize, define, identify, and develop programs for gifted children with learning disabilities. The results of empirical research on this population, as well as case studies, are included. Several model programs that were developed specifically for this population are described. Fox, L. H., & Brody, L. E. (1983). Models for identifying giftedness: Issues related to the learning disabled child. In L. H. Fox, L. E. Brody, & D. Tobin (Eds.), *Learning Disabled/Gifted Children: Identification and Programming*. Austin, TX: Pro-Ed.

Despite the many examples of famous individuals who were obviously talented and yet had great difficulty as students, many people have difficulty understanding that a child can be gifted and also have a learning disability. Because these students are so misunderstood, they are rarely identified and even if identified are often poorly served. This article explores the current policies and practices with regard to defining, identifying, and educating this misunderstood and underserved population. Mills, C.J. & Brody, L.E. (1999) Overlooked and Unchallenged: Gifted students with learning disabilities. *Knowledge Quest*, 27(5), 30-34.

In an educational environment of limited resources, competing agendas, and budget cutbacks, why should a principal care about doubly exceptional children. The answer is tied to a school's mission to give every child an equal opportunity to realize his or her full potential. This article discusses the characteristics of the child who is both gifted and learning disabled and then addresses the role of the principal in leading and assisting staff to meet the academic needs of these children. Mills, C. J. & Brody, L. E. (2002) The Doubly Exceptional Child: A principal's dilemma. *Streamlined Seminar*, 20(4), 1-2.

under-represented students

Under-represented students sometimes have specific skill/knowledge gaps that can be addressed with targeted, accelerated instruction that allows them to move ahead academically and excel at a high level.

In specially targeted programs that are supplementary to their regular school program, educationally disadvantaged students can learn at a fast pace and increase their aptitude and achievement test scores.

The Skills Reinforcement Project (SRP) was designed to increase the basic skills of disadvantaged and minority youth in mathematics and language arts. Forty-five minority and economically disadvantaged 6th graders participated in a 110-hr. academic program on Saturdays and at a residential college during the summer. When compared with 46 students of similar SES, sex, and ethnicity, the SRP participants made statistically greater gains on pre- and posttest measures of math. Although not statistically significant, the gains made on the verbal measures were greater than those made by the comparison group. Lynch, S. J., & Mills, C. J. (1993). Identifying and preparing disadvantaged minority youth for high level academic achievement. *Contemporary Educational Psychology*, 18, 66-76.

This research involved 36 students identified as "educationally disadvantaged" who scored above average on standardized achievement tests and completed a program to reinforce their academic skills in either language arts or mathematics and 28 control students who received no instructional intervention. Data indicate a significant effect of the instructional intervention for both achievement and aptitude test scores in language arts and math. Gains in math were significantly greater than in language arts. After instructional intervention, the majority of subjects were eligible and academically qualified for challenging gifted-talented programs. Mills, C. J., Stork, E. J., & Krug, D. (1992). Recognition and development of academic talent in educationally disadvantaged students. *Exceptionality*, 3, 165-180.

Under-represented students who attend CTY courses look very similar to other CTY students in terms of their high educational aspirations and academic self-concepts.

From 2000 to 2003, the Center for Talented Youth's Goldman Sachs Scholars Program provided full scholarships for 403 underrepresented students based on geographic location and level of need. These students were evaluated prior to, and after attending summer programs. Overall, these students showed high aspirations for their educational future. Even as early as 7th grade, 100 percent of these outreach students planned to attend college. These students also placed a high importance on: getting good grades, going to a good college, understanding what they learn, and enjoying learning. Such findings are consistent with past research involving the general population of CTY students.

CTY-Goldman Sachs scholars were also asked a myriad of questions designed to evaluate their

under-represented students

academic self-concept by assessing how well they felt they would do in various subjects. Almost all CTY-Goldman Sachs Scholars felt that they would do either “very well” or “well” the following year in math, science, and English/language arts. Congruent with the previous finding, the vast majority of CTY-Goldman Sachs Scholars felt that they would be good at learning something new in math, science, and English/language arts.

Under-represented students who attend CTY summer programs make similar achievement gains as other CTY students.

Students in summer programs are not systematically graded or evaluated on the basis of test scores. To provide evidence of student learning, we asked instructors to create and administer assessments at the beginning and at the end of their courses. These assessments were tailored to each instructor's syllabus and goals for the course. This pre- and post-testing procedure provided a measure of achievement gain. A specific interest was to examine the gains made by students in under-represented groups who received scholarships. These students may have started in courses with lower scores (i.e., less knowledge about the topic), but they made similar gains when compared to other students in their classes who did not receive a scholarship. Ablard Mickenberg, K.E. (2006). The value of pre-post assessment for improving instruction and learning: Five years of research, (Tech. Rep. No. 35). Baltimore, MD: Johns Hopkins University, Center for Talented Youth

Under-represented students who attend CTY courses perform academically as well, if not better, than their gifted and talented peers.

The Next Generation Venture Fund, which began in 2004, as an expansion of the Goldman Sachs Scholars program, also targets under-represented gifted students. The program brings these under-represented children to the highest levels of academic achievement through participation in rigorous summer programs, year-round distance education courses, specialized weekend courses, a mentoring program and year-round academic counseling. Preliminary results indicate that these under-represented students are performing just as well as their peers in the CTY classroom, as rated by CTY instructors. In addition, NGVF students tend to take as many honors and AP courses in their home schools, when compared to a control group. NGVF students are more likely to be accelerated in their courses and to participate in supplemental academic coursework than their gifted and talented peers.

Under-represented students who attend CTY courses go on to attend highly competitive colleges and universities.

The ultimate goal of both the Goldman Sachs Scholars program and the Next Generation Venture Fund program is to prepare under-represented students for admission to highly selective colleges. Results obtained from the original Goldman Sachs scholars who are now of college age indicate that the program was successful. Almost all of these students who responded to our survey are enrolled in a college program, and the majority of students are attending prestigious universities such as Harvard, Yale, and Princeton. 66.7% are attending schools ranked as either Highly or Most Competitive, as compared to only 48.1% of the control group. The mean rating of schools attended

benefits of the cty summer experience

Exposure to academic challenge and high quality of instruction are frequently reported by CTY students and their parents as benefits of taking a CTY course.

The large majority of CTY students rate the intellectual challenge of the CTY courses as demanding and report that their CTY instructors were excellent or outstanding. Many students feel that CTY exposes them to better quality instruction and teachers than what is available at their home schools. Like students, parents express their satisfaction with CTY courses for the academic rigor that they provide. When parents are asked about the major factor in deciding to have their child attend CTY summer programs, the most frequently reported factor involves academic challenge and opportunities for academic advancement.

Taylor, C., & Ablard, K. (1999). Student Evaluations of Academic Programs: CTY/OS and CAA (Internal Report No. 4B). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Mills, C., & Hoffmann, J. Student Perceptions Study (Internal Report No. 13). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Kasahara, E. (2006). Student Program Satisfaction Survey. Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Ablard Mickenberg, K.E. (2007). Why Do Students Elect to Attend or to Not Attend CTY Summer Programs? (Technical Report No. 36). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Achievement gains have been reported by instructors and documented via pre- and post-assessment methods.

Students are not systematically graded in CTY courses, but students do receive written evaluations from their instructors. Instructors express significant student learning for the large majority of the students. In recent years, instructors have been asked to develop or adopt an existing assessment that reflects the specific topics that they will teach in the course. Instructors administer this assessment at the beginning and at the end of the three-week course. Although students may vary in knowledge and skills when entering the course, most demonstrate considerable gains in achievement over the short period of three weeks.

Ablard Mickenberg, K.E. (2006). The Value of Pre-Post Assessment for Improving Instruction and Learning: Five Years of Research (Technical Report No. 35). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Ablard Mickenberg, K.E. (2006). Achievement Gains in Summer Programs: Pre- and Post-Assessment Project Summary Report (Internal Evaluation Report No. 21). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Many students who take a CTY summer course are eventually accelerated in

benefits of the cty summer experience

their schools' curriculum.

CTY strongly recommends, as written in the application and course description materials, that students meet with their schools' principal or guidance counselor to discuss courses of interest. Students are told that this is a chance to explore whether or not the school might recognize the CTY course work, and whether the student would be allowed to take more advanced courses based on what is learned in the summer course. Certain courses are very similar to traditional high school math and science courses and lend themselves more easily to receipt of credit or placement. More specifically, the majority of students taking one of the CTY Fast-Paced Science courses (i.e., Biology, Chemistry, Physics) or the Individually-Paced Mathematics Sequence (i.e., Algebra I, Geometry, Algebra II and so on) receive credit or placement (course skipping) in their home schools. Of students who receive placement into a higher-level course, many feel that the CTY course provided better preparation for the higher course than what their classmates got in school. Moreover, the large majority of placement students report positive effects such as opportunities to be with intellectual peers and heightened interest in a field of study.

Mills, C.J., & Ablard, K.E. (1993). Credit and placement for academically talented students following special summer courses in math and science. *Journal for the Education of the Gifted*, 17(1), 4-25.

Ablard, K.E. (2005). Credit and Placement for CTY Math and Science Courses: Trends Over Time (Technical Report No. 32). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Opportunities to be with other bright students and friendships with such students are frequently reported by CTY students and their parents as benefits of taking a CTY course.

The large majority of CTY students indicate that one of the most positive aspects of the CTY experience is making friends with other students with abilities and interests that are similar to their own. Many CTY alumni report that at least one CTY student had a strong positive influence on their intellectual or personal development and report long-lasting friendships with CTY attendees. Parents endorse this benefit of intellectual peer relations. Social benefits of the CTY experience need to be considered in relation to academic benefits. It is important to keep in mind that many students say that the social benefits of participation in CTY summer programs are at least equivalent to the academic benefits.

Mills, C., & Hoffmann, J. Student Perceptions Study (Internal Report No. 13). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

Kasahara, E. (2006). Student Program Satisfaction Survey. Baltimore, MD: Johns Hopkins University, Center for Talented Youth.

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