

# Aspects of Personality and Peer Relations of Extremely Talented Adolescents

Susan L. Dauber  
Johns Hopkins University

Camilla Persson Benbow  
Iowa State University

## Abstract

Exceptionally gifted students may be at risk for problems in social and emotional development. To discover if peer relations are affected by type and/or amount of giftedness, extremely mathematically or verbally talented 13 year-olds (top 1 in 10,000) were compared to modestly gifted students (top 1 in 20) of similar age on measures of popularity and peer acceptance, participation in group activities, and personality traits. The verbally or mathematically talented students were also contrasted on the same measures. Virtually no differences in group activities or personality traits were found. In their ratings of peer perceptions, the modestly gifted group exceeded the extremely gifted, especially the verbally gifted, in being considered athletic and popular, and in social standing. The modestly gifted also rated themselves as more extroverted, socially adept, and uninhibited. Perceptions of peer ratings of importance and acceptance were higher for the mathematically than the verbally gifted. Thus, extremely precocious adolescents, especially the verbally precocious, may be at greater risk for developing problems in peer relations than modestly gifted youth.

Previous studies of personality traits and emotional adjustment of gifted students have generally concluded that the gifted are at least as well adjusted emotionally as the average student (Cattell, Barton, & Dielman, 1972; Grossberg & Cornell, 1988; Janos & Robinson, 1985; Karnes & Wherry, 1981; Olszewski-Kubilius, Kulieke, & Krasney, 1988; Solano, 1983; Werner & Bachtold, 1969). It has been suggested, however, that exceptionally gifted students may be at a disadvantage; students with extremely high IQs are less popular and have more difficulty with peer relations than age-mates (Austin & Draper, 1981; Feldman, 1986; Freeman, 1979; Gallagher, 1958; Ross & Parker, 1980). Possibly their unusually high intelligence makes it difficult for their age-mates to relate to them intellectually or socially (Austin & Draper, 1981; Feldman, 1986; Hollingworth, 1942; Terman & Oden, 1947). In this study, we attempted to determine if the extremely gifted are at greater risk for difficulties in peer relations than modestly gifted students.

Generalizations about the extremely gifted may ignore some very real differences within that group. Although several studies have characterized the mathematically gifted as less

sociable and more detached and reserved than their verbally gifted counterparts (Payne, Halpin, & Ellett, 1973; Silverblank, 1973), most comparisons favor the mathematically talented. Mathematically gifted students are more outgoing and sociable, independent, spontaneous, and socially mature than verbally gifted students (D'Heurle, Mellinger, & Haggard, 1959; Ferguson & Maccoby, 1966; Haier & Denham, 1976; Nelson & Maccoby, 1966; Solano, 1983). Students with high verbal ability, in contrast, are strained, tense, less talkative, and more withdrawn and introverted (Cattell, 1945; D'Heurle et al., 1959; Ferguson & Maccoby, 1966). These personality differences may explain why extremely mathematically talented students are more popular than extremely verbally talented students (Brody & Benbow, 1986). We shall, therefore, compare the mathematically and verbally talented in peer relations and on several personality dimensions.

Difficulty in peer relations among the gifted may also result from differential involvement in school and community activities. Most studies of the noncognitive activities of gifted children, however, consistently find that they are equally involved in all types of sports and games and have as many, if not more, outside interests as average-ability children (Benbow, 1983; Lewis, 1943; Terman, 1925; Witty & Lehman, 1927). Again, there may be differences within the gifted population. Perhaps those who are modestly gifted participate in extracurricular activities to a greater extent than extremely gifted students. There also may be differences in types of activities participated in. The exceptionally gifted seem to prefer more solitary pursuits (Witty & Lehman, 1927). Differences in interests and activities may relate to differential acceptance by peers.

In sum, no clear profile exists of differentially gifted adolescents as part of the age-peer network. Differentially gifted

## Putting the Research to Use

Extremely precocious students appear to be at a greater risk for developing problems in their peer interactions than other less gifted students. Moreover, verbally precocious students appear to have the lowest feeling of importance and social standing. These findings indicate that educators need to be sensitive to possible feelings of isolation on the part of extremely gifted students. Assisting extremely gifted children to form social relationships and gain the acceptance of their peers may benefit such students greatly.

adolescents' personality and involvement with peers have not been studied together to form a meaningful profile. This study attempts such a synthesis. To augment this synthesis, we will also study students' self-rated perceptions of how they are appraised by peers on several social dimensions. This will provide insights into how differentially gifted children view their relationship to the peer group and acceptance by peers.

### Methods

From November 1980 through October 1983 two groups of extremely talented students were identified through talent searches by the Study of Mathematically Precocious Youth (SMPY) or the Center for Talented Youth (CTY) at Johns Hopkins University (Stanley, 1984). These students scored before age 13 either  $\geq 700$  on the mathematical portion (SAT-M) or  $\geq 630$  on the verbal portion (SAT-V) of the College Board Scholastic Aptitude Test. They were termed the 700M (the mathematically talented) and 630V (the verbally talented) group, respectively. Students earning such scores before age 13 are estimated to represent the ablest 1 in 10,000.

For those three years, 268 boys and 23 girls were identified for the 700M group, and 98 boys and 67 girls were found for the 630V group. Since so few girls qualified for the 700M group, additional 700M girls continued to be included beyond 1983. Of those identified, 173 700M males, 35 700M females, 44 630V males, and 48 630V females completed a lengthy questionnaire.<sup>1</sup> The average age at the time of the study was 13.7 years for both males and females.

A modestly gifted group also was selected for this study by the same procedure (i.e., through talent searches) used in selecting the extremely precocious students. Although these students had scored in the top 3% of national norms on at least one sub-test of a standardized achievement test, their SAT scores as 7th graders were low. The combined SAT score (SAT-M + SAT-V) for this group was 540 or less, where a total of 500 reflects essentially chance performance. Therefore, although by preselection this group was far abler than the average of its age-mates, its members clearly did not have exceptional mathematical or verbal reasoning abilities. These students comprised the modestly gifted group. Originally, 87 males and 118 females (14 to 15 years of age) were identified for the modestly gifted group. Of these, 50 males and 61 females completed the questionnaire.

### Procedures

Questionnaires were mailed to all students in each group. Of the 440 questionnaires sent to the extremely gifted group, 340 were returned, a response rate of 77%. The only deviation

from this rate was for the 700M females, with 92% responding. Due to the paucity of 700M females, more time was spent encouraging them to return their questionnaires. The modestly gifted group returned 111 of the 205 questionnaires, a response rate of 54%. The disparity in response rates between this group and the extremely gifted probably can be accounted for by the more frequent reminders sent to the extremely gifted group and their greater amount of personal interaction with SMPY. The modestly gifted group was given a specific deadline by which to respond and was reminded by letter only once, but participants were paid a small fee.

Step-wise linear discriminant function analyses between respondents and nonrespondents were performed on both groups using SAT-M, SAT-V, gender, and talent group as variables for the extremely gifted group, and SAT-M, SAT-V, and gender for the modestly gifted group. These variables could not distinguish between the respondents and the nonrespondents in either group.

Items on the 24-page student questionnaire used in this study concerned personality traits, social activities, and social standing within the peer group (Appendix A). Some of the items were adapted from the sophomore questionnaire of the High School and Beyond National Longitudinal Study conducted by the National Center for Education Statistics (Conger, Peng, & Duntzman, 1976; Peng, Fetters, & Kolstad, 1981). Although use of standardized inventories would have been preferable, their inclusion with the questionnaire would have negatively affected response rates. The questionnaires were already too long.

### Results

First, variables reflecting personality traits, participation in group activities, and peer perceptions of social standing were analyzed separately. Second, extremely gifted students were compared to modestly gifted students by sex. Third, mathematically and verbally gifted students were contrasted by sex. Finally, the three sets of variables were included in one discriminant analysis to determine if all the variables could separate the groups. This dual system of analysis highlighted differences in each variable, as well as the pattern of interactions among variables.

### Personality Differences among the Differentially Gifted

The means and standard deviations for the personality variables, as well as all other variables used in the analyses, are shown in Table 1. ANOVAs<sup>2</sup>, performed on the nine personality indices using gender and talent group (700M vs. 630V) as independent variables, resulted in no significant main

<sup>1</sup>Those who met the criteria for both groups were excluded from all analyses. Although students who score at least 630V and 700M are clearly extremely able and fascinating to study, the present purpose was to focus on differentially gifted students. That is, how do mathematically and verbally gifted students differ from each other?

<sup>2</sup>The pattern of unequal N's in the subgroups resulted in nonorthogonal ANOVA's. Although discarding observations would artificially balance the design, it would also decrease the power. Therefore, we followed the four-step procedure outlined by Appelbaum and Cramer (1974) to handle the problems resulting from nonorthogonality.

**Table 1**  
**Means and Standard Deviations of all Variables, by Group**

Variable	700 M (N = 208)		630V (N = 92)		Total Gifted (700M/630V) (N = 300)		Modestly Gifted (N = 111)	
	Mean	S. D.	Mean	S. D.	Mean	S.D.	Mean	S.D.
Socially Adept	6.00	2.14	5.56	1.95	5.86	2.09	7.58	1.94
Uninhibited	4.99	2.20	5.02	2.08	5.00	2.16	7.09	2.03
Venturesome	5.57	2.15	5.54	2.07	5.56	2.12	6.71	2.45
Independent	7.14	2.05	7.22	1.93	7.16	2.01	7.31	2.15
Dominant	5.80	2.19	6.37	2.11	5.97	2.18	6.22	2.09
Radical	6.37	2.06	6.63	2.09	6.45	2.07	6.79	2.02
Imaginative	5.85	1.99	6.40	2.14	6.02	2.05	6.86	2.02
Emotionally stable	7.32	2.21	6.99	2.37	7.22	2.26	7.80	2.15
Extroverted	4.96	2.26	5.01	2.23	4.97	2.24	6.51	2.30
As popular	1.88	.57	1.67	.65	1.82	.60	2.15	.56
As athletic	1.54	.63	1.40	.54	1.50	.61	2.05	.66
As socially active	1.68	.59	1.58	.65	1.64	.61	2.24	.62
As part of the leading group	1.67	.66	1.41	.62	1.60	.66	2.00	.77
As important	2.25	.60	1.90	.66	2.14	.64	2.19	.60
Athletic teams	1.50	.53	1.46	.54	1.48	.53	1.73	.45
School clubs	.28	.31	.24	.33	.27	.32	.28	.32
National clubs	.20	.27	.27	.31	.22	.28	.31	.30
Performance clubs	.29	.30	.36	.30	.31	.30	.32	.35

effects or interaction terms that also had at least a medium effect size.

When ANOVAs were computed on the same personality variables using gender and membership in either the modestly or extremely gifted group as independent variables, five significant differences resulted. Both gender and group differences favoring the modestly gifted and females were found for the "socially adept" variable ( $p < .05$ ) and for the "uninhibited" variable ( $p < .05$ ). The modestly gifted also rated themselves as more extroverted than did the extremely precocious students ( $p < .05$ ).

#### **Participation in Group Activities**

No gender or group differences emerged on any of the group activities variables (national clubs, athletics, school clubs, and performance clubs; listed in Appendix A), with the exception of "participation in performance clubs" (see Table 1). Junior high school females more frequently participated in performance clubs in both gifted groups ( $p < .01$  for extremely precocious,  $p < .001$  for modestly gifted).

#### **Peer Perceptions of Social Involvement**

Peer perceptions of an individual's social involvement were investigated in order to ascertain the students' standing within their peer network. Three responses to the items were possible: not at all, somewhat, and very (see Appendix A). ANOVAs were performed using the same independent variables used previously (i.e., talent group and gender). Only statistically significant differences are reported.

The "popularity," "membership in the leading crowd," and "socially active" variables measured similar concepts. Each variable reflects the individual's perceived social position. In ANOVAs between the extremely precocious and the modestly gifted group, significant group differences ( $p < .001$ ) were found favoring the modestly gifted on all three variables: "popularity," "socially active," and "membership in the leading crowd." Similarly, the modestly gifted exceeded the extremely gifted ( $p < .001$ ) in being considered "athletic."

Thus, four out of the five variables in this section resulted in meaningful differences between the extremely and modestly gifted groups. All comparisons favored the modestly gifted. Being viewed as "important" by peers also revealed one statistically significant difference. In this case the 700M group rated themselves significantly higher than did the 630V group ( $p \leq .001$ ). No gender differences were found in any comparisons.

#### **All Psychosocial Indices Considered Simultaneously**

Step-wise linear discriminant function analysis (Cooley & Lohnes, 1971) was used to determine (i) whether any of the above 18 variables or combination thereof can separate the three groups, and (ii) their discriminating capacity. The first such analysis, between the 700M and 630V groups, was significant ( $p < .001$ ; canonical  $r = .38$ ), with 6 of the 18 variables meeting the criterion for entry into the function. The most powerful discriminating variable was peer perception of importance.

Since the two gifted groups were distinctive, we computed discriminant analyses separately between each extreme talent group and the modestly gifted group. The discriminant function between the 630V group and the modestly gifted was significant ( $p < .001$ ; canonical  $r = .67$ ). Ten variables were entered statistically into the discriminant function, with the "peer perception of athletic ability" having the strongest loading. Several personality variables also had high discriminating capacity (i.e., "uninhibited," "socially adept," and "dominant").

The discriminant analysis between the 700M group and the modestly gifted was also significant ( $p < .001$ ; canonical  $r = .60$ ), but only 7 of the 18 variables were statistically included. The "peer perception of importance" variable was the best discriminator, followed by whether others view the student as socially active. Finally, a discriminant analysis on the 700M, 630V, and comparison groups was statistically significant ( $p < .001$ ; canonical  $r = .58$ ). Peer perception of importance was the best discriminator.

### Discussion

This study examined whether exceptionally gifted students differ from modestly gifted students and whether verbally and mathematically precocious students differ on several measures of personality and peer relations. Past research suggests that it is exceptionally gifted children who are at risk for developing adjustment problems (e.g., Austin & Draper, 1981; Hollingworth, 1942). In addition, mathematically talented children may experience less difficulty with peers than verbally talented children.

The modestly gifted students did have the most favorable profile in terms of personality and peer acceptance/interaction. The extremely gifted students viewed themselves as more introverted, less socially adept, and more inhibited. The extremely gifted adolescents also reported that their peers saw them as much less popular, less socially active, less athletic, and less active in the leading crowd. Thus, extremely precocious students may be at greater risk for social problems than modestly gifted students. Few gender differences were noted.

Several significant differences between extremely mathematically (700M) and verbally (630V) talented students were also found. Primarily, the mathematically precocious thought that their peers would rate them higher in importance than did the verbally gifted. In fact, the 700M group had an even higher rating of their perception of "importance" than did the modestly gifted. The "importance" variable is more of a measure of self-esteem than of peer acceptance/interaction. Thus, this result is consistent with the finding that quantitatively able students have greater self-esteem than verbally able students (e.g., Ferguson & Maccoby, 1966; Nelson & Maccoby, 1966).

Moreover, results from the discriminant analyses using each domain of talent (i.e., math and verbal) separately and contrasting each exceptionally gifted group with the modestly gift-

ed group revealed that the verbally talented differed from the modestly gifted on more attributes than the mathematically talented did. It is unclear why the verbally gifted should have the lowest feeling of importance and social standing of all the groups. Perhaps the verbally gifted do not feel that their talents are as socially acceptable as the mathematically gifted in today's technologically oriented society. Another possible explanation is that extreme mathematical ability may be less obvious in social situations. Verbally gifted children, by contrast, are conspicuous due to their sophisticated vocabulary. Young gifted children have difficulty forming friendships if they use advanced vocabulary and sentence structure (Roedell, Jackson, & Robinson, 1980).

The three groups of gifted students did not differ significantly in participation rates for any of the activities studied, even though extremely gifted students perceive themselves as less athletic and socially active than the modestly gifted. This discrepancy between actual participation levels in various activities and perception of social standing indicates that there is not a simple relationship between these two variables. Extremely gifted students, however, might not have taken part in highly esteemed activities or sports as often as the modestly gifted.

There are several possible limitations in our study, foremost of which is our reliance on self-report data of students' perceptions of how others view them. Other students may rate them very differently. Yet the self-report data offer valuable insight into the students' own perceptions of their place within the peer group.

In conclusion, there appear to be differences transcending the merely intellectual domain between extremely and modestly gifted students and between differentially gifted students. Peer relations seem to be affected by amount of giftedness and domain of specific talent. While much attention has been given to ensuring that the extremely gifted student is afforded an acceptable and broadening intellectual environment, perhaps not enough emphasis has been placed on developing such students' peer interaction skills. It might be advisable for educators, especially teachers, to be sensitive to possible feelings of isolation on the part of the extremely gifted students. Facilitating the acceptance of the gifted child by peers and the formation of social relationships may significantly benefit the extremely gifted child.

---

Author's Note: We thank Linda E. Brody, Ann McGill, Cindy J. Raymond, Daniel J. Reschly, and Julian C. Stanley for helpful comments and suggestions. Support was provided by the National Science Foundation (MDR-8651737).

## References

- Appelbaum, M.I., & Cramer, E.M. (1974). Some problems in the nonorthogonal analysis of variance. *Psychological Bulletin*, *81*, 335-343.
- Austin, A.B., & Draper, D.C. (1981). Peer relationships of the academically gifted: A review. *Gifted Child Quarterly*, *25*, 129-133.
- Benbow, C.P. (1983). Adolescence of the mathematically precocious: A five-year longitudinal study. In C.P. Benbow and J.C. Stanley (Eds.), *Academic precocity: Aspects of its development* (pp. 9-37). Baltimore, MD: Johns Hopkins University Press.
- 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.
- Cattell, R.B. (1945). Personality traits associated with abilities. II: With verbal and mathematical abilities. *Journal of Educational Psychology*, *36*, 475-486.
- Cattell, R.B., & Butcher, H.J. (1968). *The prediction of achievement and creativity*. New York: The Bobbs-Merrill Company, Inc.
- Cattell, R.B., Barton, K., & Dielman, T.E. (1972). Prediction of school achievement from motivation, personality, and ability measures. *Psychological Reports*, *30*, 35-43.
- Cattell, R.B., Eber, H.W., & Tatsuoka, M.M. (1973). *Handbook for the Sixteen Personality Factor Questionnaire*. Champaign, IL: Institute for Personality and Ability Testing.
- Conger, A.J., Peng, S.S., & Duntleman, G.H. (1976). *National longitudinal study of the high school class of 1972: Group profiles on self-esteem, locus of control, and life goals*. Research Triangle Park, NC: Research Triangle Institute.
- Cooley, W.N., & Lohnes, P.R. (1971). *Multivariate data analysis*. New York: Wiley.
- D'Heurle, A., Mellinger, J.C., & Haggard, E.A. (1959). Personality, intellectual, and achievement patterns in gifted children. *Psychological Monographs*, *73* (13, Whole No. 555), 1-28.
- Feldman, D.H. & Goldsmith, L.T. (1986). *Nature's Gambit: Child Prodigies and the Development of Human Potential*. New York: Basic Books.
- Ferguson, L.R., & Maccoby, E.E. (1966). Interpersonal correlates of differential abilities. *Child Development*, *37*, 549-571.
- Freeman, J. (1979). *Gifted Children*. Baltimore, MD: University Park Press.
- Gallagher, J.J. (1958). Peer acceptance of highly gifted children in elementary school. *Elementary School Journal*, *58*, 465-470.
- Grossberg, I.N., & Cornell, D.G. (1988). Relationship between personality adjustment and high intelligence: Terman versus Hollingworth. *Exceptional Children*, *55*, 266-272.
- Haier, R.J., and Denham, S.A. (1976). A summary profile of the nonintellectual correlates of mathematical precocity in boys and girls. In D.P. Keating (Ed.), *Intellectual talent: Research and development* (pp. 225-241). Baltimore, MD: Johns Hopkins University Press.
- Hollingworth, L.S. (1942). *Children above 180 IQ Stanford-Binet: Origin and development*. Yonkers-on-Hudson, NY: World Book Co.
- Janos, P.M., & Robinson, N.M. (1985). Psychosocial development in intellectually gifted children. In F.D. Horowitz & M. O'Brien (Eds.), *The gifted and talented: Developmental perspectives* (pp. 149-196). Washington, DC: American Psychological Association.
- Karnes, F.A., & Wherry, J.N. (1981). Self-concepts of gifted students as measured by the Piers-Harris children's self-concept scale. *Psychological Reports*, *49*, 903-906.
- Lewis, W.D. (1943). Some characteristics of very superior children. *Journal of Genetic Psychology*, *62*, 301-309.
- Nelson, E.A., & Maccoby, E.E. (1966). The relationship between social development and differential abilities on the Scholastic Aptitude Test. *Merrill-Palmer Quarterly*, *12*, 269-284.
- Olzewski-Kubilius, P., Kuleke, M.J., & Krasney, N. (1988). Personality dimensions of gifted adolescents: A review of the empirical literature. *Gifted Child Quarterly*, *32*, 347-352.
- Payne, D.A., Halpin, W.G., & Ellett, C.D. (1973). Personality trait characteristics of differentially gifted students. *Psychology in the Schools*, *10*, 189-195.
- Peng, S.S., Fetters, W.B., & Kolstad, A.J. (1981). *High school and beyond*. Washington, DC: National Center for Education Statistics.
- Roedel, W., Jackson, N., & Robinson, H. (1980). *Gifted young children*. New York: Teachers College Press.
- Ross, A., & Parker, M. (1980). Academic and social self-concepts of the academically gifted. *Exceptional Children*, *47*, 6-10.
- Silverblank, F. (1973). A selection of selected personality factors between students talented in English and students talented in mathematics. *California Journal of Educational Research*, *24*, 61-65.
- Solano, C.H. (1983). Self-concept in mathematically gifted adolescents. *Journal of General Psychology*, *108*, 33-42.
- Stanley, J.C. (1984). The exceptionally talented. *Roeper Review*, *6*, 160.
- Terman, L.M. (1925). *Mental and physical traits of a thousand gifted children*. Stanford, CA: Stanford University Press.
- Terman, L.M., & Oden, M.H. (1947). *The gifted child grows up: Twenty-five years' follow-up of a superior group*. Stanford, CA: Stanford University Press.
- Werner, E.E., & Bachtold, L.M. (1969). Personality factors of gifted boys and girls in middle childhood and adolescence. *Psychology in the Schools*, *6*, 177-182.
- Witty, P.A., & Lehman, H.C. (1927). The play behavior of fifty gifted children. *Journal of Educational Psychology*, *18*, 259-266.