Exceptionally Gifted Boys and Their Parents*

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The developmental gaps between gifted intelligence and creativity and exceptional early giftedness and the later attainment of eminence in adulthood are well reported. A number of factors have been thought to account for these gaps, the most mentioned being family variables. In an effort to explore some of the possible early experiential and family variables involved in the achievement of eminence we have developed a model of cognitive and personality development and have undertaken a longitudinal study of two distinct groups of exceptionally gifted boys and their families. One of the basic premises to this model is that human development is multifaceted and longitudinal, occurring over extended periods of time. Rare as they are, eminent careers are also multifaceted in their antecedents and longitudinal in their development. They are not matters of luck or genius.

The behavioral makeup of eminence is definable, although not well understood in terms of its development (Albert, 1975, 1978). The development of eminent careers appears to involve a number of family variables and to require at least two major, infrequently occurring transformations: cognitive giftedness into creative ability and the transformation of this ability to an even rarer, well-balanced set of creative skills, values, and motivations that make up and sustain a highly committed, sharply focused, socially responsible and personal lifestyle of cognitive and creative activity. These transformations occur first within the family, and eventually outside of it. Research suggests that almost all well-documented eminent careers involve persons who were cognitively gifted youths (Cox, 1926; Walberg, Rasher, & Hase, 1978). That not all cognitively gifted children are also exceptionally creative (Butcher, 1968; Wallach, 1971) or become eminent in their adult years is also well-documented (Oden, 1968). Most explanations for the differences between promise and fulfillment point to substantial differences in early facilitating environments, family factors, and educational-career opportunities.

A second premise of this research (Albert, 1980a, b) centers upon the families themselves. Families are defined as experience-producing (generating) and experience-selecting (directing) agents in the development of their members, especially the younger ones. Furthermore, parental experiences, behaviors, and personalities give form and substance to these two basic family functions.

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A third assumption which is relevant to this report is that any exceptionality focuses other persons' attention, interest, and motivation upon the child or adult involved. The more significant the relationship and/or the greater the exceptionality, the more focused and organized the interpersonal interactions become between family and child (see Pollin, Stabenau, & Tupin, 1965). Therefore, family similarities and the child's exceptionality working together shape and order the priorities within and between family members.

In this report, early similarities and differences between two groups of exceptionally gifted boys and their families will be explored.

Methodology

This is a longitudinal study of two samples of healthy, exceptionally gifted boys and their families. One group consisted of 26 of the highest scorers in the 1976 Math Talent Search conducted by Julian Stanley (1974, 1977); the second group of 26 boys living in southern California were selected only on the basis of IQ's of 150 or higher. All subjects were unknown to the investigator prior to entering the study. Because most personality and cognitive developmental trends show little stability until age 10 and also because different personality factors often contribute positively to academic achievement at one age and negatively at another, we selected a subject age range of 11-14 (Cattell, 1971; Kagan & Moss, 1962). The mean age was 12.5 years at the time of initial contact. Like parents of most gifted children (Freeman, 1979; Terman, 1925), these parents were older than their national cohorts: mothers were 27.2 years of age and fathers were 30.5 years of age at subjects' birth. The families average 2.6 children. This is not significantly lower than the 1960 United States aveage of 3.1 (U.S. Department of Commerce, 1974). Their socioeconomic status was significantly higher than the national population. Myrianthopoulos and French's (1968) index of socioeconomic status, which combines household scores for education, family income, and occupation into one score, was used to determine this. The United States socioeconomic median is 59. The groups' median scores of 95.4 and 92 (combined median score of 94) put these families at the 98.5% level for the national socioeconomic status. Over 90% of our subjects were living with both parents at the time of contact. By comparison, the national average is 83% (U.S. Department of Commerce, 1974). Barbe (1956) reports figures of 88% and 93% for gifted children in his study and Termin's original sample.

Instruments

All instruments selected for use were standard and well-reported in the literature, and functioned as two complementary sources and types of data available on important variables. All parents and subjects were given the California Psychological Inventory (Gough, 1956), the Loevinger Sentence Completion Test, (Loevinger, 1970), and the Wallach-Kogan Test of Creative Potential (Wallach & Wing, 1969). In addition, parents were given several questionnaires and extensive interviews regarding their early family experiences and their present motivations regarding their childrens' achievement, and intellectual activities. The subjects, on the other hand, were given the Biographical Inventory of Creativity (BIC) (Schaefer, 1970), the Allport-Vernon-Linzey Study of Values (Allport, Vernon & Linzey, 1960), the Holland Vocational Preference Inventory (Holland, 1965), and a 62-item questionnaire regarding their attitudes on various facets of school, life, friendship, and parental expectations developed by the author.

Factors included for study were parents' and grandparents' educational attainment, parents' and subjects' birth-order, subjects' and parents' creative potential, and subjects' cognitive giftedness.

Results

Education

Although education is related to socioeconomic status to some degree, it offers an independent clue to a family's own motivation for promoting intellection and achievement in its children. Education influences both what parents want for their children and, to some degree, how they expect the child to achieve that goal. Knowing parents' and grandparents' level of education therefore gives one a significant clue to some of the values and behavioral emphases modeled and stressed by them. Referring to our earlier assumption regarding exceptionality and family focus, we believe that these values and behaviors will be especially centered upon the child who is exceptionally gifted.

Both samples were well-educated and had attained significantly more formal education than the national norms.

Mothers. Mothers of both groups of boys were exceptionally well-educated. The mothers of the math-gifted boys had an average of 15.6 years of education and there were 17 (65%) college graduates among them. The mothers of the high-IQ sample averaged 16.4 years of education and there were also 17 college graduates among them.

Fathers. The fathers of both samples of boys were also well-educated. Math-gifted boys' fathers had reached 17.4 years of education and 22 of the 26 were college graduates (85%). The fathers of the high-IQ sample averaged 17.8 years of education and among them, 25 (96%) were college graduates.

Grandparents. As one might expect, the amount of formal education obtained by the grandparents was slightly less than that obtained by the parents. The grandparents of the math-gifted boys averaged 12.4 years of formal education whereas the grandparents of the high-IQ boys averaged 11 years of formal education. More of the grandparents (especially grandmothers) of the math-gifted boys were college graduates. Also, significantly more of the math-gifted boys' grandparents had either some post-graduate education or had obtained a post-graduate degree.

Another interesting difference between the two samples of parents is that a significantly greater number of the high-IQ boys' parents were the first generation college graduates in their families than were the math-gifted boys' parents. This difference is primarily one between the mothers of the two samples of boys. It appears that more of the math-gifted boys came from families in which lengthy formal educations are a two-generation practice rather than a first-generation experience as appears to be the case for the parents of the high-IQ group.

Birth-Order

Birth-order is both a family and an individual characteristic of importance and mystery in the development of children (Albert, 1980a). There are no only children among the math-gifted boys. There are, however, 12 oldest, 9 youngest, and 5 middle-placed children. Among the high-IQ boys, 3 are only children, 15 oldest, 6 youngest, and 2 middle-placed. The birth-orders of the two samples are what one would expect from the literature of gifted children and they are not significantly different from one another. The birth-order of the math-gifted boys' mothers and fathers and of the high-IQ boys' mothers are both quite similar and do not differ from their children's birth-order. The one group which does significantly differ is the fathers of the high-IQ boys. This group consists of 6 only children and 13 youngest children. The remaining 7 were oldest or middle-placed. It appears that a greater number of fathers of the high-IQ boys were raised in special family positions than the other parents in the study.

Because birth-order affects early child-parent experience, an important way of looking at birth-order of parents and their children is through the similarities and differences that exist between them. We find that more of the math-gifted boys share their fathers' birth-order than their mothers' by a ratio of 12 to 3. This is quite different from the parent-child birth-order among the high-IQ boys. They have an almost equal number of mother-son (8) and father-son (9) matchings. In terms of both their birth-order similarities and the fathers' own apparent high math ability we can say that the early experiences within the families of the math-gifted boys are likely to be more similar to their fathers' than to their mothers' and this similarity will be greater than that of the high-IQ boys.

Cognitive Giftedness

Their preadolescent cognitive abilities establish the remarkable cognitive giftedness of these two groups. There can be no question that both are exceptionally gifted, although each in a somewhat different domain. Before becoming specific, we should say that although we have very few IQ scores for the math-gifted boys we have good reason to believe that a number of them are well above IQ of 130, with several in the 180 or higher IQ range on the basis of the IQ's reported by some of our families and Keating's (1976) report on an earlier sample of mathematically precocious boys. Similarly, among the high-IQ group are several boys whose SAT-Math scores were above the mean SAT-Math scores for the math-gifted sample. Just as a number of our math-gifted boys were reported to be much better than their peers in other subjects besides mathematics, so we find a number of the high-IQ boys to have higher measured math aptitude than their peers. However, only one among this group appears to have achieved actual early mathematical prominence. He is already doing college-level work in computer science. The two samples seem to consist of boys whose present exceptional cognitive giftedness clearly lies in two different but independent cognitive areas. Another difference between the two groups is in the somewhat greater range of activities in which the high-IQ boys have demonstrated outstanding performances. More of these boys are active in music, singing, dramatics, school and community leadership roles, art, and writing (fiction and nonfiction) than presently apparent among the math-gifted boys. However, both groups are made up of versatile subjects. This early versatility corresponds to early research by White (1931) and others (Carroll & Larring, 1974) showing that interest and performance versatility is one of the early stable distinguished characteristics of the exceptionally gifted and the potentially eminent child. The math-gifted sample was selected on the basis of their SAT-Math scores. The high-IQ sample was selected on the basis of their IQ scores prior to this study. Both samples' scores were significantly higher than peer norms on comparable cognitive measures. In order to get a better idea of how cognitively gifted the math-gifted boys are, we can compare their scores to those of Duke University male freshmen (Wallach & Wing, 1969). Our math-gifted sample has a mean SAT-Math score of 635.4 (84th percentile of college-bound males), compared to the 302 Duke University freshmen's mean SAT-Math score of 651.7. There is no statistically significant difference between the two scores. The mean SAT-Verbal score for the math-gifted boys is 491.2 (68th percentile of college-bound males) compared to the Duke University freshmen's score of 603.3, which is significantly higher. This difference illustrates the moderate degree of independence between mathematical and verbal aptitudes as well as the later development common to verbal aptitude.

The high-IQ group consists of boys whose mean IQ is 159.5, standard deviation of 6.3. This group is well within the 99th percentile.

Creative Potential

Parents and subjects were given the Wallach-Kogan Test of Creative Potential and all boys, in addition, were given the Biographical Inventory of Creativity (BIC). The Wallach-Kogan measure is divided into figural and verbal subtests, whereas the BIC is divided into an art/writing section and a math/science section.

The relationships between cognitive giftedness and creative giftedness are as yet not clear. However, it is commonly held that intelligence and creativity are two relatively separate areas of cognitive performance, and that each is a highly multifaceted area (Anastasi & Schaefer, 1971). Statistical analyses of batteries of creativity tests and intelligence tests generally indicate that general intelligence accounts highly for scores on creativity measures and that furthermore, creativity itself can be at least initially divided into two general verbal and figural areas (Butcher, 1968; Domino, Walsh, Rezorikoff, & Honeyman, 1976; Hudson, 1966). For these reasons this project uses several measurements of creativity. The results are shown in Table 1.

A surprisingly remarkable similarity exists btween the two samples of cognitively gifted boys, although they were selected a year apart, a continent apart, and on the basis of distinctly different test performances. We expected the math-gifted sample to perform better on the figural and the math/science subtest of the Wallach-Kogan and BIC measures, respectively, and the high-IQ sample to perform significantly better on the verbal and the art/writing subtests. Instead, the differences between the two samples are slight and not statistically significant. At minimum, these results suggest that the two samples are each made of highly talented, cognitively gifted boys in the areas of art/writing and math/science as measured by standard instruments. Second, these results further indicate the versatility that accompanies exceptional giftedness. In addition, the math-gifted and the high-IQ samples' performances on all subtests and total scores for the Wallach-Kogan and the BIC measures of creative potential were significantly greater than junior high and high school junior and senior males' performances. There is no doubt that these are two exceptionally gifted groups of boys, nor that they are equally exceptional in their creative potential at this age.

Parents' Creative Potential

Over the years, research has indicated that cognitively gifted children have cognitively gifted parents and will themselves have cognitively gifted children. In a word, cognitive giftedness appears to be very much a family trait. What is less clear is whether or not creative giftedness runs within families. From the pioneer research of Galton, whose measures of eminence were actually measures of applied creative potential, it is less clear whether parents and children will show the same degree of correlation in their creativity as they do in their cognitive abilities.

Table 1
Average creativity scores for nongifted junior high and high school males and exceptionally gifted boys and their parents

	(Albert & Harold, 1975)			High-IQ Boys			Math-Gifted Boys			Duke University (Wallach & Wing, 1969)	
	7th Grade (n=26)	8th Grade (n=25)	9th Grade (n=18)	Subjects (n=26)	Mothers (n=26)	Fathers (n=24)	Subjects (n=26)	Mothers (n=26)	Fathers (n=23)	Females (n=200)	Males (n=302)
Wallach-Kogan	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*	*Mean*
Figural subtest	11.70	11.60	13.62	25.88 [b]	36.26*	39.65*	25.08 [b]	31.85	35.37	35.24	29.72
Verbal subtest	12.15	13.13	20.46 [a]	46.12 [b]	80.35**	89.48**	46.85 [b]	64.34	65.83	51.38	44.79
Total score	23.85	24.73	34.08 [a]	71.44 [b]	116.61**	129.13**	71.93 [b]	96.19	101.20	86.62	74.51

	High School Male Juniors and Seniors (Schaefer, 1971)		Math-Gifted	High-IQ
	Sample a(n-170)	Sample b(n=49)		
BIC	*Mean*	*Mean*	*Mean*	*Mean*
Math/Science	93.25	98.53	105.15 [b]	105.92 [b]
Arts/Writing	100.42	101.36	104.92 [b]	107.00 [b]

a=9th-Graders significantly more productive than 7th- or 8th-Graders
b=Significantly more productive than nongifted Junior High & High School males ($p<.001$)
*=$p\leq.05$
**=$p\leq.01$ Significance of differences between same-sex parents of samples of exceptionally gifted subjects

Table 1 shows that the parents of both groups of exceptionally gifted boys are themselves exceptionally creative. Parents of both groups outperformed Duke University subjects. Furthermore, the parents definitely showed more creative potential than their children. It is the parents of the high-IQ boys who have the highest creativity scores of all. Although the boys themselves did not differ significantly on the Wallach-Kogan measure of creative potential, the parents do. The performances of both groups of boys on the Wallach-Kogan measurement are almost completely independent of their parents' performances. The only exception is the significant correlation between the verbal scores of the IQ boys and their fathers ($r=.487$, $p<.02$-$.01$).

The results show that the creative potential of these two samples of gifted boys is significantly greater than that of a control group of average-IQ peers, and at their present age is remarkably independent of their parents' outstanding creative potential especially when compared with Duke University subjects in Wallach and Wing's original study (1969). While recognizing that many factors play crucial roles in transforming cognitive giftedness into creative potential and ultimately later achievement, we wish to emphasize the present evidence for the tremendous creative potential within the families of both samples of boys. It is equally clear that the parents of both groups are exceptionally creative according to our measures. Furthermore, although we do not have direct measures of cognitive giftedness for the parents, the fact that many of them are college graduates and/or hold highly professional or technical positions suggests that they are themselves cognitively gifted. Just as other research has shown that cognitive giftedness runs in families, this study and others (Albert, 1978, 1980a, b; Burk, Jensen, & Terman, 1930; Cox, 1926; MacKinnon, 1962) show that creative, gifted children generally have creative, gifted parents. This raises an interesting point regarding the remarkable generative capacity of families. Our results for the siblings of these gifted boys indicate that this capacity is somewhat selective, for we have a number of cases in which a sibling appears to be more potentially creative than the subject. But for the moment, it is the parents' high degree of creative potential that we find most remarkable and to some degree, unexpected.

Comments and Conclusions

We are all familiar with the fact that parents' and children's IQ scores generally are related and show a substantial amount of similarity in terms of their general level. There is also good reason to believe that parents' and children's creative abilities are positively related, especially if one refers to the evidence regarding the achievement of eminence among members of the same family. Actual demonstration of creative ability serves as a very sound criterion for evidence of creativity.

Over the years the degree and nature of relationship between IQ and creativity have been much argued but not clearly established. We believe that this study indicates that the subjects' intelligence must play an important role in their creative performances. The interrelationship is twofold: creative performance requires intelligence for processing of information and problems, and gifted intelligence is associated generally with a number of the same personality characteristics that are associated with creative ability.

Many of us tend to forget just how unclear and questionable the distinction between intelligence and creativity is. During the early 1960's a great deal of research and writing on the differences between intelligence and creativity was undertaken. McNemar (1964) raised a series of questions regarding a dichotomy. He attempted to demonstrate that a person's performance on creativity measures could be accounted for by their intellectual abilities. Others have since tried to demonstrate this as well (Albert, 1980b; Butcher, 1968; Nicholls, 1972). The problem is that the distinction between creative behavior and intelligent behavior is not as clear as often believed to be. Intelligence is varied in its manifestations but it is manifested through a variety of performances, some of which we must call creative. Even earlier than McNemar, MacKinnon (1962) stated that "Over the whole range of intelligence and creativity there is, of course, a positive relationship between the two variables. No feeble-minded subjects have shown up in any of our creative groups" (p. 493). Part of the problem is a problem of not being able to measure the degrees of creativity or eminence as accurately as we can IQ. But the other part of the problem is, as suggested above, insufficient attention to the common personality characteristics that gifted intelligence and creativity often share, especially in the range of giftedness. Studies of eminent persons from Cox (1926) to the present day have shown that they score extremely high on conventional IQ tests and also show some of the same personality attributes observed among very creative persons of all ages. We believe that although it is common to read that intelligence and creativity are relatively independent (Wallach, 1971), the evidence is not totally convincing that this distinction holds at all levels of intelligence. We have already referred to Cox, MacKinnon, and Walberg et al. The general evidence indicates that it is rare to find children who score average or below average in intelligence and high in creativity, although it is not rare to find children scoring well above the average in both creativity and intelligence if one compares them to a control group of average IQ peers. Milgram, Milgram, and Landau (1974) report that children who score high on creativity measures almost always score much higher than average on IQ measures. They found that among 310 average children and 182 gifted children between the ages of 9-13 the high creativity scores were "almost invariably found in the upper intelligence ranges," i.e., IQ of 140 or better. Albert and Harold (1975) found among 53 male adolescents of average or low-average IQ that the Wallach-Kogan total scores (creative potential) correlated positively and significantly with their IQ scores but negligably with their self-esteem scores. However, Milgram et al. report that in comparison to a matched sample of average-IQ children gifted children had more positive, less conflicting self-concepts. Moreover, their self-descriptions were more complex and more ambiguous, showing some of the same personality characteristics that are often found in creative adults. We believe the results of the present study and those of Milgram et al. show that cognitive giftedness and creative giftedness are very much related to one another and may be manifestations of the same complex, multifaceted abilities. Therefore, it should not surprise us that there is a large degree of family cognitive and creative similarity. This similarity would be a function, we believe, of not only common heredity but of modeling a number of the family characteristics we have described.

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