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Independence and the Creative Potential of Gifted and Exceptionally Gifted Boys

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A 16-item questionnaire concerning independence and three divergent thinking tests were administered to three groups of preadolescent boys and their mothers as part of an ongoing longitudinal investigation of exceptional giftedness. The subjects included one group of exceptionally gifted boys with IQs in excess of 150 (n = 28), a second group of exceptionally gifted boys selected for their math-science abilities (also well within the 99th percentile; n = 26), and a control group of gifted boys (n = 37), with a mean IQ of 133). The three groups were compared with one another in terms of (a) their own independence ratings, (b) their mothers' independence ratings, (c) correlations of boys' and mothers' independence ratings, and (d) correlations of independence ratings with IQ and scores from the divergent thinking tests. Results indicated significant differences among the three groups of mothers, and significant differences between the two exceptionally gifted groups and the control group. In addition, mothers' and subjects' independence scores were moderately correlated with IQ and divergent thinking test scores. These results are discussed and placed in the context of the longitudinal project of which they are a part.

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INTRODUCTION

Comparisons between high- and low-achieving persons of apparently equal talents in a variety of fields suggest that one of the major differences between the eminent and their lower ranked counterparts is the former's stronger, clearer sense of personal independence and more prolonged cognitive assertion, often in the face of personal loss and early adversity (Albert, 1980; Cox, 1926; Eiduson, 1962; Hammond, 1984; Oden, 1983; Rushton *et al.*, 1983; Simonton, 1987). In-depth research on productive and eminent individuals suggests that they are often highly self-sufficient and strongly self-motivated, somewhat introverted, clearly passionate in their interests, dominant in some of their interpersonal relationships, and both deeply serious and playful in their work. They invariably feel responsible and independent within their career and professional interests (MacKinnon, 1978; May, 1975; Roe, 1953). Although their personalities may differ, successful participants in a variety of fields usually exhibit these same performance characteristics (Simonton, 1987). Interestingly, self-esteem is not often mentioned by creators themselves or in the empirical research as an important personality disposition. This makes sense in the light of extensive biographical and autobiographical information about creative persons (especially nonscientists) who are highly distraught, depressed, even self-lacerating, but nonetheless are highly creative. On the other hand, there are creative and productive individuals who are apparently supremely self-confident (MacKinnon, 1978; May, 1975; Roe, 1953).

While high cognitive ability is among the salient characteristics of eminent individuals in a variety of fields (Barron, 1968; Cox, 1926; Helson, 1980; MacKinnon, 1965; Walberg *et al.*, 1983), more than this is surely required. Eminent creativity requires a freedom of thought, feeling, and action sustained over time by an infrequent meshing of field-appropriate personality dispositions, abilities, and values. When one adds another necessity for high-level creativity–a sensitivity to significant problems coupled with a strong sense of responsibility—one sees how critical this "creative complex" is to the selection of and motivation to pursue difficult problems over long periods (Albert, 1975; Runco and Okuda, 1988). In the final analysis, these freedoms and meshings are essential to action, because performance is essential for the realization of the abilities and personality dispositions. To be able to act upon them, use them, and assert them—this is where independence and self-assertion enter the developmental equation.

In our model of family life, the families of gifted individuals simultaneously perform several interrelated actions from the child's early years through his or her adolescence (Albert, 1980; Albert and Runco, 1986, 1987). They encourage exploration and achievement (Seginer, 1983, 1986), they sup-

port the child's own growing effort to pursue his or her natural curiosity, and they make warm as opposed to clinging attachments. Moreover, such families protect the child from too abrupt and highly unpredictable changes. In order for the development of independence and curiosity to continue, such families encourage the child to manipulate and try to change some parts of his or her world for him- or herself. In this encouragment, the families need to clearly value and reward competence, and expect performance results.

The present investigation compares independence training in families of exceptionally gifted and conventionally gifted preadolescent boys. The primary hypothesis is that exceptionally gifted children differ from nominally gifted children as these children differ from those with average abilities and capacities (Albert, 1969; Albert and Runco, 1986). With the consistent differences between gifted and nongifted groups and between the exceptionally high IQ and math–science groups that have already been found in a number of comparisons (Albert and Runco, 1986, 1987; Runco and Albert, 1986), it is reasonable to expect that the subjects and their mothers will differ in their judgments of independence. Based on the theories of independence and achievement outlined above, our expectation is that the exceptionally gifted subjects and mothers will give ratings indicative of higher independence than the nominally gifted subjects and their mothers. With the evidence that different domains of achievement have idiosyncratic developmental histories (Gardner, 1983), and our earlier findings that the high IQ subjects are more similar to their parents than the math–science subjects (Albert and Runco, 1986), we expect that the high IQ subjects will give ratings more strongly correlated with those of their mothers than those of the high math–science subjects and their mothers. Another prediction is that the independence ratings given by the mothers will be correlated with measures of their sons' creative potential. This prediction is based on earlier investigations of independence and general intelligence (Crutchfield, 1962; Lucito, 1964; Nakamura, 1958; Tuddenham, 1959), independence, achievement, and creativity (Allen and Levine, 1968; Aviram and Milgram, 1977; Bachman, 1986; Moustakas, 1967), and independence and originality (Barron, 1968).

METHOD

Subjects

One exceptionally gifted group was selected because their IQs at age 12 were in excess of 150 (average IQ = 159; n = 26). They were selected from the mentally Gifted Minors programs of four school districts. The second sample was selected on the basis of math–science abilities well into the

99th national percentile (e.g., an average SAT math score of 655 at age 12; $n = 28$). These subjects were drawn from the Study of Mathematically Precocious Youth (Stanley *et al.*, 1974). The families of the samples were well in the upper-middle socioeconomic status. The families of the high IQ subjects had an average of 2.8 children and the families of the math–science subjects had an average of 2.5 children. The control group ($n = 37$; IQ mean of 133) of nominally gifted boys came from two seventh-grade classes of a large public intermediate school.

Measures and Procedure

The subjects' age 12 creative potential was assessed with the Instances, Uses, and Similarities divergent thinking tests from the Wallach and Kogan (1965) battery. Each test contained three questions. A total divergent thinking score was calculated by adding the ideational fluency scores from the separate tests. Other scores from these tests (e.g., originality and flexibility) were not used because they are strongly correlated with fluency scores (Runco, 1986).

All subjects and their mothers were given the same 16-item Independence questionnaire (adapted from Winterbottom, 1958). This questionnaire asks about the most appropriate age for an individual to be involved in a variety of activities. The 16 questions are presented in Table I. Each question has age 4 through age 16 as response options. This measure was chosen for its high reliability and the ease with which it can be administered to adolescents and adults. All measures administered to the exceptionally gifted subjects and their mothers were given in their homes, allowing as much time as needed to complete the tests. Subjects in the control group received the divergent thinking tests and the Independence questionnaire in their classrooms, again with as much time as required. Their mothers completed the questionnaire at home.

RESULTS

The interitem (alpha) reliability coefficients of the subjects' Independence questionnaire were as follows: control sample (.79), math–science sample (.85), and exceptionally high IQ sample (.74). Their mothers' were equally reliable: control mothers (.88), the mothers of math–science boys (.82), and the mothers of exceptionally high IQ boys (.65). Table I presents the means and standard deviations of the ratings from the Independence questionnaire. A *low* score indicates a younger age and for a specific behavior, and therefore *greater* independence in the behavior.

Table I. Mean Ratings for Each Independence Questionnaire Item and Each Group[a]

	Children			Mothers		
	IQ	MS	Control	IQ	MS	Control
1. Earn your own spending money	10.8	11.3	9.9	11.0	7.9	11.0
2. Sleep overnight at a friend's	5.9	5.9	5.7	6.4	5.8	5.9
3. Play where you want	7.3	6.4	7.7	7.0	6.3	7.4
4. Make your own friends and visit their homes	6.3	6.7	8.0	6.9	6.2	7.6
5. Stay alone at night until midnight	11.3	10.3	11.3	12.1	11.2	12.7
6. Make decisions about clothes or money	10.4	10.5	10.5	8.0	9.7	10.8
7. Act as a babysitter in another home	12.8	13.0	12.8	14.1	9.4	13.8
8. Be able to go to bed on your own	8.6	9.1	10.0	8.2	6.9	10.1
9. Go to the movies alone	11.1	11.8	12.1	11.8	6.9	13.0
10. Go on an overnight trip (organized by school)	10.4	10.3	10.3	10.2	10.4	11.4
11. Try new things without mom or dad for help	10.2	10.2	10.4	8.7	9.8	9.6
12. Do well in school in your own	9.7	9.6	10.1	7.6	9.0	9.3
13. Entertain self	7.3	7.5	8.6	6.6	6.9	8.2
14. Do well in competition	7.1	6.9	7.9	7.0	5.8	7.7
15. Take part in parents' conversations/interests	8.3	7.3	7.9	8.6	4.3	8.5
16. Try things without asking for help	10.9	10.9	11.4	3.9	6.1	9.4

[a]IQ and MS (math-science) are the exceptionally gifted groups.

Multivariate analyses of variance (MANOVA) were conducted to test the primary hypotheses of this investigation and to compare the three groups in terms of subjects' and mothers' Independence judgments. Wilks's lambda was the criterion in these analyses, and the 16 items of the Independence questionnaire were the dependent variables. The first MANOVA established a significant difference among the ratings of independence given by the three samples of *subjects* in the multivariate test ($Rc = .55$, $F[32, 142] = 1.61$, $p < .05$) and the univariate tests for Items 4 and 8. Contrasts indicated a significant difference between the ratings of the control subjects and the exceptionally gifted subjects in the multivariate test ($Rc = .54$, $F[16, 71] =$

1.87, $p < .05$) and the univariate tests for Items 4, 8, and 13. The difference between the two exceptionally gifted samples was not significant.

A second MANOVA indicated that there was a significant difference among the three groups of *mothers'* ratings, with two significant discriminant orthogonal functions ($Rc = .84$, $F[32, 98] = 4.56$, $p < .001$, and $Rc = .67$, $F[15, 50] = 2.78$, $p < .01$). This difference among the three groups was also apparent in the univariate tests of Items 1, 3, 6, 7, 8, 9, 15, and 16. Contrasts indicated significant differences between the ratings given by the control mothers and the mothers of the exceptionally gifted subjects in the multivariate test ($Rc = .70$, $F[16, 49] = 2.90$, $p < .01$) and the univariate tests for Items 3, 6, 7, 8, 9, 13, 15, and 16. Unlike the contrasts of the two samples of exceptionally gifted sons' ratings, there was a significant difference between the mothers of the exceptionally high IQ subjects and the mothers of the math-science subjects in the multivariate test ($Rc = .80$, $F[16, 49) = 5.52$, $p < .001$] and the univariate tests for Items 1, 3, 7, 9, 15, and 16.

CORRELATIONS

Product-moment correlations were used to determine whether or not mothers and sons gave similar independence ratings, and whether or not the ratings of both mothers and sons were related to the sons's cognitive ability. These analyses used a composite Independence score calculated for each subject and each mother from the average of the 16 questionnaire items. Table II presents the means and standard deviations of this composite for each of the groups.

Fluency scores from the divergent thinking tests are also presented in Table II. Because divergent thinking tests may be sensitive to administration

Table II. Means and Standard Errors for the Independence Composite and the Divergent Thinking Test Scores

	Group		
	High IQ ($n = 26$)	Math-science ($n = 28$)	Control ($n = 37$)
Mothers' independence[a]	8.6 (1.3)	6.3 (2.2)	9.7 (1.6)
Subjects' independence	9.3 (0.9)	9.2 (1.1)	9.8 (1.2)
Divergent thinking fluency[b]	46.4 (4.7)	45.3 (4.9)	30.7 (2.5)

[a]The average of the 16 items presented in Table I.
[b]The sum of three divergent thinking test scores.

procedures, scores from these tests were transformed into z scores (within each group), and these were used for the correlations. Both unadjusted coefficients (r) and coefficients adjusted (r') for attenuation due to the imperfect reliabilities of the tests are presented (Nunnally, 1978).

Results indicated that the math–science sons' and mothers' ratings were *negatively* related ($r = -.23$, $r' = -.28$), but the exceptionally high IQ subjects' independence ratings were *positively* correlated with their mothers' independence ratings ($r = .13$, $r' = .19$). The difference between the adjusted coefficients approached statistical significance ($z = 1.54$, $p < .06$). The correlation between the sons and mothers of the control group was slight and negative ($r = -.08$, $r' = -.10$). While these coefficients are not large, keep in mind that they may be attenuated by the very restricted range of scores.

Independence Ratings and Cognitive Ability

Because low scores on the questionnaire indicate younger ages for a particular activity and represent earlier (or higher) independence, a negative correlation was predicted between independence ratings and cognitive ability scores. The exceptionally high IQ subjects' independence ratings were significantly and negatively related to IQ ($r = -.39$, $p < .05$, $r' = -.45$), but the scores for independence and IQ were unrelated in the control group. Although *mothers'* independence ratings were unrelated to their sons' IQ, they were significantly related to their sons' creative potential (divergent thinking test performance). For the entire sample of three groups of subjects, this coefficient was $r = -.29$ ($p < .05$, $r' = -.23$). Similar mother–son correlations were found in both of the exceptionally gifted samples: for the exceptionally high IQ group ($r = -.29$, $r' = -.36$) and for the math–science group ($r = -.35$, $r' = -.37$). Furthermore, *subjects'* own independence ratings were marginally related to their divergent thinking test scores in the exceptionally high IQ group ($r = -.26$, $r' = -.30$). Again, we stress that the coefficients are probably attenuated by the restricted range of scores.

DISCUSSION

The primary predictions of the present study concerning independence are supported by the results: The subjects and the mothers in the two exceptionally gifted samples gave significantly different independence ratings than the subjects and mothers in the control group. Moreover, the ratings of the exceptional math–science group show earlier autonomy than both the exceptionally high IQ group and the nominally gifted control group, and the independence ratings of the exceptionally high IQ group reflect an earlier

autonomy than the control group. These findings are consistent with the view that different levels and different domains of ability have different developmental histories (e.g., Albert, 1980; Albert and Runco, 1986; Gardner, 1983).

Although the magnitude of the correlation coefficients are only moderate (possibly reflecting a restricted range of subjects' scores), the relationships among independence, IQ, and divergent thinking test scores are also very consistent with earlier research. For example, Moustakas (1967) suggested that individuality and creativity are inextricably tied to one another. In his words, "to be creative means to experience life in one's own way" (p. 27). Barron (1969) pointed to a relationship between a lack of resistance to socialization as a loss in individuality. Aviram and Milgram (1977) gave empirical support for this relationship, and like the present investigation, they focused specifically on divergent thinking as an index of creative potential.

Keniston (1968) as well as anyone caught the complex nature of family dynamics and practices regarding independence training for gifted boys when he wrote of gifted, committed youth in the 1960s:

> Paradoxically, those who come from what to an outside observer would appear to be the best families often underwent a severe struggle to emancipate themselves from these families. It may be that the very closeness, warmth, and encouragement toward independence in some of these families were what made adolescence both possible and necessary . . . Put differently, many of these families seem to have given their children the strength and the need to challenge, reexamine, and partially reassimilate their parents' values, and eventually to achieve an unusual degree of individuality for themselves. (pp. 102–103)

Although the present correlational results clearly suggest that cognitive ability and independence are related, they tell us little about causality. It is possible, for example, that children with high independence develop divergent thinking skills because of the opportunities they seek out in order to think and operate independently (see Scarr and McCarthy, 1983). Or a child with outstanding cognitive ability, as a result of his/her parents' recognition and confidence, may be encouraged to use and explore his/her own abilities and initiative (Albert and Runco, 1986, 1987; Baumrind, 1971; Koengs *et al.*, 1977; Roe, 1953; Seginer, 1986). Families as facilitating environments (Winnicott, 1976) often value and encourage independence, especially those families in which giftedness is linked with valued achievement (Bloom, 1985; Keniston, 1968; Laband and Lentz, 1985). This encouragement (implicit and explicit) demonstrates to the child the parents' high priority for independence through achievement, and encourages efforts along these lines. Thus it is only a matter of time and everyday living that this parental emphasis comes through to the child as family values, themes, expectations, and "presses" (Marjoribanks, 1979), by way of parental modeling, rewarding, and overt respect for the child's own efforts (Baumrind, 1971).

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