9 *The Effects of Acceleration on the Social and Emotional Development of Gifted Students*

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Abstract

From the two perspectives of a literature review and a longitudinal comparison of accelerants and non-accelerants, an examination of the potential effects of acceleration on the social and emotional development of gifted students revealed no identifiable negative effects. The literature review discusses several major studies with respect to issues central to the problem: the differential effects of varying methods of acceleration, the definition of the "social and emotional development" construct, and the identification of appropriate reference groups. The longitudinal comparison presents the results of a study of twenty-one male radical accelerants and twenty-one nonaccelerants matched on age and ability at the time of the talent search. A comparison on several variables revealed that the two groups were very similar at age 13. Five years later, however, differences favoring the accelerants were found in educational aspirations and in the perceived use of educational opportunities, amount of help they reported having received from SMPY, and their evaluation of SMPY's influence on their social and emotional development.

Daurio (1979) argues that opposition to acceleration of gifted students is justified primarily by concern for its effect on the students' social and emotional development. This report examines the

merits of this argument from two perspectives. First, the results of several major studies of the social and emotional development of accelerants are reviewed in the context of a core of issues central to the problem. Second, the social and emotional development of gifted radical accelerants and the social and emotional development of nonaccelerants identified through the Study of Mathematically Precocious Youth are compared. Neither the review of the literature nor the comparison of the SMPY gifted students identified any negative effects of acceleration on social and emotional development. Indeed, any effects of this sort seem to be positive. The validity of the claim that acceleration is somehow detrimental to the social and emotional development of accelerants must thus be seriously questioned.

Research on the Social and Emotional Development of Gifted Students

The social and emotional development of accelerated gifted students has been the subject of much attention from psychologists and educators. The belief that acceleration somehow inhibits social and emotional development appears so widespread that arguments over the advantages and disadvantages of acceleration "seem to hinge on the relative weights that should be given to social and intellectual values in the educative process" (Terman & Oden 1947, p. 264). This section discusses a cluster of issues whose resolution is central to research in this area and reviews the results of several major studies in this context.

ISSUES CENTRAL TO THE STUDY OF THE SOCIAL AND EMOTIONAL DEVELOPMENT OF ACCELERATED STUDENTS

There are several problems inherent in studying the effects of acceleration on the social and emotional development of gifted youths. First, acceleration may be achieved by one or more of a variety of methods. Stanley (1979) has delineated some types of acceleration: grade skipping, early part-time college study, college graduation in fewer than four years (by entering college with sophomore standing, taking heavier-than-average course-loads, attending summer school, and/or concurrent graduate study), and bypassing the bachelor's degree. While all of these methods follow Pressey's (1949, p. 2) definition of *acceleration* as "progress through an educational program at rates faster or ages younger than conventional,"

they may affect the social and emotional development of the students choosing them in different ways. It is not difficult, for example, to imagine that studying calculus on one's own at age 13 and taking the Advanced Placement exam to get college credit for it affects the student differently than does taking a regular college calculus course at the same age. Despite the basic nature of this concern, many studies of the social and emotional development of accelerated students do not report the method by which the students became accelerated (see, for example, Terman & Oden 1947). The degree of acceleration, as well as the method used to achieve it, may also differentially affect the social and emotional development of gifted students. Six years of acceleration quite probably affects a gifted student differently than does one year of acceleration. Most research in the area has focused on "moderate" acceleration of one to two years.

Another definitional problem involves the "social and emotional development" construct. Consensus among investigators on the meaning of this phrase is low. In various studies the construct has been equated with participation in extracurricular activities (Pressey 1949; Hobson 1963), presence of leadership qualities (Morgan 1959; Keys 1938), degree of interpersonal effectiveness (Worcester 1956; Birch 1954), and absence of psychopathology (Elwell 1958). That these and other specific, relevant concepts are themselves difficult to define precisely and even more difficult to measure accurately complicates the situation further. Clearly, a thorough study would measure several of these facets of "social and emotional development."

A third problem lies in the definition of reference groups. Many studies have compared the accelerants with their older, more average-ability classmates (Hobson 1963; Pressey 1949). If the question to be addressed is how well the accelerants fit in with their older classmates, this approach seems worthwhile. It does not, however, speak to the more important issue of how acceleration affects the development of gifted students. A bright youth may choose either to accelerate or to opt for some other educational path and still remain equally bright. The most appropriate comparison is thus between the social and emotional development of two groups of equally gifted youths – accelerants and nonaccelerants (as in Terman & Oden 1947; Fund for the Advancement of Education 1953).

A number of investigators have examined the effects of acceleration on the social and emotional development of gifted youths with varying degrees of consideration of the issues just discussed. A large group of educators recommended exercising extreme caution when considering acceleration as an educational alternative for gifted students. Most of these recommendations were based on intuition or on case studies that did not involve comparison with any reference groups (Zorbaugh 1937; Edelston 1950).

FINDINGS OF RESEARCH ON THE SOCIAL AND EMOTIONAL DEVELOPMENT OF ACCELERATED STUDENTS

Among the scientific investigations in this area, a review of the literature confirmed Daurio's (1979) finding that not one study has found acceleration to harm the social and emotional development of gifted students permanently or severely. The following is a discussion of the results of several of the major studies in this area.

Terman (1925–59) investigated longitudinally, descriptively, and observationally the development of more than 1,000 gifted children. In chapter 20 of the fourth volume of the *Genetic Studies of Genius* series, Terman and Oden (1947) divided their sample into three groups according to age at high-school graduation. The routes by which these students had come to be accelerated were not specified. The three groups were compared longitudinally on a number of measures of social adjustment, including ratings by parents, teachers, and fieldworkers, extracurricular participation in high school and college, and scores on a marital adjustment test. Terman and Oden found that "the influence of school acceleration in causing social maladjustment has been greatly exaggerated. There is no doubt that maladjustment does result in individual cases, but our data indicate that in a majority of subjects the maladjustment consists of a temporary feeling of inferiority which is later overcome. The important thing is to consider each child as a special case" (ibid., p. 275).

Terman and Oden also found that the accelerants had a higher probability of furthering their education, had greater occupational success, had higher marital satisfaction, and had suffered no negative effects on their physical maturation.

Keys's (1938) carefully controlled study compared a group of gifted accelerated students with a sample of equally bright nonaccelerants. Further, two subgroups of accelerants were defined according to I.Q.; one group of accelerants had IQs below 120 and another had IQs greater than 136. The effects of acceleration could thus be analyzed in terms of both intelligence and chronological age. Keys found that the accelerants participated in more extracurricular activities, had better study habits, held more offices, and won more scholarships than did the equally intelligent nonaccelerants. Sociability appeared more related to intelligence than to age. The highest self-estimated happiness was reported by the very bright accelerants.

Hobson (1963) followed up underage students admitted to school on the basis of mental, rather than chronological, age. The underage pupils participated in more extracurricular activities than their normal-aged classmates. Worcester (1956) also examined the social and emotional development of underage students admitted on the basis of test scores. Peers and teachers rated the underage students as being as well or better

adjusted socially and emotionally as their older classmates. Worcester concluded that "the younger ones had gained a year of school time without a loss in social adjustment" (ibid., p. 28).

Pressey (1949) studied underage college students at Ohio State University matched with a control group of equally bright, older students. He found that a larger percentage of the underage students worked part time and that more of the underage students participated in extracurricular activities.

The Ford Foundation (Fund for the Advancement of Education 1953) compared a group of accelerated Ford Scholars with an equally able, nonaccelerated group of comparison students. The social and emotional development of the Scholars was evaluated with respect to problems resulting directly from acceleration. No social maladjustment directly attributable to acceleration was found. "The Scholars encountered more initial difficulties in adjusting to campus life than their older Comparison students, but most of the difficulties were minor and were soon overcome" (ibid., p. 10).

Finally, Keating, Wiegand, and Fox (1974) examined the behavior of five precocious boys aged 12 to 15 in a college course. In addition to outperforming their older classmates, these young students interacted as much as their older classmates and often were not even identified as being young.

This by no means complete summary of the relevant literature is intended only to give the reader the flavor of the research in this area. For a more thorough review the reader is directed to Daurio (1979).

Data available from SMPY provide an opportunity to investigate the social and emotional development of accelerated students in a way that is unique with respect to the issues delineated here. Gifted radical accelerants (students accelerated three years or more) and nonaccelerants were longitudinally studied. Measurements for a number of the facets of the social and emotional development construct were available. The findings of this study are in accord with those of the investigations previously mentioned – that is, the social and emotional development of gifted students choosing to accelerate is not harmed by that choice and may in fact be enhanced.

Mathematically Talented Radical Accelerants and Nonaccelerants: Their Social and Emotional Development

Over 2,500 mathematically talented seventh- and eighth-graders took the College Board's Scholastic Aptitude Test in SMPY's 1972, 1973, and 1974 talent searches. The SMPY students' scores on this test were superior

to those of a national sample of high-school juniors and seniors. High-scoring participants were encouraged to consider acceleration as one means of developing their talents. Many youths did choose to accelerate and entered college at an age between one and six years younger than that of the average college freshman. Other equally high-scoring youths chose different educational paths. The data SMPY has collected on these youths provide an opportunity to investigate the effects of acceleration on the gifted students' social and emotional development that is unique for three reasons. First, the social and emotional development of the accelerants may be compared with that of equally bright nonaccelerants. As pointed out earlier, several studies (e.g., Hobson 1963; Pressey 1949) have compared the social and emotional development of accelerated students with that of their postacceleration classmates – that is, older students of more average ability. That kind of investigation does not address the effects of acceleration on the social and emotional development of the gifted child. Second, the development of both accelerating and nonaccelerating high scorers has been longitudinally monitored by SMPY (Benbow 1981). A retrospective comparison of the two groups both before and several years after acceleration occurred can thus be made. This kind of comparison deals with the issue of potential self-selection factors that might bias results. In other words, any differences in the two groups before any of the students accelerated which might account for postacceleration differences can be ascertained and evaluated. Finally, a significant number of the students who accelerated have done so radically (i.e., are three or more years ahead of their age-mates). It is these radical accelerants who have been the subject of the most concern over social and emotional development (e.g. Maeroff 1977; Nevin 1977) and whose development has been chosen for investigation.

METHOD

Subjects

Twenty-one male radical accelerants were found in the ranks of talent-search participants between 1972 and 1974.[1] Two female radical accelerants were also found; they are not included in the analyses. It is interesting that so few girls chose to accelerate their education radically. This finding may be partially attributed to the smaller number of girls who scored high in the talent searches (Stanley, Keating, & Fox 1974; Keating 1976), but probably also results from other considerations such as sex differences in social interests and interest in mathematics and science (Fox 1976; Fox, Brody, & Tobin 1980).

Radical accelerants were defined as those students who at some point are at least three years ahead of their age-mates in educational placement. This may be accomplished via one or more of the accelerative methods

previously delineated. Thus any youth who is a college freshman at age 15 or younger, a college sophomore at 16 or younger, a baccalaureate recipient at 19 or younger, a master's degree recipient at 21 or younger, a law degree recipient at 22 or younger, or a four-year professional degree (M.D., Ph.D., etc.) recipient at age 23 or younger is considered a radical accelerant no matter how he or she has achieved that acceleration. Once a student acquires radical accelerant status he is always treated as such, even if he slows down his educational pace. Most of the radical accelerants in this study accelerated by skipping grades and by subject matter acceleration.

These twenty-one male radical accelerants were matched with other talent-search participants who were of approximately the same age and who had scored about as well on the SATs. The results of this matching can be seen in table 9.1. The two groups seem well-matched, with respect to both age and verbal and mathematical abilities. Further, it is clear that both the accelerant and the nonaccelerant groups are extremely able, averaging 691 and 690, respectively, on SAT-M and 543 and 536, respectively, on SAT-V. These scores represent the ninety-sixth percentiles on SAT-M and seventieth percentiles on SAT-V for college-bound seniors (Admissions Testing Program 1979).

An interesting problem arose during the matching process. It became increasingly difficult to find nonaccelerated youths of ability equal to that of the radical accelerants as the matching progressed. While most of the high-scoring talent-search participants did not radically accelerate their educations, neither did most of them avoid acceleration altogether. For this reason it was decided to include as nonaccelerants some youths who had accelerated their education to a minimal extent (e.g., had entered college with AP credits).

Data Set and Analysis Protocol

With the available data, the social and emotional development of the subjects in one group was compared with that of the subjects in the other group at two points: first, at the time of the talent search, prior to acceleration, when the subjects were roughly 13 years old, and, second, five years later, when the subjects were of high-school graduation age. Comparison of available data for the two groups at the first measurement point addresses potential dissimilarities between the two groups which might have affected the acceleration decision and/or the social and emotional results of acceleration. Differences at the second measurement point can therefore more confidently be attributed to the acceleration itself rather than to any prior social/emotional characteristics.

The results of three relevant standardized affective measures were available for most of the subjects. All three of these tests had been administered when the subjects were of seventh- or eighth-grade age. The three

TABLE 9.1. Talent-Search Performance on SAT-M and SAT-V

Measure	SMPY Radical Accelerants (N = 21)		SMPY Nonaccelerants (N = 21)	
	Mean	Standard Deviation	Mean	Standard Deviation
SAT-M*	691.0	44.8	690.0	36.3
SAT-V**	542.9	70.8	535.7	64.7
Age (year-month)	12-11	0.95 year	13-3	1.00 year

*rSAT-M radical accelerants, nonaccelerants = .76 $p < .001$.
**rSAT-V radical accelerants, nonaccelerants = .91 $p < .001$.

measures are the California Psychological Inventory (CPI) (Gough 1969), the Strong-Campbell Interest Inventory (SCII) (Strong & Campbell 1974), and the Study of Values (SOV) (Allport, Vernon, & Lindzey 1970).

These three measures address different aspects of the social and emotional development construct. The CPI purports to measure "personality characteristics important for social living and social interaction" (Gough 1969, p. 5). The device is composed of eighteen scales clustered into four groups. "The profile obtained gives a good indication of the general social functioning of an individual" (Weiss, Haier, & Keating 1974, p. 128). Furthermore, the CPI has been successfully used with gifted junior-high-school students (Lessinger & Martinson 1961). A variety of reference groups are thus available. Means and standard deviations for each of the eighteen scores were computed separately for the two groups, and a linear discriminant analysis was performed using the SPSS package (Nie et al. 1975).

The SCII, on the other hand, has as its goal the measurement of vocational interests. Six occupational categories (realistic, investigative, enterprising, artistic, social, and conventional), as well as academic orientation and introversion-extroversion are ranked for each individual. Holland (1973), whose vocational preference scales are incorporated in the SCII, believes that vocational interests and personality are closely linked. He feels that within an occupational category, people's interests and values tend to be similar. Various personality types are thus associated with different occupational category ratings. As with the CPI, means and standard deviations for each category were computed separately for the two groups and a discriminant analysis was performed.

The SOV is an ipsative measure of evaluative attitudes based on Spranger's (1928) theory of types of men. He posited six types: the theoretical, truth-seeking man; the economic, practical man; the aesthetic, beauty-seeking man; the social, altruistic man; the political, power-seeking man; and the religious, mystical man. SOV profiles have also been shown to be related to traits such as creativity (Hall & MacKinnon 1969). The analysis protocol was the same as that for the CPI and the SCII.

The final piece of available data on the subjects when they were of seventh- or eighth-grade age was self-rated liking for school and for mathematics. These ratings were obtained from the questionnaire required for participation in the talent search on a 5-point scale (with 1 equalling strong like and 5 equalling strong dislike). The same analysis protocol was used. Approximately five years after each talent search (i.e., when its participants were of high-school graduation age) each participant was sent a detailed questionnaire about his or her progress as part of another study (see Benbow, chapter 2, Appendix 2.1). Thus the group as a whole was followed up at age 18, when the radical accelerants were, on the average, seniors in college, and the nonaccelerants were college freshmen. The questionnaire was aimed primarily at identifying the academic accomplishments and status of former talent-search participants; however, questions about high-school and college activities, liking for college, educational aspirations, and self-perceived social and emotional development were also included. The two groups' answers to these questions were compared via discriminant analysis. Unfortunately, this questionnaire represents the only data SMPY yet has on the social and emotional development of the students subsequent to their acceleration.

Results

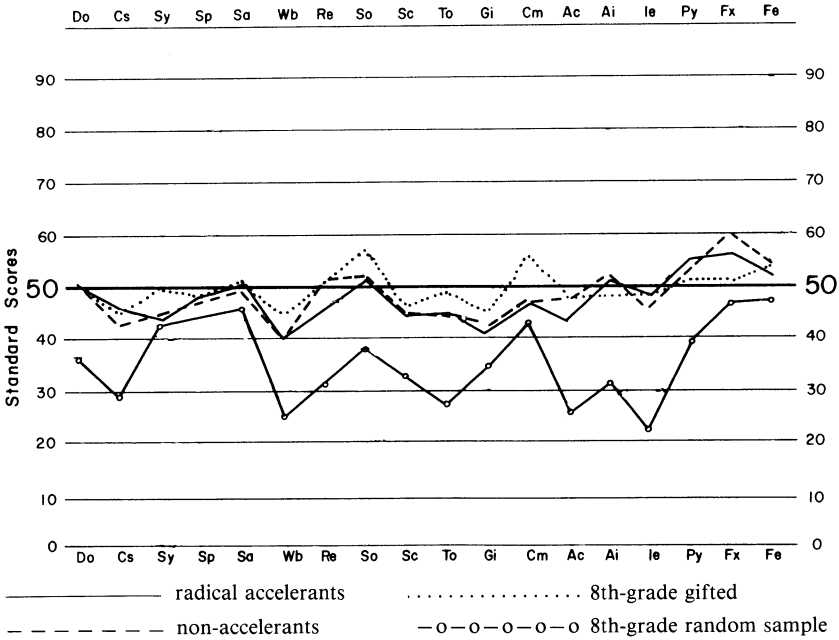
California Psychological Inventory. In figure 9.1 and table 9.2 can be seen the mean CPI profiles for four groups: the SMPY radical accelerants, the SMPY nonaccelerants, and Lessinger and Martinson's (1961) eighth-grade gifted and eighth-grade random groups. It is clear that the two SMPY groups differ very little if at all in their CPI profiles. The SMPY groups are also similar to the eighth-grade gifted group. All three of these groups seem to be functioning more effectively than the eighth-grade random group. The largest differences, not surprisingly, are in the achievement potential/intellectual efficiency cluster composed of the achievement via conformance (Ac), achievement via independence (Ai), and intellectual efficiency (Ie) scales.

Profiles of the two SMPY groups show them to be well adjusted and interpersonally effective. The generally high scores of the SMPY group members, compared with those of the random eighth-grade sample, indicate that the gifted radical accelerants and nonaccelerants are mature, academically advanced, and interpersonally effective. The relatively high scores on flexibility (Fx) and psychological-mindedness (Py) point toward a group of insightful individuals, while the rather low scores on well-being (Wb) and good impression (Gi) suggest a cautious group.

A discriminant analysis performed on the CPI data for the two SMPY groups (see table 9.6) revealed no differences between them.

Strong-Campbell Interest Inventory. In table 9.3 are presented the means and standard deviations for the radical accelerants and nonac-

FIGURE 9.1. Profile Sheet for the California Psychological Inventory: Male[1] – Comparison of profiles in the CPI for four groups: the radical accelerants, non-accelerated SMPY students, 8th-grade gifted group, and an 8th-grade random sample



[1] *For definitions of various scales see Table 9.2.*

celerants on eight SCII scales. Both groups' scores on the six occupational themes fall into the average range (40 to 60), but there are some large intra-profile differences. Both groups scored highest on investigative and in the low range on artistic and social themes. Surprisingly, both groups fell within the average range on the academic orientation scale – that is, working with people was not preferred to working with things or vice versa. Both groups achieved rather high scores on the introversion-extroversion scale – that is, they seem to be rather introverted. The two groups thus appear to be investigative in outlook. People who prefer investigative activities are described by Holland (1973) as scholarly, independent, cautious, introverted, and rational. This description seems to correspond well with the impression of the two groups gleaned from the CPI.

The results of a discriminant analysis performed on this data are non-significant (see table 9.6). It thus appears that the vocational interests of the two groups do not differ.

Study of Values. Means and standard deviations for each of the six SOV scores for the two SMPY groups and for high-school students are reported in table 9.4. Again, the radical accelerants and nonaccelerants appear quite similar. Both groups scored highest on theoretical, second

TABLE 9.2. CPI Scales

CPI Scale	SMPY Radical Accelerants (N = 16)		SMPY Non-accelerants (N = 13)		Eighth-Grade Gifted (N = 94)		Eighth-Grade Random (N = 82)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Do (Dominance)	27.1	6.7	27.6	5.1	27.0	5.5	19.5	4.9
Cs (Capacity for status)	18.0	3.7	16.8	4.2	17.6	3.7	11.3	3.5
Sy (Sociability)	21.8	5.1	22.0	5.2	24.4	5.0	20.7	4.2
Sp (Social presence)	33.3	6.8	32.8	7.7	32.9	5.7	30.6	6.2
Sa (Self-acceptance)	19.7	3.6	19.2	3.5	19.6	3.5	17.6	3.8
Wb (Well-being)	33.2	4.0	33.2	5.3	35.6	4.8	27.2	6.1
Re (Responsibility)	28.9	4.0	31.2	3.3	31.7	4.3	21.5	5.8
So (Socialization)	37.3	5.2	37.9	4.8	40.8	4.9	29.9	5.3
Sc (Self-control)	26.8	4.7	28.5	6.9	28.2	8.8	18.0	7.2
To (Tolerance)	20.2	4.8	20.0	6.3	22.4	4.4	12.1	4.8
Gi (Good impression)	14.4	4.6	15.9	5.3	16.9	6.8	10.3	4.7
Cm (Communality)	24.4	2.8	24.7	2.2	26.4	1.8	23.6	3.5
Ac (Achievement via conformance)	24.8	3.3	26.5	4.3	26.3	4.2	16.4	4.4
Ai (Achievement via independence)	18.9	3.6	19.5	3.7	18.0	3.9	10.9	3.5
Ie (Intellectual efficiency)	38.8	4.9	37.4	4.1	38.7	4.4	26.0	5.3
Py (Psychological-mindedness)	12.3	3.1	11.8	3.4	11.2	2.7	7.9	2.7
Fx (Flexibility)	11.0	4.3	12.4	4.7	9.4	3.4	7.7	2.7
Fe (Femininity)	16.9	3.0	17.8	4.5	17.4	3.2	15.1	3.4

TABLE 9.3. Strong-Campbell Interest Inventory (SCII) Scales

SCII Scale	SMPY Radical Accelerants (N = 19)		SMPY Non-accelerants (N = 20)	
	Mean	Standard Deviation	Mean	Standard Deviation
Realistic	47.7	13.7	49.5	9.2
Investigative	59.9	4.5	56.1	7.2
Artistic	40.8	8.4	41.9	8.4
Social	40.1	12.3	42.3	8.9
Enterprising	43.7	8.1	44.9	7.1
Conventional	50.4	10.3	52.0	9.1
Academic orientation	54.4	11.3	51.6	11.5
Introversion-extroversion	59.3	12.3	59.3	12.0

TABLE 9.4. Allport, Vernon, and Lindzey's Study of Values

SOV Scale	SMPY Radical Accelerants (N = 21)		SMPY Non-accelerants (N = 20)		High-School Students (N = 12,616)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Theoretical	52.6	5.8	50.4	6.9	40.2	7.4
Economic	42.6	7.0	41.8	8.4	40.5	7.0
Aesthetic	35.2	7.3	33.3	6.8	36.7	7.6
Social	36.3	9.0	39.9	7.8	40.2	6.9
Political	46.7	5.6	45.7	7.2	41.1	6.3
Religious	27.0	10.9	29.1	11.1	40.9	8.7

highest on political, and lowest on religious values. Both groups obtained "high" scores on theoretical, "low" scores on religious, and fell within the average range on the other four scales compared with high-school students (Allport, Vernon, & Lindzey 1970, p. 24). Allport, Vernon, and Lindzey also claim that a theoretical type is "inclined to actively seek truth in a logical, often scientific manner." The political scale, on which the two SMPY groups scored second-highest, denotes "a concern for power." These findings also correspond well with those of the other standardized measures.

A discriminant analysis performed on the SOV data for the two groups again resulted in a nonsignificant discriminant function (see table 9.6).[2] There is no evidence that at age 13 the values of the two groups differed.

Liking for School and Math. The data presented in table 9.5 concern liking for school and for math for the radical accelerants and nonaccelerants. Both groups reported a strong liking for math and a fairly strong liking for school. In this respect, too, the two groups appear quite similar.

The Composite Profiles for the Two Groups at Age 13. At age 13 there is no evidence of any dissimilarity, favoring either group, between

TABLE 9.5. Liking for School and Mathematics

Reported Liking for	SMPY Radical Accelerants (N = 21)		SMPY Nonaccelerants (N = 21)	
	Mean	Standard Deviation	Mean	Standard Deviation
School	1.67	0.80	2.05	0.74
Mathematics	1.29	0.46	1.29	0.46

NOTE: Liking was coded as follows: 1 = strong liking; 2 = slight liking; 3 = neutral; 4 = slight dislike; 5 = strong dislike.

the radical accelerants and nonaccelerants. This was true with respect to age, academic ability, and social and emotional development (general social functioning, vocational interests, and values). None of the three discriminant analyses performed on this data resulted in significant discriminant functions (see table 9.6).

Considering the diversity of the measures used, the composite profile is remarkably consistent. Subjects from both groups seem best described as solid, well adjusted, socially mature, and interpersonally effective individuals who are also rather cautious and introverted. Both groups also seem to prefer academic/intellectual pursuits to social ones. It may be surprising that the group profile is so consistently positive. The manner in which subjects were selected may have influenced this. All of the subjects volunteered to participate in a difficult contest and in the follow-up testing sessions. Thus there is a potential positive bias in the profile.

If some kind of self-selection factor is operating for the two groups, it does not appear to be operating differentially for the radical accelerants and nonaccelerants. This finding is in itself interesting. Thus any differences between the two groups after acceleration may be attributed with some confidence to the acceleration and not to a priori differences between the two groups.

The Questionnaire: Five Years Later. In table 9.7 the means and standard deviations of the two groups' answers to the follow-up questionnaire can be seen. It is clear from this table that the radical accelerants and nonaccelerants differ in a number of respects at age of high-school graduation. In high school the radical accelerants participated in slightly more types of activities than did the nonaccelerants, but the nonaccelerants took part in a greater number of activities. This was true even though the number of activities was corrected for the number of years spent in high school. The nonaccelerants held more jobs than did the radical accelerants. Many of the radical accelerants, however, were too young to work in high school. The nonaccelerants participated in more college activities than did the radical accelerants, although the radical accelerants had been in college longer. The nonaccelerants reported a slightly greater liking for college than did the radical accelerants. Whether these last two findings are

TABLE 9.6. Discriminant Analysis for the SMPY Radical Accelerant and Nonaccelerant Groups

Discriminant Functions	Measure							
	CPI		SCII		SOV		Questionnaire	
Eigenvalue	0.89		0.17		0.08		2.89	
Canonical correlation	0.69		0.39		0.29		0.86	
Wilks' Lambda	0.53		0.85		0.92		0.26	
Chi-square, d.f., sig.	14.68, 1, NS		5.80, 1, NS		3.06, 1, NS		48.94, 8, $p < .001$	
Centroids ‹ radical accelerants	0.61		0.39		0.21		0.85	
nonaccelerants	−0.75		−0.37		−0.20		−0.85	
Unstandardized discriminant function	Capacity for status	0.16	Investigative	0.16	Social	0.12	Kinds of high-school activities	0.21
	Responsibility	−0.24	Social	−0.06	Constant	−4.44	Total in-school activities	−0.42
	Self-control	−0.11	Constant	−6.98			Total out-of-school activities	0.15
	Tolerance	0.10					Number of Jobs	−0.30
	Communality	−0.19					Educational aspirations	0.20
	Achievement via conformance	−0.08					Use of educational opportunities	0.27
	Flexibility	−0.22					Helped by SMPY	−0.89
	Femininity	0.12					Acceleration's effect on social/emotional development	0.24
	Constant	12.54					Constant	−0.47

TABLE 9.7. Follow-Up Questionnaire Responses Obtained Five Years after Talent-Search Participation

Questionnaire Item	SMPY Radical Accelerants (N = 21)		SMPY Non-accelerants (N = 21)	
	Mean	Standard Deviation	Mean	Standard Deviation
Kinds of in-school activities	2.0	1.5	2.1	1.7
Number of in-school activities	2.3	1.7	3.0	1.5
Kinds of out-of-school activities	3.6	2.6	3.1	2.0
Number of out-of-school activities	3.0	1.9	3.2	2.2
Number of jobs held in high school	0.4	0.6	1.5	1.1
Number of college activities	1.3	1.1	2.0	1.6
Liking for college[a]	1.9	0.9	1.4	0.8
Educational aspirations[b]	8.1	0.4	7.2	1.8
Use of educational opportunities[c]	1.8	0.9	2.7	1.1
How SMPY has helped[d]	1.3	0.7	2.7	0.7
How SMPY has affected social/ emotional development[d]	2.4	1.1	3.0	0.8
How acceleration has affected social/ emotional development[d]	2.2	1.1	2.5	1.2

Responses were coded as indicated for each item.

[a] 1 = strong liking
2 = moderate liking
3 = neutral
4 = moderate dislike
5 = strong dislike

[b] 7 = master's degree
8 = doctoral degree

[c] 1 = extremely well
2 = rather well
3 = about average
4 = rather poorly
5 = extremely poorly

[d] 1 = extremely positively
2 = slightly positively
3 = no effect
4 = negatively

the result of a real difference or are the artifactual product of freshman enthusiasm on the part of the nonaccelerants is unknown.

The radical accelerants had higher educational aspirations than did the nonaccelerants; the radical accelerants planned, on the average, to obtain a doctoral degree, while the nonaccelerants aspired, on the average, to obtain a master's degree (table 9.7).

The final section of the follow-up questionnaire presented perhaps the most important and interesting questions, since they deal with the students' perceptions of their own academic and social/emotional development. More specifically, they asked each subject how well he had used his educational opportunities, how much SMPY had helped him, how SMPY had affected his social and emotional development, and how acceleration had affected his social and emotional development. The two groups answered these questions quite differently. The radical accelerants felt that they had used their educational opportunities rather well compared with the nonaccelerants, who thought they had used them "about average." The radical accelerants felt that SMPY had helped them very much, while the nonaccelerants thought that SMPY had given them very little help. The radical

accelerants thought that their association with SMPY had positively influenced their social and emotional development, while the nonaccelerants perceived no influence. Interestingly, both groups felt that acceleration (if any) had influenced their social and emotional development in a slightly positive way (table 9.7).

A discriminant analysis performed on the questionnaire data resulted in a discriminant function of considerable power. The results of this analysis can be seen in table 9.6. Eight of the original twelve variables were retained in the discriminant function, which had a chi-square value of 48.9, with 8 df ($p < .001$).

While the significance of the discriminant function indicates clear differences between the radical accelerants and the nonaccelerants, the nature of the measurement instrument makes it difficult to explain precisely this difference. The data on participation in extracurricular activities are equivocal – neither group consistently outperformed the other in that respect. The best interpretation of these data is perhaps that no differences in extracurricular participation exist between the two groups. The nonaccelerants held more jobs in high school than did the radical accelerants, but this is attributable to the fact that the radical accelerants were too young to work in high school.

The last five questions are more easily interpretable. The radical accelerants had higher aspirations than the nonaccelerants. The radical accelerants report that they have used their educational opportunities better than the nonaccelerants have. The radical accelerants report being helped more by SMPY. The radical accelerants report that SMPY has influenced their social and emotional development more positively than do the nonaccelerants. Interestingly, both groups reported that acceleration had positively influenced their social and emotional development. Thus it appears that the effects of acceleration on the social and emotional development of gifted students are not negative and might in fact be positive. A more thorough follow-up of the social and emotional development of talent-search participants would shed light on this question.

Conclusions

The potential effects of acceleration on the social and emotional development of gifted students were examined from two perspectives: (1) a review of the relevant literature, and (2) a longitudinal comparison of the social and emotional development of equally bright radical accelerants and nonaccelerants identified by SMPY. The literature survey resulted in the identification of three dimensions along which research in this area may be classified and evaluated: method and degree of acceleration of the subjects, the definition of "social and emotional development," and the iden-

tification of an appropriate reference group. No study, regardless of its orientation on these dimensions, has demonstrated any permanent or significant negative effects of acceleration on social and emotional development. The present study, which is unique in its combination of orientations along the three dimensions, also found no negative effects of acceleration on social and emotional development. In fact, some evidence of positive effects is presented. The similarity of findings of these two approaches is strong support for the claim that there is no validity to the argument that acceleration is harmful to the social and emotional development of gifted youths. A more extensive longitudinal investigation of the social and emotional development of SMPY accelerated and nonaccelerated gifted students would be worthwhile.

Notes

1. Two of the subjects were not formal talent-search participants, since they lived outside the search region, but they have otherwise been treated as such by SMPY and are thus incorporated into this study.

2. The SOV data were ipsative. Since no significant differences were found this should not affect the results.

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