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ABSTRACT

This Canadian study examined the later development (in high school and college) of two groups of children who had received an early enrichment intervention, comparing them with a limited control group and with each other. Experimental subjects were grouped into those (N=40) from families with some college and those (N=14) from families with high school (or less) education. The latter group included 10 subjects from Afro-Caribbean immigrant families and 4 subjects from other ethnic backgrounds. The early enrichment centered on increasing parents' language interactions with infants in perceptual motor play and during daily child care routines. Follow-up found that 68 percent of the college background group had been identified as gifted, as had 36 percent of the group from less educated families. Competencies were generally much higher in the Afro-Caribbean experimental group than in their controls, and earlier stimulated children performed generally better than later stimulated children. Girls and boys in all groups were about equally advanced in most competencies including math and science. Discussion focuses on the role of language-mediated early motivation and comparison with other studies of early intervention. (Contains 29 references.) (DB)

Sociocultural Variations in Competence Development Among High school Students Educationally Enriched During Infancy

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Abstract

This paper compares the later development of early enriched children from different backgrounds in giftedness and other advanced competencies in high school and college (in Canada). Two groups were compared, those (N = 40) from families with 1 to 6+ years of university education with those (N = 14) from families with high school (or less) education. The latter group included 10 Ss (with 8 controls) from Afro-Caribbean immigrant families and 4 S from other ethnic backgrounds. In the college background group 68% were gifted, while in the latter group 36% were gifted, and many Ss in both groups excelled in a variety of verbal and other competencies.

Competencies were generally much higher in the Afro-Caribbean experimentals than in their controls and earlier stimulated children performed generally better than later stimulated children. Girls and boys in all groups were about equally advanced in most competencies, including math and science. Discussion focuses on how motivation in early established competencies, mediated through language interaction, promotes self-direction in learning that enables children to respond to and seek resources to advance their later development of competencies. Also discussed is why these families with limited education maintained and expanded their high competencies better than the children from similar families in the 1970's early intervention research in United States.

How much does early experience contribute to the development of competence? Not only generally across populations, but under varying conditions and populations. And not only in early life, but over the course of later development. Will intensive early enrichment programs have approximately the same impact on children from different educational backgrounds and ethnic groups, and equally on boys and girls?

In our continuing follow-up study of the later development of children who participated in language-focused enrichment programs during infancy, we have presented a series of papers summarizing the high competencies generally attained by the high school years (Fowler, Ogston, Roberts-Fiati, and Swenson, 1993, 1993a, 1993b, 1993c, 1993d, 1994), with limited attention to background differences (i.e., gender and Afro-Caribbean). In this paper we would like to discuss how children from different educational and ethnic backgrounds have fared in greater detail. We will not only analyze data from cases presented earlier, but will also add data from a number of additional cases recently located.

Background

The substantial body of literature indicating the importance of early language stimulation for cognitive and social development has been summarized in our previous papers (especially in Fowler, Ogston, Roberts-Fiati, and Swenson, 1992). In brief, the evidence is extensive on: How easily infants can be experimentally induced to learn various dimensions of language (sounds, words, syntax); parents and day care programs vary widely in the quality of early language interaction employed, which in turn correlates significantly with development in the early years; and experimental early intervention programs on young children from families with limited income and education have resulted in large short-term impacts on language and cognitive development. Laboratory experimentation and correlation studies are not equivalent to experimental enrichment studies in real life, however. In the bulk of the early intervention studies, moreover, most programs did not start until ages 3 or 4 years, and except for later experimental group developmental advantages over controls in certain indices of school and community functioning (e.g., staying out of special education classes and employments rates), most basic gains eroded over the long-term when children were returned to their original impoverished environments. No studies have emerged that compare the effects of the same early enrichment programs on infants from different educational and ethnic backgrounds.

Methods

Our follow-up research is based on a compilation of early enrichment studies, undertaken in the 1970s. These included 3 doctoral dissertations using randomized controls and a collection of case studies from pilot studies and student seminar projects. Several siblings of project Ss have been included where parents are known to have followed similar enrichment practices. In all cases, parents were guided in enrichment techniques through demonstrations, discussions and written guides (Fowler, 1974; Ogston, 1983; Roberts, 1983; Swenson, 1983). Guidance was provided over periods of about 6 to 12 months in infants ranging from 3 to 24 months of age. (Additional follow-up research on infants enriched during day care, i.e., Fowler, 1972, 1978, are projected.)

Methods of enrichment centered on parents interacting with infants with language in perceptual motor play and daily child care routines (since presented in a book, Fowler, 1990a, and a videotape, Fowler, 1990b). In all studies, the approach combined orientation to both social interactive and cognitive referential or semantic modes of functioning. The three dissertations involved certain variations, however. The dissertation with Afro-Caribbean infants included an additional component, guidance in problem solving, and started at two age levels, 4 and 14 months (Roberts, 1983). Ogston's dissertation (1983) compared enrichment in language with enrichment in gross motor skills, but it was later discovered that the motor skill learning was richly language mediated, so that the latter group are included in the tally of early language-oriented enrichment Ss. Ogston's controls are also included among the language enriched at follow-up because parents were furnished with written and verbal guidance in language enrichment techniques at termination of the infant programs. Swenson's (1983) dissertation compared the effects of beginning enrichment in infants at two ages, 3 and 7 months. All other studies utilized the same form of language enrichment beginning between 3 and 8 months of age.

Results

Early Development

General trends. As reported in prior papers, the general trends found that every child in every study advanced in language and cognitive skills well beyond the norms for development. Infants acquired 5 or more words at an average of 9 months (range of 7 to 11 months) and began constructing 2 word phrases at an average of 12 months (range of 10 to 17 months), compared to the respective norms of

13 and 21 months. Infants in the three controlled dissertation studies generally exceeded control infants significantly in measures of both language and IQ development. Ogston's (1983) gross motor stimulated group significantly surpassed the language (but not the control) group in motor skill development. Language and IQ levels at 30 to 42 months follow-ups were generally maintained at high levels, and following the post-program language guidance furnished Ogston's controls they had approached or equalled levels of her other two groups.

Insert Table 1

Development of infants from different backgrounds. Turning to the patterns of development for infants from different backgrounds and educational levels, how did they compare with the development of the group overall? The main comparisons are with a set of 14 children whose families had no more than a high school education. This group included 10 Afro-Caribbean infants and 4 infants from other minority backgrounds (Italian, Chinese, Lithuanian) and one from an Anglo-Canadian background. These children are compared to 40 Ss from Anglo-Canadian families with varying amounts of college education (many with BAs or more) among the main body of families. Their early development is summarized in Table 1. (Note that the process of tracing additional Ss is continuing.)

The results show that in both the Afro-Caribbean groups and in those from other backgrounds, every infant except one advanced in their Griffiths (1970) language quotient scores by at least 18 points. The range is from 18 to 55 points. The one infant who advanced by only a single point, in fact was already at a superior level, at 137 at the outset of the program at 3 months of age. While there are nc control scores available on the infants from other backgrounds, the post program language scores of the Afro-Caribbean controls contrast sharply with the program infant scores. Most declined relatively in language competence and with one exception (RC105) the latter are about average or below. Later we shall see whether the high post program score of this one exception has any long-term significance.

Other language records of these infants parallel the development scored on the Griffiths Scales. On REEL Scale assessments of language development (Bzoch and League, 1970), made periodically during observations by the researcher, the infants showed similar developments in language. The child RE105 was observed to be saying 5 words by 11 months, the two Italian speaking infants about 8 words and

the Chinese speaking infant 6 words by 12 months, compared to norms of 13 to 14 months. Child OG01 was one of Ogston's children who were audiotaped at 16 months. Her record revealed her imitating 2 to 3 word sentences and a rapidly accumulating vocabulary, more characteristic of the development of children between 18 to 20 months or more. Detailed parent diary records were seldom maintained by these less academically educated parents, except for the child, SA03. Her development showed astonishing progress, saying her first words at 8 months, and constructing phrases by 13 months, compared to norms of 11 to 12 months and 18 to 20 months, respectively.

The IQ score patterns and changes paralleled the language development in these infants, though generally at somewhat lower and less dramatic levels. IQ scores (termed the GQ on the Griffiths) of the Afro-Caribbean groups ranged from about 120 to 130 IQ at posttesting, compared to the 130 and above scored for language quotients. IQ scores of two of the Ss from other backgrounds were slightly higher. Afro-Caribbean control IQ scores also declined as language scores had, clustering around 100 IQ at posttesting.

How does this compare with the language development of infants from college-educated backgrounds? The mean language score advances during the program in the various language enrichment groups among college-educated families ranged from 18 to 43 points, compared to means of 25 and 41 in the high school educated groups tallied in Table 2. The mean age for the first 5 or more words was about 9 months and for the first two word phrases was 12 months among infants from college-educated families, compared to the respective norms of 13 and 21 months. While records are less complete with infants from the high school (or less) educated groups, as noted above, the Italian and Chinese speaking infants appear to have been slightly less advanced, but the Afro-Caribbean infants and child SA03 and OG01 both attained comparable levels. Actually, the difference with the Italian and Chinese infants appears to result from their slightly lower starting levels. It is thus clear that during the program period, at least, all of these infants from families with no more than a high school education--and many with much less) were advancing during the enrichment program well ahead of norms, most of them paralleling the complex language development of infants in the college educated families.

Where some of these infants may not have progressed as well is in the post program period, once the regular language guidance of the researcher were terminated. While there was no short term follow-up on either the Afro-Caribbean or Chinese speaking families, among the

original total of 4 infants in the Italian speaking groups the mean scores dropped slightly by about 11 points on the language scale. In our two Ss available at follow-up, by 18 months CI03 fell back 18 points and CI03 by 12 points. (It should be noted here, however, that both the Italian and Chinese speaking infants were tested each in their own language with the aid of an interpreter, which may well have affected the results.) How did this effect their later development?

Later Development

General trends. The general pattern of later development among children from families with at least some college education was highly positive. Some 68% of 40 children located to date were not only gifted, but enjoyed a variety of high interests and competencies, many of them in several domains or types of activity, as displayed in Table 2. It will be noted that from 80 to 90% of them were highly skilled verbally, encompassing such skills as writing, avid reading, drama and learning two or more languages easily; about 70 to 80% were both highly skilled and interested in math and science; substantial percentages were very interested and skilled in some art, some of them in more than one area; and 78% were active and skilled in some sport, again sometimes in more than one; socially over 80% were adept and well over 60% were active leaders, socially and in intellectual activities. As high as 90 % were independently motivated intellectually, likely to pursue their skill areas on their own.

Insert Table 2 here

Development of students from different backgrounds. Table 2 also shows the status of later competencies in high school (2 Italian Ss now attending college) of children from families with no more than a high school education. Ss from two sets of different ethnic/racial background are shown, the first of Afro-Caribbean Ss, the other from a mixed set of Italian and other ethnic groups. The tallies for younger and older experimentals and controls are combined because of the complexity of the data. How have these students fared compared to those from more educated backgrounds?

Taking first the percentages of Ss with gifted status, 20% of the Afro-Caribbean experimental program Ss (1 girl, 1 boy) and 75% of those from other backgrounds (2 girls, 1 boy) enjoyed gifted status, compared to 68% of Ss from college educated backgrounds. Note that no Afro-Caribbean control S was gifted. Moreover, one additional Afro-Caribbean youth was close to gifted, scoring 125 IQ on the WISC (Wechsler Intelligence Scale for Children) when tested by the school.

The distribution of competencies among the respective groups followed similar patterns. Thus, except for reading competence (in which percentages matched the students from college-educated families) verbal skill percentages ranged from 10 to 30 in the Afro-Caribbean experimentals and 50 to 75 in the mixed group. Again, the Afro-Caribbean controls ranged only from 0 to 25%, and only 38% in reading. Percentage distributions for most other skill areas fall similarly in the 30 to 40% range for the Afro-Caribbean experimentals and 50 to 75% for the students from the mixed group. Boys and girls were represented about equally in giftedness and the other various high competencies in both the Afro-Caribbean and other mixed group.

Only in the visual arts, which is of course spatial rather than verbal, and social activity did controls match the other groups. All groups reached 70% or more in relations among peers and were similar in relations with adults, but controls were markedly lower in leadership quality (13% versus 40 and 50% for the other high school background groups). Thus the percentage rates of the combined high school background groups (Afro-Caribbean experimentals and the mixed group) tended to cluster around 35 to 40%, compared to 50 to 90% for the youths from college-educated backgrounds.

In general, the younger Afro-Caribbean experimentals (enriched from 4 to 16 months) did relatively better than the older experimentals (enriched from 12 to 24 months). Both of the gifted Ss were in the younger group and the child who was close to gifted also came from this group. Proportionally more were good readers and all who were good writers (2), good at learning languages (3), social studies (4), at math and science (3 each), and in intellectual leadership (2) also were members of the earlier stimulated group.

Two other categories deserve special mention, one, the drop-out percentages and, the other, the orientation toward independent intellectual activity. None of the students from the college-educated families or from the mixed group from high school (or less) educated families had dropped out of school (though several had encountered difficulties, including learning disabilities, that had impeded school achievements at various points). Among the Afro-Caribbean students, 3 controls and 2 experimentals had dropped out. But while the controls had quit school because of poor school achievement, the latter two had dropped out largely for financial reasons, as they had good school records and plan to continue schooling at later dates. (One each came from the respective younger and older groups.)

In the other category of special interest, motivational independence for learning and display of leadership in intellectual activities, no less than 80% of the Afro-Caribbean Ss and all of the 4 Ss from the mixed, high school background families evidenced clear signs of highly independent motivations intellectually, in some sphere, such as in reading, writing, computers, science or math. Only 25% of the Afro-Caribbean controls showed any intellectual motivation. Intellectual leadership is similarly noteworthy: Twenty per cent of the Afro-Caribbean students and 50% of those among the mixed group displayed such leadership, while none of the controls of the latter group did. Such leadership consisted of such things as taking initiative to organize a Saturday morning computer club, initiative in working for refugee organizations, and editing a university newsletter in which he provides social commentary.

Still further differences show up in the school placement levels (not shown in Table 2) between the Afro-Caribbean experimentals and their controls. Seven (70%) of the former, but only 3 (38%) of the latter were placed in advanced programs within their grades. As a final note, the sole Afro-Caribbean control child (RC105) who made an outstanding language gain during infancy of 25 points to a quotient of 137 at posttesting was one of only 2 students doing well in high school, one of 3 who was a good reader and one of two who wrote well (she belonged to a writer's club), and the only one who learned to read before attending school. Her aunt and mother had taught her. As the research of Clarke-Stewart (1973), Huttenlocher and her colleagues (1991) and others shows, while many parents do little to stimulate their children's early language development, many others do. And when they do it usually makes a difference.

Discussion

There are of course problems with these data, despite their apparent significance. Chief among these are the lack of controls among the college educated background group and the small Ns in the other groups. Tracing Ss and data collection are also incomplete in various cases. Many of these cases are found among the high school educated background groups, resulting in smaller Ns and currently more tentative data.

Yet even without considering controls (a few of which have recently been located but not yet interviewed), these high competence patterns among all groups exceed what may be expected by chance. Among the students from college-educated background groups, only 4.8% of population from this educational background would be expected to be

gifted (Humphreys, 1985), compared to the 68% appearing in our group of 40 Ss. Moreover, our college-educated families include many families with less than a BA, and a number where only one parent has college background, less than levels expected in Humphrey's high status population group.

Among students with high school (or less) backgrounds, only .001% of the population would be expected to be gifted. This percentage compares with the 20 and 75% found in our respective Afro-Caribbean and mixed background groups, or the average of 36% across both.

To what can be attributed the apparent later competence differences between the students from high school (or less) and those from college educated backgrounds? Several alternative hypotheses present themselves, among them family stimulation and support, personal motivation, opportunities, birth order and perhaps social discrimination. The most obvious of course is that educated families can furnish a more complex, academically oriented learning environment for fostering the kind of abstract symbol based competencies valued in schools and the larger society. It does not appear, however, that such families are less competent in implementing the verbal competencies fostered during the original infant program. The language (and general IQ) gains and levels attained generally matched those of infants among infants from college educated families. And at the short term follow-up made between 18 and 42 months, scores fell around 10 points in only two of the original N of 8 Ss from high school educated families from mixed backgrounds, thus pretty much matching the stable patterns found in the infants from college-educated backgrounds. (No short term follow-up was made of the Afro-Caribbean infants.)

Yet fostering verbal and cognitive competencies during infancy perhaps demands less complex symbol skills of parents than fostering academic competence development during the elementary and high school years. In his famous early study Skeels (1966) placed orphaned infants in the care of young women in an institution for the retarded. Given their high motivation, the quality of loving care and stimulation they provided was sufficient to raise the cognitive and language skills of these infants to at or above normal levels, enabling them to be eligible for adoption.

The consistent pattern of high intellectual motivation appearing in later development across all groups, regardless of educational background, suggests another factor we have discussed in prior presentations. It would appear that given an early start of enriched

competencies, centering on verbal skills, children became oriented toward promoting their own further learning. The early complex skills established provided more than knowledge alone, in other words. The children appeared to become personally invested in and motivated to pursue learning themselves. Recall that only 25% of the Afro-Caribbean control families displayed independent intellectual motivation to learn and achieve, compared with 80% of the experimental group, all of the 4 from mixed backgrounds and 90% of those from college educated families (Table 2). Lacking the early enrichment, most controls did not develop this kind of self-direction for learning emerging in nearly all of the early enriched Ss.

But presumably competence development also requires a certain consistent level of family support and aspirations for school achievement and competence development for their child (Bloom, 1985; Csikszentmihalyi, Rathunde, and Whalen, 1993; Fowler, 1983, 1986). Perhaps the similarities across groups can be accounted for by the early established motivational system factor, while the differences between those from more and less educated families may be in part explained by the more complex knowledge and problem solving skills of the more educated families as resources for the developing children.

But it is unlikely that cognitive and personal support alone is responsible. The advantages of larger and more stable financial resources available among the educated families probably should also be factored in. Indeed, the 2 experimental Afro-Caribbean students who dropped out of high school are reported to have done so mainly for financial reasons, while none of the college educated background group appeared to encounter difficulties of this kind.

While our preliminary observations support these interpretations, we are presently conducting an in depth study of the developmental history of our subjects, seeking to sort out the various sorts of support, stimulation and other forms of mentoring and circumstances contributing to the later development of competencies. We are particularly interested in determining how the early enrichment interacted with later experiences to bring about the later giftedness and competencies.

Birth order and sibling position have often been found to affect how competencies develop, with the first child more frequently developing the higher competencies (Fowler, 1975; 1983). The first (and only) child is more often the only child in a family with several siblings who experiences the undivided attention and stimulation of parents during early development, giving that child a richer learning

environment than the later siblings. But as it turns out, while children among college educated families were selected for first born status, so were the 4 Ss from the mixed background group (of whom 3 were gifted). Moreover, the 2 sibling case studies of the college-educated group, who were later born, both had gifted status and one of the two gifted children in the Afro-Caribbean experimental group was later born. Nor did competencies and birth order status appear to vary together among the rest of the Afro-Caribbean group.

It is also possible that ethnic/racial status made a difference. All of the college-educated group were white (except one whose father was Japanese) and the four mixed background group were also white. The Afro-Caribbean group may have encountered a certain amount of social discrimination that may have negatively influenced their competence development, as is commonly experienced in the US, Canada and other countries. Could discrimination account at least in part for the slightly lower competence percentages than for the other students from high school educated families?

Yet, withal, it is important to stress the exceptional percentages of giftedness and other high competencies and achievements attained among students from these families with less than a college education, especially among the students from the Afro-Caribbean immigrant families. How can we account for the impressive competence development in these students, compared to the more modest outcomes generally realized in the famous early intervention studies of the 1970s (Garber and Heber, 1981; Lazar and Darlington, 1982; Schweinhart, Barnes and Weikart, 1993)? Several factors appear to be operative. First, most of the early intervention programs did not start until ages 3 or 4 years, compared to our programs starting during infancy. Second, in the most systematic program that both began in infancy and was strongly language mediated (Garber and Heber, 1981) as ours were, families were generally much lower in income, education level, and family stability. Most of our families were generally coping fairly well occupationally and in family life, despite the parents' limited schooling (X = 9 years). (Child SA03 is an exception; see the case study below.)

Third, all except one of our families were recent immigrants from the Caribbean or Europe. Ogbu (1993) has advanced the interesting thesis from anthropological studies that poor and less educated immigrant families are motivated from fundamentally different cultural frames of reference than the indigenous poor with limited education. They come to a new land that they perceive is rich with opportunities not available in their country of origin. They are thus highly

motivated to learn and achieve and foster these achievement patterns in their children, since they compare their present low level status in the host country, not with the socioeconomic hierarchy in the host country, but with the poverty and limited opportunities they were mired in their country of origin. In contrast, the indigenous poor with little education see themselves in relation to the failure of past indigenous generations to rise, feeling the weight of past failures and thus believing little in possibilities to rise and less motivated to strive and assist their children to learn and achieve. This framework, according to Ogbu, is especially dominant among Afro-Americans in the US, who were the families in the Garber and Heber (1981) study, with their legacy of slavery and past oppression. It would appear that a combination of these factors are the major sources of the relative success of our early intervention programs.

We cannot say with certainty at this juncture that the early enrichment was the major circumstance bringing about the development of the later giftedness and high competencies. Nor can we say that it is the language focus of the enrichment that played such a major role.

However, the experimental-control differences in the Afro-Caribbean group are highly suggestive, as are the probability patterns among students in both the college educated and high school educated background groups. So too is the fact that higher numbers and percentages of the earlier than the later stimulated Afro-Caribbean experimental children were gifted and more consistently attained higher competencies in reading, writing, learning other languages, math and science, and in intellectual leadership. Moreover, there were almost no gender differences in giftedness and other high competencies. We await the results of our inquiry into the developmental histories of our youths to gain further insights into the relative contributions of early and later experiences, and just how patterns and sequences of experiences appeared to bring about competence developments of this magnitude.

What seems apparent at this point is that the early enrichment set the stage of higher order competencies, including motivation, that facilitated constructive interaction with later opportunities and resources to generate continuing expansion of competencies. And, because the mode of early interaction was verbally mediated, engaging both cognitive referential and socially oriented modes, it is difficult not to hypothesize that language mediation served a core function in generating the advancing competencies.

In order to furnish a more concrete dramatization of just how the early enrichment established the early competencies, and in particular the special role language interaction played in the process, we are recounting here from an earlier paper (Fowler, Ogston, Roberts-Fiati and Swenson (1993d) two case studies of the early development two infants from the high school educated families. One is of child SA03 from the mixed background group, the other is of RE105, an Afro-Caribbean child.

Case Study I. High school girl of single parent, high school educated mother (Swenson, 1983). Early Development. Language: First words at 6 months, well-formed phrases by 13 months, MLU of 3 at 24 months (again, norm = 1.9), and LQs and IQs at 13 and 17 months of 178/148 and 158/138, respectively. (Binet of 109 at age 3 unreliable because of then intensified family problems and enrollment in poor day care.)

Later Development. Learned to read easily (letters in preschool), became avid and fast reader (1 to 2 books a day), and early began writing stories (Verbal SAT = 440; TSWE = 54, 83rd percentile). Selected to attend a Young Writer's Conference (grade 6), co-authored a book with a friend in grade 8). Acts and writes scripts since grade 6, plays roles on TV. Advanced in grade, consistently high grades, and in enriched math (SAT = 470), science and social studies beginning in grade 6. Is highly social, a camp leader, corresponds widely, dances, sews, draws well (won city wide poster contest on alcohol abuse). Currently on the honor role in a special high school program. Interests: Drama, journalism and creative writing, reading, camping, sports and nature. Major Influences: Mother. Highly affectionate and attentive to early language program and later development, despite irregular employment, welfare, chaotic cooperative living arrangements and alcohol abuse (until child age 6). Teachers/Schools. Verbal and social skills and motivation attracted frequent teacher support and enrollment in special programs and schools (high school) from grade 4 on. Community Mentors. Early interactions in cooperative living attracted by emerging verbal skills. Two coop women mentored her throughout school (frequent discussions, paying for drama lessons and camp). Researcher and family. Maintained continuing interest, involving her in nature, since researcher housed mother and herself when family destitute during child's infancy. Self Motivation. Has initiated projects (reading, writing, acting, drawing) throughout development.

Case Study II. (Roberts, 1983). Early Development. This boy, the fourth child, exemplifies the special importance guiding families in

early enrichment may have for minority populations with limited education (mother, elementary school; father, evening high school diploma). His mother expressed great scepticism at the outset of the program, noting that her daughters had both learned to say first words at 12 months, but that her older boy had been delayed in speech. Language: First 5 words by 11 months, 2 to 3 word phrases between 13 and 15 months (versus norm of 24 to 27 months), beginning fluent speech by 21 months (compared to norms of 30 to 36 months), and posttest LQ and IQ of 140 and 130 (at 21 months).

Later Development. In gifted classes throughout elementary school; has skipped a grade. Generally excellent grades. Excellent reader, high skills in math and science ("best student," his team won project, reported in local newspapers), and does well in French. Active in sports. Interests: Science, sports, music, reading, and computers (organized Saturday computer club). Major influences: Both parents have high aspirations for children, but only this boy does well. Mother. Engaged son with increasing enthusiasm in early language/cognitive program, as she saw the boy progress. Teachers/School: Responded to his high skills and motivation, enrolling him in gifted classes and special projects, awarding high grades. Self-motivation: Mother says he is an exceptionally bright child who has set his own pace throughout school, e.g., computer club organizing and science project.

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Table 1

Pre- Post Program Griffiths Language Scores of Infants from Different Backgrounds: Families with High School Education or Less

Afro-Caribbean Ss[a]

Program Starting Age: 4 months

	Program Group				Randomized Controls		
	Pre	Post	Change		Pre	Post	Change
RE101	109	151	+42	RC101	120	83	-37
RE102	116	157	+41	RC102	120	83	-37
RE103	115	159	+44	RC103	105	93	-12
RE104	101	147	+46	RC104	108	112	+ 4
RE105	93	140	+47	RC105	112	137	+25
RE106	105	136	+31				
RE107	121	146	+25				
X	108.6	148	+39.4		113	101.6	-11.4

Program Starting Age: 14 months

RE203	110	158	+48	RC201	108	101	- 7
RE205	96	[b]		RC202	94	98	+ 4
RE206	119	137	+18	RC203	97	87	-10
				RC204	97	88	- 9
X	108.3	147.5	+33		99	93.5	- 5.5

Other Backgrounds[c]

	Pretest	Posttest	Change
CI02	105	139	+34
CI03	97	138	+41
CE02	95	119	+24
SA03	125	147	+24
OG01	137	138	+ 1
X	111.8	136.2	24.8

[a] Mean parent education level: 9 years.
[b] Score missing.
[c] CI02 and CI03: Italian immigrant families, both 5 years of education ; CE02: Chinese family, high school education; SA01: single parent mother (daughter of Lithuanian immigrants) with 11th grade education; OG01: Anglo-Canadian family with high school education.

Table 2

Indices of High Competence Among Early Enriched High School/College Students from College-Educated Families and High School (or less) Educated Families (Ages 13 to 20 years)

Family Educ. Background	1-6+ Years University		High School or Less					
Ethnicity	Canadian[a]		Afro-Caribbean Experimental		Afro-Caribbean Controls		Mixed[b]	
Ns (Fup/Orig)	40/44		10/21		8/22		4/ 8	
Competencies	f	%	f	%	f	%	f	%
Schooling								
Spec Acad Prog[c]	27	68	2	20			3	75
A-B Grades	34	85	6	60	2	25	3	75
Indep. Motiv.	36	90	8	80	2	25	4	100
Dropout			2[d]	20	3	38		
Verbal Skills								
Reading	34	85	8	80	3	38	4	100
Read-Presch	24	60			1	13	2	50
Writes-Well	36	90	2	20	2	25	3	75
-Creatively	34	85	1	10			3	75
2nd Languages	36	90	3	30			3	75
Math	28	70	3	30			2	50
Science	32	80	3	30			2	50
Arts								
Music	23	58	4	40	1	13		
Drama	12	30	3	30				
Visual	20	50	3	30	3	38	3	75
Dance	11	28						
Sports	31	78	3	30	3	38	2	50
Social Skills								
With Peers	34	85	7	70	7	88	3	75
With Adults	32	80	3	30	4	40	2	50
Leadership	27	68	4	40	1	13	2	50
Intellectual	25	63	2	20			2	50

[a] Largely Anglo-Canadians (including 5 Anglo immigrant families); 7 immigrant (Finnish, Norwegian, Swedish, Russian, Japanese, Polish) families (1 parent or grandparent); 2 half French Canadian; 2 Jewish; 1 half Italian.

[b] Italian immigrants (2); Lithuanian immigrant grandparents, single parent mother (1); Anglo-Canadian (1).

[c] In special academic programs: in gifted classes and/or accelerated in grade, or in special academic schools--all indices of giftedness, as not all schools have gifted programs & some students avoided testing/enrolling.

[d] Both mainly for financial reasons, after completing Grades 9, 10, as performing excellently in school.

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