

Parent-Child Cultivation and Children's Cognitive and Attitudinal Outcomes from a Longitudinal Perspective

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Abstract This work adopts the concept of “concerted cultivation” (Lareau A. *American Sociological Review* 67(5), 747–776, 2002, 2003) to interpret how socioeconomic differentials in child rearing practices generate unequal children's outcomes, distinguishing between children's participation in organized leisure activities and children's engagement in cognitively stimulating activities. Results show that it is the engagement in cognitively stimulating activities and not the participation in organized activities more generally that enhances children's reading ability and the locus of control. Path analyses confirm that the selected dimensions of parent-child cultivation—parental expectations, direct stimulation, parental interactions with the school and children's engagement in cognitively stimulating activities—mediate more than half of the socioeconomic gradient in children's reading ability and the locus of control, even after controlling for the previous level of abilities. In addition, the effect of parent-child cultivation is largely independent from and stronger than parental socioeconomic characteristics. The model is assessed on a large cohort sample (British Cohort Study 1970).

Keywords Concerted cultivation · Cultural capital · Child rearing · Parental expectations · Inequalities in child's outcomes · BCS70

1 Introduction

The persistent or even increasing impact of parental socioeconomic background on children's outcomes over the last decades has been consistently documented (Dronkers 1993; Blanden et al. 2007; Shavit et al. 2007; Jonsson et al. 2009; von Stumm et al. 2009). However, the mechanisms through which socioeconomic

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background exerts its impact remain unclear. Drawing on Lareau's recent ethnographic research, this article uses the concept of concerted cultivation (2002, 2003) to interpret how socioeconomic disparities in child rearing practices influence the child's reading ability and the locus of control. The notion is intended as a modern conceptualization of cultural capital (Bourdieu 1979; Bourdieu and Passeron 1979; Bourdieu 1986). More specifically, it offers a framework for theoretical conceptualization and empirical operationalization within a research tradition that studies the transmission of inequality over generations focusing on the uneven capacity of parents to foster their children's abilities (Bowles and Gintis 1976; Bourdieu 1979; Bourdieu and Passeron 1979; Bourdieu 1986; Entwisle et al. 1997; Farkas 2003; see Esping-Andersen 2007; see Jonsson 2010). Concerted cultivation refers to socioeconomic differences in the way parents conceive the nature of the child's development and define their child-rearing strategies to foster it. That is, concerted cultivation is reflected in how parents engage in deliberate and systematic practices to foster their children's abilities. The three dimensions of concerted cultivation are (1) orchestrating the child's leisure time in various organized activities. Lareau argues that it is not any particular activity, but the collective set of the leisure activities that enhances children's abilities; (2) language use; (3) interactions with social institutions.

This article criticizes the argument that any structured leisure activity yields equally positive outcomes for the child and takes existing studies on parent-child cultivation a step further by distinguishing between engagement in cognitively stimulating activities and the participation in organized leisure activities more generally. This refinement aims at showing precisely how parent-child cultivation mediates, as Lareau suggests, the positive effects of socioeconomic background on children's outcomes. The effect of parent-child cultivation on children's reading ability and the locus of control is controlled for the previous level of abilities.

2 Literature

In recent decades there has been a growing interest among social scientists in studying the link between socioeconomic inequalities and children's abilities. (Phillips et al. 1998; Farkas 2003; Beron and Farkas 2004; Durham et al. 2007). An important effort in the study of life-course mechanisms underlying such a link has been made by Lareau (2002, 2003).

She argues that parents' views of what their children need to thrive are stratified by socioeconomic background and lead families to engage in differential patterns of child rearing strategies, which, in turn, result in unequal children's outcomes. Higher and middle class parents believe it is their responsibility to broaden their children's worldview and foster their abilities, and consequently they adhere to the child rearing strategy which she coins "concerted cultivation". They organize the child's daily life in multiple structured activities that are believed to provide a wide array of benefits for his/her educational and social success. By contrast, the child rearing approach of lower class parents can be defined as an accomplishment of natural growth. It is focused on satisfying children's material needs, neglecting the idea that children's specific abilities can be fostered by educational involvement or by

participation in stimulating activities. They think that providing food and safety is enough to guarantee prosperous growth and success.

The concerted cultivation and natural growth approaches differ in three main dimensions: the organization of daily life, language use, and social connections.

Higher class parents orchestrate the child's leisure time in multiple organized activities, recognizing their importance for a child's development. By contrast, lower class parents enroll their children in fewer organized activities, favoring strong ties within the kin. The idea that leisure activities have an educational return is not new and has been firmly supported by the cultural reproduction tradition of research (Bourdieu 1979; Bourdieu and Passeron 1979; Bourdieu 1986). Following the cultural reproduction perspective, high class groups are in possession of a cultural capital in the form of a legitimate and *beaux* cultural taste. Their capital is defined in contrast to lower class groups which simply lack the right taste and express vulgar cultural aspirations. Since in schools the prevailing cultural climate is the upper class, children from lower class background, who lack socialization into *beaux* activities, will experience school as a hostile environment and attain worse results, while children with an upper class background experience school as a natural extension of the family environment and achieve better results (Bourdieu and Passeron 1979; Kalmijn and Kraaykamp 1996).

Language use has been a traditional terrain for studying the invisible inequalities of family life. Higher class parents talk and play more with their children, use a richer vocabulary, and in general they tend to be more responsive to the child's feelings and to take into considerations his/her opinions and needs for explanations (Kerckhoff 1972; Bernstein 1975; Beron and Farkas 2004; Durham et al. 2007). Lareau confirms that parents taking a concerted cultivation approach use a more elaborate language with their children and pay attention to the child's view when talking to him. Furthermore they prefer discussion over the use of commands. Parents conforming to the natural growth approach use directives as the main form of discipline and children are hardly ever allowed to question their views. Higher class children boast a larger vocabulary at any developmental stage beyond 2 years of age. Since vocabulary test scores correlate with general ability, higher class children have an early margin over working class children in elementary school performance, which is a significant predictor of educational success (Walker et al. 1994; Beron and Farkas 2004; Durham et al. 2007; Duncan et al. 2007; Cheadle 2008).

The organization of daily life and language use are key dimensions for defining the child-rearing approach. The third dimension—social connections—is relevant, but less essential. It suffices to say that children reared according to a concerted cultivation approach are often placed in homogeneous age groups, while children reared according to a natural growth approach spend more time with other family members in heterogeneous age groups.

An important consequence of the child rearing pattern is the sense of entitlement or constraint. Children brought up within the concerted cultivation framework learn to be assertive and perceive school as an environment in which he/she can intervene and ask questions. The natural growth strategy, instead, encourages the child to develop a sense of constraint, which is reflected in being deferential and passive in interacting with the school and professionals. Kohn (1963, 1976) showed that parental ranking of the attributes they want most to instill in their children are cast along an underlying

continuum, with conformity and self-direction at the two extremes. Conformity indicates parental preference for good manner, obedience and responsible scholastic conduct. Self-direction is addressed by those parents who want their children to develop a high degree of self-control and curiosity rather than being excessively worried by rule-compliance. The Marxist economists Bowles and Gintis (1976, 2002) related socialization strategies to labor market outcomes, arguing that upper class parents tend to teach their children the traits that are required for succeeding in a professional life, such as initiative and critical thinking. By contrast, lower class parents tend to teach the traits that are valued in the low-skilled labor market, such as docility, dependability and persistence, rather than independent thought.

3 Hypotheses

This paper evaluates three hypotheses related to the role played by parent-child cultivation in mediating the impact of socioeconomic background on children's cognitive and attitudinal outcomes. First, the I assess the hypothesis that child-rearing practices are expression of family socioeconomic status (SES).

H1—Parental educational level and economic status are positively associated with parent-child cultivation

The second hypothesis is based on the assumption that the participation in organized leisure activities has beneficial consequences for the child's reading ability and the locus of control.

H2—A) The child's participation in organized leisure activities positively affects its locus of control and reading ability

Lareau's argument is that children who participate in multiple organized activities learn more and faster. Positive outcomes regard a wide range of abilities useful in schooling ranging from general achievement to specific domains. Following Lareau's theoretical perspective, Cheadle (2009) and Bodovski and Farkas (2008) partially corroborated, drawing on large datasets and using statistical techniques, the hypothesis that concerted cultivation accounts for differences in achievements between children from different socioeconomic backgrounds. The emergence of a sense of entitlement and a broader knowledge of the world are key results of the exposure to concerted cultivation and, at least partially, accounts for its positive effect on children's abilities.

However, accounts on how the participation in cultural activities enhances children's educational success are unclear. Lareau affirms that it is not any specific activity, but the concerted set of the leisure activities that foster positive developmental outcomes for the child; yet the activities in which children may be engaged can be very different. Can we assume that all kinds of activities are equally important? Is there a group of activities which are more important than others and must be included in the set of concerted activities in order to create positive outcomes for the child?

Moreover, it is not clear why participation in organized activities is a key indicator of the child rearing approach centered on cultivation. The way in which

families structure children's leisure time reveals whether they adhere to the concerted cultivation or natural growth strategy of child rearing. However, conformity to either of the two patterns can be expressed in multiple ways, of which the participation in organized activities is only one. Parents may opt for alternative or complementary practices to foster their children's abilities, such as direct stimulation, help with homework or private extra scholastic lessons, which nonetheless reveal the deliberate effort to cultivate the child's abilities.

Studies distinguishing between different aspects of cultural capital have suggested that in operationalizing cultural capital, *beaux* art participation should be disentangled from reading and cognitive abilities (Crook 1997; De Graaf et al. 2000). They argue that the traditional conceptualization of cultural capital is vague and heterogeneous and includes aspects of parental behavior that have nothing to do with cultural stimulation. Their results confirm that parental linguistic, reading and cognitive behavior, more than art participation affects child's educational outcomes.

In line with this stream of research and in reaction to current operationalizations of parent-child cultivation centered on the concerted participation in organized activities, this work criticizes the argument that it is the concerted set of leisure activities that produce advantages in children's outcomes, rather than specific kinds of activities. In particular, a case is made for the importance of engagement in cognitively stimulating activities compared with mere participation in organized leisure activities for the child's cognitive and attitudinal outcomes.

H2—B) The child's engagement in cognitively stimulating activities positively affects its locus of control and reading ability more than does participation in organized leisure activities.

The effect of parent-child cultivation dimensions on child's outcomes is controlled for the previous level of abilities.

The last hypothesis seeks to confirm that differences in child rearing approach, as defined by the dimensions of parent-child cultivation, mediate socioeconomic differences in cognitive and attitudinal outcomes.

H3—Parent-child cultivation mediates the positive effects of parental educational level and economic status on the locus of control and reading ability.

The notion of parent-child cultivation consists of the already mentioned dimensions participation in organized leisure activities and engagement in cognitively stimulating activities, in combination with parental educational expectations, direct stimulation and parents' interactions with the school.

A primary concern for parents engaged in the cultivation pattern is the child's success in school. Parents want their children to be successful in school and that schools enhance children's abilities; in order to further foster those abilities which are valued at school, they also enroll children in extracurricular activities. In the late 1960's Sewell and his colleagues were the first to propose a social and psychological model of attainment containing educational expectations. They found that the perceived encouragement from parents, teachers and peers stimulate the development of ambitious aspirations, which in turn have an impact on educational and occupational outcomes (Sewell et al. 1969; Sewell and Hauser 1975, 1980; Jencks et al. 1983; Hauser et al. 1983). From a cultural capital perspective, parental

educational expectations reflect the perceived opportunities of intergenerational social mobility. The family's place in the social structure becomes embodied expectations which guide the parents' engagement with their child. Rather than being directly penalized by schools, in a process termed self-elimination (Bourdieu and Passeron 1979), lower class pupils and their families exclude themselves *a priori* from the most ambitious educational tracks.

Parents adhering to the cultivation pattern also directly stimulate their children to foster his/her abilities. The cognitive stimulation experienced at home is a significant explanatory factor of disparities in children's motivations/aspirations and academic achievements (Gottfried et al. 1994; Gottfried et al. 1998; Bradley and Corwyn 1999; Luster et al. 2004; Opdenakker and Van Damme 2005). Children who are read to and who receive help with homework and other learning tasks, have higher chances to do well in school because they will be relatively more prepared to deal with the tasks they are confronted with at school (De Graaf et al. 2000). More important, the cognitive and non-cognitive abilities learned at home will help the child to score highly on academic tests and, thereby, to attain higher educational outcomes (Farkas 2003; Duncan et al. 2007).

Another dimension of parent-child cultivation is the parents' interaction with the school. Lareau documented that parents following the cultivation pattern tend to intervene in social institutions, such as schools, for the child's sake and train the child to intervene and discuss with the teacher.

Unfortunately, BCS70 does not include information regarding one potentially interesting dimension of parent-child cultivation, namely family language use. The proposed definition of parent-child cultivation, hence, comprises only five of the six dimensions ascribed to the construct.

A key assumption of the proposed theoretical approach is that the variation of children's characteristics can be substantially accounted for by the transmission of a range of abilities via the interactions with parents and the broader social environment. This assumption is, however, called into questions by a stream of developmental research which argues that a considerable portion of what children learn and achieve is determined by the "innate" genetically programmed ability and, consequently, cannot be acquired or modified through education or socialization (Loehlin 1989; Chipuer et al. 1990; Plomin and Spinath 2002). The innate ability in conjunction with acquired skills will shape the child's developmental trajectory and determine cognitive and educational achievements. The validity of the parent-child cultivation's perspective is compared with this rival perspective using the British ability scale as a proxy for abilities influenced by genetic factors.

4 Data

I use a longitudinal, uniquely rich dataset, the British Cohort Study 1970 (BCS70), which has collected information from a sample of 17,200 individuals in the birth wave, all those who were born in England, Scotland, Wales and Northern Ireland in one particular week in April 1970.¹ Individuals from Northern Ireland were dropped

¹ I thank the UK Data Archive for giving me access to the BC70 datasets.

from all the subsequent surveys. Data have been collected on births and families. In the 5-year and 10-year surveys, the parents of the cohort members, class and head teachers of the schools they attended, and the individuals themselves (who also undertook educational assessments) were interviewed. In 1975 and 1980, the sample was increased by the inclusion of 839 immigrants to Britain who were born in the reference week. In the 1986 follow-up wave, parents, class and head teachers were interviewed, and the individuals in the sample completed diaries, educational tests and provided information on their leisure time and the group of peers. At age 5, 13135 individuals were assessed, i.e., 80% of the 16461 estimated to be eligible. At the age of 10 the achieved sample was 14875 individuals, i.e. 92% of the 16181 estimated to be eligible. The number of individuals who were assessed, decreased to 11615 at the age of 16 years, i.e., 73% of the 16000 estimated to be eligible.

The sub-sample consists of all individuals for whom a collected and deposited value of at least one question from at least one of the survey waves (at birth, 5 years of age, 10 years of age, 16 years of age) is available, with the exclusion of individuals from Northern Ireland. In this way the sample is the broadest possible, encompassing all individuals who appeared in at least one survey. The total number of cases is 16286, resulting from the combination of the 5-year-old, 10-year-old and 16-year-old samples. The list-wise deletion reduced the sample size to 3145 cases. Results based on the list-wise reduced sample (3145) and on the sample comprising item non-responses (16286) are simultaneously presented to evaluate possible departures from the missing-at-random assumption.

5 Concepts and Variables

5.1 Operationalization

The operationalization of the constructs used throughout the empirical analysis is carried out prior to the path analysis. Each construct is defined by a single indicator, which stems either from a single variable or from a combination of variables. The correspondence between each variable and the related theoretical construct is, as in any operationalization in the social sciences, imperfect. The issue of validity of operationalization is taken into account by associating variables with a measurement component. The proportion of the error component is assigned *a priori* relying on previous social and psychological research. This approach for handling measurement error is typically preferred to free modeling when using single indicators, because the measurement error estimate cannot be compensated by the unreliability in other indicators (McDonald et al. 2005). In single-indicator situations it is wiser to estimate *a priori* the measurement component associated with the indicator on the basis of previous research or some indicator of reliability such as Cronbach's alpha or split-half reliability, or to assume no measurement error in the ideal situation of a perfect correspondence between variable and construct. The general rule for attributing the measurement error is to assign a 20% discrepancy to the variables that represent relatively better the corresponding indicator, and a 30% discrepancy to the variables that represent the corresponding indicators less well. Under the assumption of an error proportion ranging between 20% and 40%, the maximum

likelihood estimation shows a good fit with the data and produces reliable results (Hayduk 1987; Schumacker and Lomax 2004).

The criteria of operationalization are the following: when the variables selected to define a given trait are interval variables which share the same scale of measurement an additive index is computed; when the target construct is described by the relationships between several categorical variables, multiple correspondence analysis (MCA) is performed.² MCA is the generalization of principal component analysis when variables are categorical instead of interval and describes patterns of relationships between several items along a reduced number of hypothetical dimensions. The dimensions obtained synthesize the information underlying the categories of interest and the generated scores can, in turn, be used as scales.

Two aspects of the BCS70 augment the empirical validity of the selected constructs. The first one is that it is prospective, avoiding the recall bias which affects retrospective surveys. Second, indicators referring to teachers and parents derive from questions directly asked to them rather than being proxied by children's perceptions and recalls.

5.2 Variables

5.2.1 Parental Highest Educational Level

The parental highest educational level is derived from questions administered to parents from the 5-year-old wave. The decision to select data from the 5-year-old survey is motivated by two reasons: first, several studies document that the impact of family characteristics is greater in the most rapid stage of development, that is, during early childhood (Guo 1998; Ram and Hou 2003; Beron and Farkas 2004; Durham et al. 2007). Thereby, indicators of family background when the child was 5 should function better than later indicators in accounting for the child's developmental outcomes. Second, such early indicators are those which guarantee the most complete information in the BCS70 compared with later indicators which suffer from cumulative attrition. Finally, indicators from the 5-year-old survey, compared with those from the 0-year-old wave, provide more reliable information because a relatively large proportion of parents were still enrolled in full time education at the time of having children. Parental educational is associated with a relatively low level of measurement error (20%).

5.2.2 Economic Resources

Economic resources are a composite indicator (constructed using multiple correspondence analysis), which comprise family income and the ownership/renting of the house, as reported by parents during the 10-year-old sweep. Since the 0 and 5-year-old sweeps do not have sufficient information regarding families' economic position, I have relied on data from the 10-year-old survey instead of the previous ones. Given that economic position can be confidently deemed as constant over time, this choice is not likely to distort estimates of this factor. The proportion of

² MCA is performed using STATA 11 and PASW (SPSS) 17 after pair-wise deletion of missing values

measurement error attributed to economic resources is 20% (Cronbach's Alpha=.4; explained inertia=25%; standardized scores).

5.2.3 *Ethnic Origin*

Ethnic origin is indicated by a dichotomous variable (from the 10-year-old survey) distinguishing children with British parents from children with at least one non-British parent.

5.2.4 *Family Type*

Two different types of family are identified (from the 10-year-old survey). These are permanently intact families, and families in which at least one of the parents has ever been absent or different from a natural/adoptive parent.

5.2.5 *Interactions with School*

Interactions with school are the combination of both parents' interest in the child's education as perceived by the teacher. Responses are given on a five-ladder-scale, ranging from very interested to uninterested (from the 10-year-old sweep). Ideally, an indicator of interactions with the school would comprise also information on participation in parent-teacher conferences, attendance of school events and volunteering at school. Unfortunately these aspects are not investigated in the BCS70. This omission is likely to reduce the validity of the construct which is assigned a measurement error of 30%. Multiple correspondence analysis was used in order to obtain a global index of the two responses (standardized scores, Cronbach's Alpha=.7; explained inertia=38%).

5.2.6 *Direct Stimulation*

Direct stimulation is operationalized using mother's responses in the 5-year-old sweep to the question concerning the frequency of reading to child in the past week. Helping with homework is another candidate for completing the definition of parental direct stimulation. Such information is, however, available only from the 16-year-old survey. Combining information from two different developmental epochs is likely to generate a fallacious synthesis of elements with different meaning. Reading to child prior to school entry indicates the actual interest in the child's development from the early years, while helping with homework measured at age 16 is, at least partly, correlated with the child's school achievements. The use of the 5-year-old item as a single indicator of direct stimulation has the advantage of properly dealing with the issue of causality. However, the use of a single indicator is likely to diminish the validity of the construct so that it is associated with a higher measurement error (30%).

5.2.7 *Parental Educational Expectations*

Parental educational expectations are operationalized as the combination (by means of multiple correspondence analysis) of two questions administered to the mother

when the child was 10. The first question is related to the expected age when the child will leave school (16, 17 or 18). The second is about the kind of education the mother want the child to pursue; whether apprenticeship, college or getting a job (measurement error equals 20% of the total variance; scores are standardized; Cronbach's Alpha is .67; explained inertia=92%).

5.2.8 Participation in Organized Leisure Activities

Participation in organized leisure activities is an additive index of the frequency of after-school activity participation, dancing class attendance, volunteering/community work, participation in meetings/club activities, and playing sports at a center. Questions were administered to children in the 16-year-old survey. Responses vary along a 4-ladder scale from rarely/never to more than once a week (measurement error=20%).

5.2.9 Engagement in Cognitively Stimulating Activities

Engagement in cognitively stimulating activities is an additive index of frequency of reading comics/magazines, reading books, playing a musical instrument, going to museum/galleries, and library visits. Questions were administered to children during the 16-year-old survey. Responses vary along a 4-ladder scale from rarely/never to more-than-once-a-week (measurement error=20%).

5.2.10 Reading Ability

The reading ability of ten-year old pupils has been synthesized using scores on a shortened version of the Edinburgh reading test (Hodder and Stoughton 1979). Children completed a variety of tasks including matching words to pictures, selecting the incorrect word in a sentence, matching answers to questions, extracting information from a picture, answering questions after reading a text, understanding the meaning of words, and putting sentences in the correct order. There were 66 items and the child received 1 point for each correct answer. The correct answers are summed up to compute an additive index. At age 16 cohort members were administered a test to assess reading and understanding. The exercise consisted in reading 75 words and then selecting another word that meant the same from a list of five words (Closs 1976). The correct answers have been summed up in a single index. Both scales are associated with a 20% measurement error (see Hutchinson et al. 2000).

5.2.11 Locus of Control

At age 10 and 16 pupils responded to a self-completion questionnaire comprising a battery of questions for measuring the locus of control (CARALOC, Gammage 1975, see Appendix C). Pupils were asked to declare their agreement, disagreement or uncertainty in respect to several statements. The locus of control refers to the degree to which an individual perceives himself/herself as able to decide over and manage his/her destiny. Many studies have confirmed the importance of the locus of

control as a determinant of socioeconomic success (Rotter 1966; Andrisani and Nestel 1976; Masqsud and Rouhani 1991; Wang et al. 1999). The Caraloc test closely mirrors the locus of control test of Nowicki and Strickland (1973). The reliability, uniqueness and discrimination of the construct were tested by a pilot study on 800 children. The internal consistency of items in the BCS70 as measured by the Cronbach’s alpha is .7 for both the 10-year-old and 16-year-old surveys. The construct is operationalized summing up the responses revealing internal control (measurement error=20%).

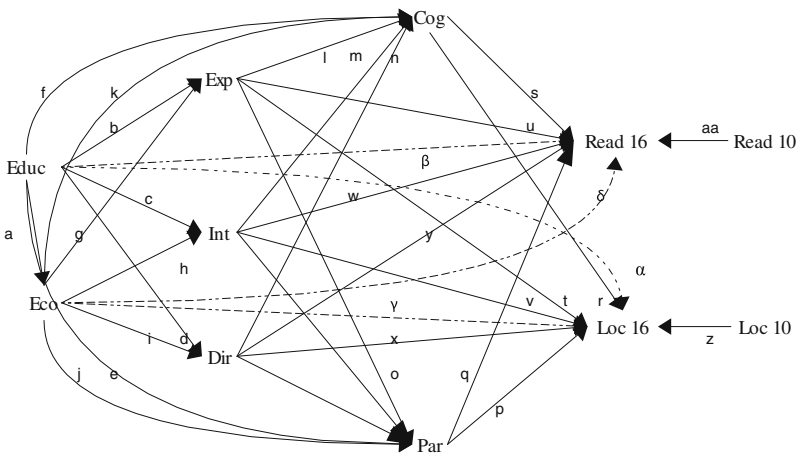
5.2.12 Abilities Influenced by Genetic Factors

The abilities influenced by genetic factors are proxied by The British ability scale (BAS, Elliott et al. 1997). At age 10 children undertook a cognitive assessment covering recall of digits (34 items), fluid reasoning (28 items), language skills (37 items) and verbal reasoning (42 items). The index is computed by summing up the correct answers.

6 Analysis

This work hypothesizes that parent-child cultivation mediates the effect of parental educational level and economic resources on children’s reading ability and the locus of control at age 16. Measures of reading ability and the locus of control at age 10 are introduced to control for the previous level of abilities (Fig. 1).

The direct effect of SES on child outcomes is expected to shrink after considering the mediating function of parent-child cultivation. Path analysis is used to decompose the effect of variables in their direct, indirect and total components and



Dashed arrows: expected non-significant direct relationships
 Educ: parental educational level; Eco: economic resources; Exp: Parental educational expectations; Int: interactions with the school
 Dir: direct stimulation; Par: participation in organized leisure activities; Cog: engagement in cognitively stimulating activities
 Loc: locus of control (at 10 and 16 years of age); Read: reading ability (at 10 and 16 years of age)

Fig. 1 Heuristic model of the effects of parent-child cultivation on the locus of control and reading ability (age 16)

to handle measurement error. The empirical analysis is performed in four steps. First, the dimensionality underlying the parent-child cultivation measures is explored; second, the hypothesized model of relationships between factors is specified; third, the model is modified to find a better fit of the hypothesized mechanisms; fourth, the model is compared with a rival specification which includes a measure of genetically influenced ability. The parameters in the model are modified on the basis of modification indexes and theoretical consideration. Large values of the modification indexes for a particular non-free parameter indicate that model fit would be increased by the inclusion of such parameter. Parameters are removed from the model if they generate standardized regression coefficients below the critical value of .09. Values of the Chi-square index of goodness of fit are oversensitive to misspecification and deviations from multivariate normality when using large samples (Jöreskog 1969). Thereby they are likely to indicate that the hypothesized model apparently does not fit the data (significant values). However, chi-square values are not sufficient for model rejection and they are reported for model comparison. The Akaike information criterion (AIC) and the root mean square error of approximation (RMSEA) will be the other indexes used for model comparison, wherein lower values indicate a better-fitting specification (Hu and Bentler 1998; Fan and Sivo 2007; Chen et al. 2008).

Path analysis is performed using the package AMOS 18 in the framework of full-information maximum likelihood approach which is confirmed to be most effective for path analysis with incomplete data (Schafer and Graham 2002). For a discussion on the consequences of missing cases and sample attrition on representativeness see the Appendix A. The proportion of missing values varies from 60% of variables from the 16-year-old survey³ to 9% of variables from the 10-year-old survey (Tables 1 and 2). The results obtained by list-wise deletion are simultaneously reported to assess whether the analysis with missing-at-random data gives similar estimates to analyzing the complete data.

The first step aims at ascertaining whether the dimensions ascribed to parent-child cultivation share common variance to define a single construct. An assessment of the strength of the correlations between the dimensions of parent-child cultivation shown in the Appendix B suggests that the variance shared by the variables is not large enough to define a single latent factor. Variables are therefore considered and treated as separate constructs, though they are regarded as aspects of the more general category of parent-child cultivation.

The first aim of our investigation is to show that the dimensions of parent-child cultivation are positively related to SES (hypothesis 1). To achieve this goal, it is necessary to confirm in the first place that parent-child cultivation dimensions are distinct from SES and not simply different measures of it. The dimension showing the strongest correlation with SES is parental expectations (.43 with parental education and .31 with economic resources, Appendix B). Child rearing practices (expectations, relationships with school, direct stimulation) correlate more with SES than do children's leisure activities (participation in organized leisure activities and

³ The low response rate of the 16-year-old survey stems from the fact that there was a teacher's strike at the time the survey was conducted. This resulted in a lower number of questionnaires received (Goodman and Butler 1996).

engagement in cognitively stimulating activities). Parent-child cultivation dimensions are actually distinct from SES, suggesting a potentially unique contribution to the explanation of children's outcomes. It is now possible to proceed to the analysis of hypothesis 1. As expected, it is the cultural dimension (defined by parental educational level) of socioeconomic background that drives parent-child cultivation more than does the economic dimension. Parental educational level correlates with child-rearing practices by .22 standard deviation (SD) on average, while economic resources correlate with them by .12 SD on average (Table 3, Model 0). Parental educational level correlates with child's activities by .14.5 SD on average, while economic resources correlate with them by .07 SD on average.

Engagement in cognitively stimulating activities is more driven by socioeconomic resources, and especially by parents' education, than is the participation in organized activities (Table 3, Model 0), suggesting that the transmission of cognitive abilities requires a higher educational background than the simple participation in organized activities does. Overall, the correlation between SES dimensions and parent-child cultivation dimensions is significant but its magnitude does not prefigure a bounded relationship. This means that child rearing practices are at least partly independent from SES resources and that hypothesis 1 is in general terms confirmed by empirical results although it needs to be reevaluated downwards. It should be noted that estimates computed after list-wise deletion are not considerably different from estimates obtained with all available information. The after list-wise deletion estimates are slightly more conservative, with the exception of the effects of economic resources on direct stimulation and interactions with school, which outpace the full-information estimates. This general similarity of estimates confirms the assumption that data are missing at random and suggests that estimates obtained with all available information are unlikely to be biased by missing values. From now on, for economy of space, I refer only full-information estimates.

In operationalizing parent-child cultivation, in line with Bodovski and Farkas (2008) and Cheadle (2009), so far, I assumed no relationship between child rearing practices and children's leisure activities. It is unrealistic, however, that these two levels are independent from each other and modification indexes confirm that the inclusion of new paths from child rearing practices to children's activities would increase the goodness of fit (Table 4).

The largest modification indexes regard the paths from interactions with the school and parental expectations to involvement in cognitively stimulating activities and from parental expectations to participation in organized leisure activities. In addition, although not strongly suggested by the modification indexes, a direct path from parental direct stimulation to cognitively stimulating activities is added because of its theoretical importance (Table 3, Model 1). By contrast, the direct paths from economic resources and parental education to participation in organized activities and engagement in cognitively stimulating activities are removed. This can be done, since, after considering the effect exerted via child rearing practices, they generate parameters that are not considerably different from 0.

The expectations regarding the relative importance of the two kinds of activities in which the child is engaged (hypothesis 2) are reinforced by the empirical results. It is not the participation in organized activities, but only the engagement in cognitively stimulating activities that generates beneficial outcomes for the child.

Table 2 Distribution of categorical variables used throughout the paper (absolute values, cases=16286)

Economic status			
Income (per week)		Ownership accommodation	
Under 35pw	228	Owned/being bought	8340
35-59pw	682	Other	5267
50-99pw	3779	Total	13607
100-149pw	4295	Mis	2679
150-199pw	2056		16286
200-249pw	777		
250 or more	750		
Total	12567		
Mis	3719		
	16286		
Teacher's perception of parental interest in child's education (age 10)			
Mother's interest in child's education		Father's interest in child's education	
Very Interested	5907	Very Interested	4126
Moderate Interest	3832	Moderate Interest	2433
Very Little Interest	667	Very Little Interest	486
Uninterested	327	Uninterested	389
Cannot Say	1638	Cannot Say	4001
Not Stated	320	Not Stated	1063
Total	12691	Total	12498
Mis	3595	Mis	3788
	16286		16286
Parental expectations (age 10)			
Age child will leave school		Type of training/education after school	
16	5404	Further education	546
17	1972	College/University	2197
18	5364	Apprenticeship	220
Not known	571	Specific job	644
Not stated	361	Don't know	1223
Total	13672	Other	154
Mis	2614	Not stated	8689
	16286	Total	13673
		Mis	2613
			16286
Family type (age 10)		Ethnic origin (age 10)	
Intact family	11607	British	11715
Disrupted family	2099	Non-British	979
Tot	13706	Tot	12694
Mis	2580	Mis	3592
	16286		16286

While children engaged in cognitively stimulating activities develop better reading abilities (.15) and tend to develop a more internal locus of control (.16), children who merely participate in a greater number of organized activities do not exhibit any significant progress (Table 3, Model 2). Unexpectedly, the sign of the effect of

Table 3 Standardized maximum likelihood estimates and selected fit indexes for the model of parent-child cultivation

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Educ → Eco (a)	.39 (.35)	.39 (.35)	.39 (.31)	.39 (.35)	.39 (.35)	.38 (.35)
Educ → Exp (b)	.37 (.36)	.37 (.36)	.37 (.34)	.37 (.36)	.37 (.35)	.37 (.35)
Educ → Int (c)	.21 (.15)	.21 (.15)	.21 (.14)	.21 (.21)	.21 (.21)	.21 (.21)
Educ → Dir (d)	.16 (.14)	.16 (.14)	.16 (.13)	.16 (.14)	.16 (.14)	.16 (.14)
Educ → Par (e)	.11 (.10)	n.e.	n.e.	n.e.	n.e.	n.e.
Educ → Cog (f)	.18 (.16)	n.e.	n.e.	n.e.	n.e.	n.e.
Eco → Exp (g)	.15 (.14)	.15 (.14)	.15 (.15)	.15 (.14)	.15 (.15)	.15 (.15)
Eco → Int (h)	.11 (.20)	.11 (.20)	.11 (.21)	.11 (.2)	.11 (.2)	.11 (.2)
Eco → Dir (i)	.11 (.13)	.11 (.13)	.11 (.13)	.11 (.13)	.11 (.14)	.11 (.14)
Eco → Par (j)	.07 (.05)	n.e.	n.e.	n.e.	n.e.	n.e.
Eco → Cog (k)	.07 (.07)	n.e.	n.e.	n.e.	n.e.	n.e.
Exp → Cog (l)	n.e.	.19 (.14)	.18 (.13)	.18 (.14)	.18 (.14)	.18 (.14)
Int → Cog (m)	n.e.	.11 (.11)	.11 (.10)	.11 (.11)	.11 (.11)	.11 (.11)
Dir → Cog (n)	n.e.	.18 (.14)	.18 (.13)	.19 (.14)	.19 (.14)	.19 (.14)
Exp → Par (o)	n.e.	.17 (.13)	.11 (.13)	n.e.	n.e.	n.e.
Par → Loc 16 (p)	n.e.	n.e.	.06 (.06)	n.e.	n.e.	n.e.
Par → Read 16 (q)	n.e.	n.e.	-.03 (-.04)	n.e.	n.e.	n.e.
Cog → Loc 16 (r)	n.e.	n.e.	.16 (.15)	.18 (.15)	.18 (.14)	.19 (.15)
Cog → Read 16 (s)	n.e.	n.e.	.15 (.12)	.14 (.1)	.14 (.09)	.16 (.13)
Exp → Loc 16 (t)	n.e.	n.e.	.13 (.12)	.13 (.12)	.12 (.10)	.11 (.11)
Exp → Read 16 (u)	n.e.	n.e.	.11 (.10)	.11 (.10)	.09 (.08)	.13 (.14)
Int → Loc 16 (v)	n.e.	n.e.	.15 (.08)	.15 (.12)	.14 (.11)	.13 (.12)
Int → Read 16 (w)	n.e.	n.e.	.09 (.06)	.08 (.06)	.08 (.07)	.11 (.08)
Dir → Loc 16 (x)	n.e.	n.e.	.1 (.08)	.10 (.08)	.09 (.07)	.09 (.07)
Dir → Read 16 (y)	n.e.	n.e.	.11 (.09)	.11 (.09)	.11 (.08)	.13 (.11)
Loc 10 → Loc 16 (z)	n.e.	n.e.	.24 (.22)	.24 (.21)	.24 (.21)	n.e.
Read 10 → Read 16 (aa)	n.e.	n.e.	.43 (.42)	.43 (.38)	.43 (.38)	n.e.
Educ → Loc 16 (α)	n.e.	n.e.	n.e.	n.e.	*.01 (.02)	n.e.
Educ → Read 16 (β)	n.e.	n.e.	n.e.	n.e.	.05 (.06)	n.e.
Eco → Loc 16 (γ)	n.e.	n.e.	n.e.	n.e.	.03 (.05)	n.e.
Eco → Read 16 (δ)	n.e.	n.e.	n.e.	n.e.	*-.02 (.01)	n.e.
Educ → BAS	n.e.	n.e.	n.e.	n.e.	n.e.	.27 (.20)
Eco → BAS	n.e.	n.e.	n.e.	n.e.	n.e.	.09 (.17)
BAS → Loc 16	n.e.	n.e.	n.e.	n.e.	n.e.	.24 (.17)
BAS → Read 16	n.e.	n.e.	n.e.	n.e.	n.e.	.37 (.31)
Loc 16 R-square			.17 (.13)	.17 (.12)	.17 (.12)	.18 (.12)
Read 16 R-square			.27 (.22)	.27 (.19)	.27 (.19)	.27 (.19)
Chi-square	142835.83 (39679.94)	142006.98 (39370.93)	220986.49 (59273.15)	206684 (56109.79)	206593.29 (56021.88)	169114.06 (47152.69)

Table 3 (continued)

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
AIC	142871.84 (39715.94)	142042.98 (39406.93)	221054.59 (59341.15)	206744 (56169.79)	206661.29 (56089.88)	169176.06 (47214.69)
RMSEA	.72 (.86)	.72 (.86)	.56 (.66)	.60 (.76)	.64 (.77)	.67 (.80)

a,...aa: expected relationships

$\alpha, \dots \delta$: expected non-significant direct relationships (Figure 1) in parenthesis after list-wise deletion estimates are reported

n.e.: not estimated

non-asterisked estimates are significant at the .01 level

*: non-significant at the .05 level

Educ: parental educational level; Eco: economic resources; Exp: Parental educational expectations; Int: interactions with the school

Dir: direct stimulation; Par: participation in organized leisure activities; Cog: engagement in cognitively stimulating activities

Loc: locus of control (at 10 and 16 yeras of age); Read: reading ability (at 10 and 16 years of age); BAS: British ability scale

participation in organized leisure activities on reading abilities turns out to be negative (−.03), suggesting possible unfavorable effects of the participation in organized leisure activities by those who are also engaged in cognitively stimulating activities. The participation in organized leisure activities is, hence, ruled out to improve the model fit.

In line with hypothesis 3, I assess whether the remaining four dimensions of parent-child cultivation account for the socioeconomic gradient in children’s outcomes. When taking into account that socioeconomically advantaged parents engage more in cultivation practices, less than 50% of the socioeconomic gradient in children’s outcomes is still accounted for by the direct effect (Table 3, Model 4; Table 5). The effect of parental educational level on the locus of control is almost entirely accounted for by indirect mechanisms, and its effect on reading ability is

Table 4 Modification indexes (expected decrease in Chi-square if parameter were to be included)

Explanatory factors	Outcomes	
	M.I.	M.I.
	Par	Cog
Interactions within the school	112.07	363.35
Direct stimulation	7.58	49.46
Parental educational expectations	237.48	656.42

Par: Participation in leisure organized activities

Cog: Engagement in cognitively stimulating activities

Table 5 Maximum likelihood estimates of direct, indirect and total effects of SES on reading ability and locus of control from model 4

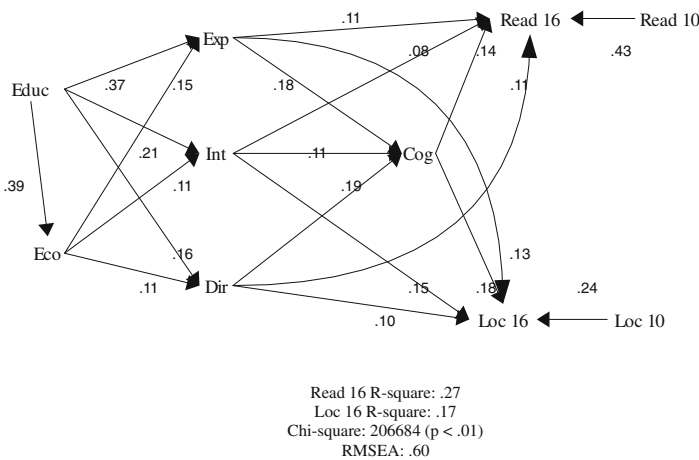
	Reading ability 16			Locus of control 16		
	Tot	Dir	Ind	Tot	Dir	Ind
Parental educational level	.15**	.05**	.10**	.15**	.01*	.14**
Economic resources	.02**	-0.02**	.04**	.08**	.03**	.05**

*:significant at the .05 level

** : significant at the .01 level

exerted by 50% through indirect mechanisms. The effect of economic resources on reading ability is exerted entirely through indirect mechanisms, and its effect on the locus of control goes mostly through indirect mechanisms.

Moreover, direct paths from SES dimensions to child’s outcomes are negligible and only one direct path—from parental educational level to reading abilities—generates a coefficient reaching .05 SD. While Chi-square and AIC values of model fit are similar across model 3 and 4, RMSEA values tend to confirm that the exclusion of direct paths from SES to child’s outcomes improve model fit (Table 3, Model 3; Fig. 2). R-squared values indicate that the amount of variance accounted in reading ability (27%) and the locus of control (17%) is in line with the literature on the determinants of child’s development (McCall et al. 1973; McCall 1981; McCall 1983; Bornstein and Sigman 1986; Espy et al. 2001), supporting the hypothesis that the model is a good representation of data.



Educ: parental educational level; Eco: economic resources; Exp: Parental educational expectations; Int: interactions with the school
 Dir: direct stimulation; Cog: engagement in cognitively stimulating activities; Loc: locus of control (at 10 and 16 years of age); Read: reading ability (at 10 and 16 years of age)

Fig. 2 Preferred model (3) of the effects of parent-child cultivation on the locus of control and reading ability (age 16)

Parent-child cultivation is likely to be correlated with other background factors that contribute to the ability formation and whose omission might lead to the overestimation of the effect of parent-child cultivation on children's outcomes. Two of these factors are included—intact/disrupted family type and ethnic origin—as control variables in the analysis of children's outcomes centered on parent-child cultivation and SES (Table 6).

OLS estimates of the effect of parent-child cultivation on reading ability and the locus of control remain significant after the inclusion of the type of family and ethnic origin, although the estimates' magnitude turns out to be reduced (Table 6).

The parent-child cultivation's perspective is compared to a rival perspective that states that children's learning outcomes are jointly determined by acquired abilities and innate, genetically programmed abilities. It is expected that the positive effect of parent-child cultivation on reading ability and the locus of control will not be reduced after including the innate ability in the model. In addition to parent-child cultivation, the British ability scale, used as a measure of abilities influenced by genetic factors, is introduced as a mediator between socioeconomic circumstances and children's outcomes (Table 3, Model 5). However, parent-child cultivation estimates remain substantially unaltered by the introduction of the British ability scale. This implies that the parent-child cultivation's perspective does not overstate the importance of socialization versus genetically programmed abilities.

7 Conclusions

Lareau proposes to study socioeconomic inequalities in children's outcomes through the lens of child-rearing interactions within the home (2002, 2003). The concepts of concerted cultivation and accomplishment of natural growth are introduced to describe the patterns driving these interactions. Concerted cultivation is the

Table 6 Standardized OLS estimates for the model of parent-child cultivation controlling for family type and ethnic origin

	Model 7		Model 8	
	Reading ability 16	Locus of control 16	Reading ability 16	Locus of control 16
Parental educational level	.208** (.148)	.110** (.051)	.118** (.218)	0.096** (.54)
Economic resources	.077** (.182)	.090** (.063)	.188** (.157)	0.108** (.75)
Cog	.257** (.063)	.227** (.022)	.251** (.066)	0.229** (.23)
Family type			-0.023 (.769)	-0.018 (.266)
Ethnic origin			-0.054** (.788)	-0.023 (.273)
R-square	.15	.093	.16	.097

*: significant at the .05 level

** : significant at the .01 level

Std errors in parentheses

Cog: Engagement in cognitively stimulating activities

child's participation in concerted, conceptually inseparable, and mutually constituting organized leisure activities and is a key aspect of the child rearing pattern prevailing in higher socioeconomic backgrounds. The results presented in this article shed some light on the relative importance of the dimensions of concerted cultivation in accounting for the children's differences in reading ability and locus of control across socioeconomic groups. First, it is the engagement in cognitively stimulating activities that produces advantages in children's outcomes, rather than the participation in organized activities. Children who regularly read, visit the library, play a musical instrument and go to museums exhibit a higher reading ability and a more internal locus of control, while, the participation in sports, dancing classes and community work does not contribute to ability formation. This finding suggests that Lareau's conceptualization of cultural resources, which includes all practices that exhibit a systematic and deliberate engagement in fostering children's abilities, is too broad. Not all efforts can be linked to equally beneficial outcomes for the child. More specifically, an effective cultivation strategy must be centered on cognitive, school-related abilities.

A plausible explanation for the results is that the engagement in cognitively stimulating leisure activities, by stimulating mature, agile and abstract thinking, positively influences the ability to learn. Another complementary explanation is that the skills acquired during leisure time constitute «quasi-scholastic dispositions» (Bourdieu 1979) that directly contribute to an improved performance on academic tests.

Furthermore, the results provides partial support to the hypothesis that socioeconomic differences in children's reading ability and the locus of control are accounted for by parent-child cultivation. The indicators of parent-child cultivation account for more than half of the socioeconomic gradient in children's outcomes and make an important contribution to the explanation of children's outcomes after controlling for socioeconomic background. Overall, the effect of parent-child cultivation on reading ability and the locus of control is stronger than socioeconomic background.

The parent-child cultivation's perspective was also compared with a rival perspective that emphasized the joint function of genetically inherited and non-malleable traits and acquired skills in determining abilities. The inclusion of a measure of intelligence as a proxy for the abilities influenced by genetic factors, did not alter the estimates of the effects of parent-child cultivation. This suggests that the parent-child cultivation's perspective does not overemphasize the importance of socialization in determining abilities. It needs to be recognized that this represents a very rough empirical confirmation of the mentioned hypothesis, since the proxy of innate ability being used—the British ability scale—like any other measure of intelligence, captures not only innate attitudes but also acquired abilities.

What are the theoretical implications of the presented results? The proposed refinement of the parent-child cultivation's perspective supports prior studies on family cultural resources distinguishing between reading climate and *beaux arts* participation (Crook 1997; De Graaf et al. 2000). Similarly to those studies, the results presented in this study suggest that the resources that bring advantages in

children's outcomes are those related to mundane cognitively oriented activities, such as reading to child. The parent-child cultivation's perspective allows us to provide a more nuanced interpretation of these results. The reading climate, in fact, turns out to be part of the family pedagogic strategy which also includes the demonstrated interest in the child's education and parental expectations.

This interpretation of cultural resources of the family is quite different from the original idea of cultural capital (Bourdieu 1979; Bourdieu and Passeron 1979; Bourdieu 1986). The concept of cultural capital implies that discriminatory mechanisms are at work through the favoring of cultural codes mastered by high status pupils. Conversely, the parent-child cultivation's perspective, by underlining the importance of pedagogic effort in supporting the child's learning progresses, purports the idea that children of cultivating parents are simply better trained to learn.

There is also another reason for revisiting the cultural capital perspective. The idea of cultural monopoly or exclusiveness must be reevaluated in light of the result that parent-child cultivation is largely independent from socioeconomic background and provides a unique contribution to the child outcomes. The attempt to study how child rearing practices explain the intergenerational transmission of advantages has led to the conclusion that such practices explain not only "structural" privileges associated with parental education and economic resources, but that they themselves constitute a resource which is independent from parental educational and economic resources. A definition of parental background that did not include parent-child cultivation would therefore omit key aspects of parental socioeconomic background which enhances children's cognitive ability and the locus of control.

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Appendix A. Sample and Attrition

A plausible selection bias might have plagued the BCS70's sample potentialities. Bias could arise, in fact, from the selection of those born in a particular week as the reference sample. To the extent that those births born in the reference week are deemed as representative of births born in a wider temporal window, selection bias stems from the fact that births are not homogeneously distributed throughout the year or even throughout seasons. Several studies document that births follow significant patterns throughout the yeas and that picks and trends are associated with parents' characteristics (McFarlane and Mugford 1984; Melbye et. al. 1997). Although, no study assessing the magnitude and consequences of this bias is

available, scholars tend to regard this bias in the BCS70 as ignorable (see Nathan 1999).

Overall the BCS70 achieved a high level of representativeness. The longitudinal nature of the study, however, consisting of many surveys carried on over a long period, has given rise to a significant degree of attrition. Yet, the negative effects of attrition have not compromised the characteristics of representativeness of the sample, with the exception of the lowest strata of the socioeconomic hierarchy (Butler et al. 1997; Shepherd 1995, 1997). In conclusion the achieved sample does differ dramatically from the target sample and its level of attained representativeness provides sufficient confidence for generalization. The only caveat is to ponder carefully results regarding the underrepresented disadvantaged subgroups (Nathan 1999).

B. Correlations Among Main Variables

Eco	.328											
Dir	.245	.197										
Int	.288	.227	.212									
Exp	.427	.310	.243	.299								
Cog	.183	.131	.162	.145	.214							
Par	.112	.099	.071	.091	.133	.295						
Read 10	.312	.228	.259	.334	.414	.257	.070					
Read 16	.281	.175	.235	.274	.345	.305	.064	.543				
Loc 10	.138	.094	.131	.195	.232	.154	.110	.351	.259			
Loc 16	.185	.163	.164	.229	.262	.279	.163	.369	.375	.322		
BAS	.280	.192	.210	.284	.359	.192	.076	.664	.458	.305	.299	
	Educ	Eco	Dir	Int	Exp	Cog	Par	Read 10	Read 16	Loc 10	Loc 16	

Estimates are significant at the .01 level

Educ: parental educational level; Eco: economic resources; Exp: Parental educational expectations; Int: interactions with the school

Dir: direct stimulation; Par: participation in organized leisure activities; Cog: engagement in cognitively stimulating activities

C. The Caraloc Locus of Control Pupil Questionnaire

- Do you feel that most of the time It's not worth trying hard because things never turn out right anyway?
- Do you feel that wishing can make good things happen?
- Are people good to you no matter how you act towards them?
- Do you like taking part in plays or concerts?
- Do you usually feel that It's almost useless to try in school because most children are cleverer than you?
- Is a high mark just a matter of "luck" for you?

- Are you good at spelling?
- Are tests just a lot of guesswork for you?
- Are you often blamed for things which just aren't your fault?
- Are you the kind of person who believes that planning ahead makes things turn out better?
- Do you find it easy to get up in the morning?
- When bad things happen to you, it is usually someone else's fault?
- When someone is very angry with you, is it impossible to make him your friend again?
- When nice things happen to you is it only good luck?
- Do you feel sad when it's time to leave school each day?
- When you get into an argument is it usually the other person's fault?
- Are you surprised when your teacher says you've done well?
- Do you usually get low marks, even when you study hard?
- Do you like to read books?
- Do you think studying for tests is a waste of time?

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