Parent-child cultivation and children's cognitive and attitudinal outcomes from a longitudinal perspective*

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Abstract

This study adopts the concept of "concerted cultivation" (Lareau, 2011, 2002) to interpret how socioeconomic differentials in child rearing strategies generate unequal outcomes among children, 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 and reading activities and not the participation in organized activities more generally that enhances children's reading ability and the locus of control. Path analyses conducted on a large cohort sample (British Cohort Study 1970) 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 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 stronger than that of parental socioeconomic characteristics

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1 Introduction

The persistent or even increasing impact of parental socioeconomic background on children's outcomes over the last decades has been consistently documented (Jonsson et al., 2009; von Stumm et al., 2009; Shavit et al., 2007; Blanden et al., 2006; Dronkers, 1993). However, the mechanisms through which socioeconomic background exerts its impact remain unclear. Drawing on Lareau's recent ethnographic research, this study uses the concept of concerted cultivation (2011; 2002) to interpret how socioeconomic disparities in child rearing strategies influence the child's reading ability and the locus of control. The concept is intended as a modern conceptualization of cultural capital (Bourdieu and Passeron, 1990 (Or. Fr. 1970; Bourdieu, 1984). More specifically, it offers a framework for theoretical conceptualization and empirical operationalization within a research tradition that studies the transmission of inequality over generations by focusing on the uneven capacity of parents to foster their children's abilities (Bowles and Gintis, 2002; Entwisle et al., 1997; Erikson and Jonsson, 1996; Bourdieu and Passeron, 1990 (Or. Fr. 1970; Bourdieu, 1984; Bowles and Gintis, 1976). 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 strategies 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; and (3) interactions with social institutions. This study 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 background and children's abilities (Cunha and Heckman, 2009; Durham et al., 2007; Beron and Farkas, 2004; Farkas, 2003; Jencks and Phillips, 1998). An important endeavor in the study of life-course mechanisms underlying such a link has been made by Lareau (2011; 2002). She argues that parents' views of what their children need in order to thrive are stratified by socioeconomic background and lead families to engage in differential patterns of child rearing styles, which, in turn, result in unequal outcomes among children. 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 is supported by the cultural reproduction tradition in the research (Bourdieu and Passeron, 1990 (Or. Fr. 1970; Bourdieu, 1984). From the cultural reproduction perspective, high class groups are in possession of a legitimized cultural capital in the form of a beaux arts 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 of beaux arts activities, will experience school as a hostile environment and attain worse results, while children with an upper class background experience school as a natural ex-

tension of the family environment and achieve better results (Kalmijn and Kraaykamp, 1996; Bourdieu and Passeron, 1990 (Or. Fr. 1970).

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 tend to be more responsive to the child's feelings and take into considerations his/her opinions and needs for explanations (Durham et al., 2007; Beron and Farkas, 2004; Bernstein, 1977; Kerckhoff, 1972). Lareau confirms that parents taking a concerted cultivation approach use more elaborate language with their children and pay attention to the child's view when talking to him/her. 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 two years of age. Since vocabulary test scores correlate with general ability, higher class children have an early advantage over working class children in elementary school performance, which is a significant predictor of educational success (Cheadle, 2008; Duncan et al., 2007; Durham et al., 2007; Beron and Farkas, 2004; Walker et al., 1994).

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 a 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 they can interact and ask questions. Instead, the natural growth strategy, encourages the child to develop a sense of constraint, which is reflected in deferential and passive interaction with the school and professionals. Kohn showed that parental ranking of the attributes they want most to instill in their children are cast along a continuum, with conformity and self-direction at the two extremes (Kohn, 1976, 1963). 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 (2002; 1976) related socialization styles 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.

The concept of sense of entitlement/constraint is related to the locus of control's one, which was developed by psychologists to indicate the degree to which an individual perceives himself/herself as able to decide over and manage his/her destiny (Rotter, 1966). Some students may believe that their actions, such as homework, produce the rewards that follow their efforts, while others perceive that their successes and failures are outside their influence and are determined by discretionary forces such as luck or unfair treatment by teachers. Such pupils, who believe they have little control over their achievements, have little reason to modify their behavior in an attempt to improve their achievements and will thereby attain lower educational outcomes. By contrast, pupils who internalize responsibility (internal locus of control) are more likely to conform to the school's norms and to play an active and responsible role in school. They are also more likely to be critical, assertive and consciously evaluating, similarly to the Lareau's notion of sense of entitlement. For this reason, the locus of control is used as a dependent factor in the analysis.

The other reason for using the locus of control is its relevance for educational attainment. Internals, by virtue of their sense of worth and perseverance, provide better responses and coping strategies to cope with demanding situations. They are more willing to delay rewards in order to maximize them, prefer to perform in skill rather than in chance situations, tend to respond to external pressures analyzing carefully available information and then improve either circumstances or themselves. Many studies have confirmed the importance of the locus of control as a determinant of socioeconomic success (von Stumm et al., 2009; Blanden et al., 2006; Groves, 2005; Wang et al., 1999; Andrisani and Nestel, 1976). In the context of education, a positive correlation is established between an internal locus of control, and academic performance and aspiration behavior (Crandall et al., 1965; Findley and Cooper, 1983).

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. The general concept of family socioeconomic background is defined by three distinct dimensions – parental education and level of parental economic resources and social class. The aspects of family background that might influence children's educaitonal choices and outcomes are diverse, ranging from cultural resources, to pedagogical approach, to wealth, and the use of multiple indicators aims at capturing the varying impact of the different sorts of family resources. This said, it can be expected that the educational and cultural resources are more important than economic ones. First, I assess the hypothesis that parent-child cultivation is related to parental socioeconomic background, as indicated by highest parental educational level, economic resources and social class.

- H1 – Parental socioeconomic background is positively associated with parent-child cultivation

The dimensions of parent-child cultivation are split into two levels: parenting styles, including parental expectations, direct stimulation and interactions with school, and the child's engagement in leisure activities, namely cognitively stimulating activities and participation in organized leisure activities. Higher status parents are expected to engage their children more in leisure activities by means of a set of stimulating parenting styles. This implies that high socioeconomic background alone is not enough to account for the child's achievements and should be associated with actual parental styles in order to generate beneficial outcomes. The effect of socioeconomic background on the child's engagement in activities is assumed to be indirectly exerted via parenting styles. Once the child's engagement is taken into account, no significant direct relationship between parenting and the child's abilities is expected to be found. It is not clear, however, whether any of the parenting dimensions is more associated with either the child's participation in cognitively stimulating activities or organized activities in general. Both parental expectations, direct stimulation and interactions with school might generate positive consequences on the two kinds of activities carried out by the child. Therefore, the first hypothesis contends, more precisely, that parental educational level and economic resources are positively associated with parenting styles in the broader concept of parent-child cultivation.

Parental expectations are a strong background factor influencing children's educational success. 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 just as they want schools to enhance their 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 has an impact on educational and occupational outcomes (Hauser et al., 1983; Jencks et al., 1983; Sewell and Hauser, 1980). 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 in 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, 1990 (Or. Fr. 1970), 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 their abilities. The cognitive stimulation experienced at home is a significant explanatory factor for disparities in children's motivations/aspirations and academic achievements (Damme and Opdenakker, 2005; Luster et al., 2004; Bradley and Corwyn, 1999; Gottfried et al., 1994, 1998). 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 (Duncan et al., 2007; Farkas, 2003).

Another dimension of parent-child cultivation is the parents' interaction with the school. Lareau documented that parents following the cultivation pattern tend to interact with social institutions, such as schools, for the child's sake and train the child to interact and discuss with the teacher. Parents adhering to the cultivation pattern tend to interact more frequently with teachers, to participate in parent-teacher conferences, and to attend school events and volunteer at school. 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, thus, comprises only five of the six dimensions ascribed to the construct. 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. 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. Following Lareau's theoretical perspective and drawing on large datasets using statistical techniques, Cheadle (2008) and Bodovski and Farkas (2008) partially corroborated the hypothesis that concerted cultivation accounts for differences in achievements between children from different socioeconomic backgrounds.

However, accounts of 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 that is 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 with 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 strategies 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 (De Graaf et al., 2000; Crook, 1997). 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 and reading behavior, more than participation in the arts affects the child's educational outcomes.

In line with this strand of research and in reaction to current operationalizations of parent-child cultivation centered on the concerted participation in organized activities, this project 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. The selected leisure activities that are thought to stimulate children's cognition are reading, playing a musical instrument, going to museum/galleries, and library visits. Reading habits are constitutive of the definition of cognitively stimulating activities, but they are also included as a stand-alone factor, since they might have a significant effect on the child's outcomes independently from other cognitive leisure activities.

- 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 longitudinal control is introduced to evaluate whether the association between parental involvement and the child's achievements is not genuine but merely due to a previous developmental advantage, influencing both parental behavior and child's later outcomes. Parents may start developing plans and making investments in their children's education only as a consequence of the children's performance in early childhood. In order to control for the distortion owing to the association between the level of parental cultivation and the previous level of developmental trait, I design a linear longitudinal model in which the outcome trait is regressed on both the previous developmental level and on parental cultivation. By virtue of this procedure, the effect of parental

cultivation on a child's attitudinal and cognitive outcomes is controlled for the advantage to begin with.

The last hypothesis seeks to confirm that differences in child rearing approaches, as defined by the dimensions of parent-child cultivation, mediate socioeconomic differences in cognitive and attitudinal outcomes. If this hypothesis is correct, results will show that the relationship between parental educational level and economic resources on the one hand and children's reading ability and the locus of control on the other is exerted mainly indirectly by parent-child cultivation, and that direct effect from parental educational level and economic resources to children's reading ability and the locus of control is non-significant.

- H3 – Parent-child cultivation mediates the positive effects of parental socioeconomic background on the locus of control and reading ability.

Parent-child cultivation is only one of the several family background factors that contribute to ability formation, whose omission might lead to the overestimation of the effect of parent-child cultivation on children's abilities. Intact/disrupted family type and ethnic origin are introduced as control factors. Inadequate cultivation or harmful parenting might result, in fact, from the partial loss of parental support which often accompanies family disruption. Additionally, the lower levels of cultural and social capital showed by immigrant parents might result in inadequate parental cultivation, which in turn might account at least partly for the delays and disadvantages accumulated by immigrant children. Such factors are not introduced as antecedents of parent-child cultivation but only as concurrent factors because studying the ways in which parent-child cultivation mediate the impact of children's family type and ethnic origin is beyond this study's focus. However, it is plausible that such background factors provide an additional explanation of children's outcomes in respect to parent-child cultivation, and they are thus included as explanatory control factors for children's outcomes.

Moreover, it will be analyzed whether the child's participation in leisure activities is more beneficial for children from service class backgrounds than for children from working class backgrounds, which are are neatly distinct in Lareau's perspective in their child-rearing styles. Two main functions of concerted cultivation can be postulated – a disequalizing-reproduction one and an equalizing-mobility one (DiMaggio, 1982). Lareau's perspective might be interpreted in the light of a reproduction hypothesis. Children from a

higher class background, in fact, can rely on higher parental cultural capital resources to transform the stimuli deriving from leisure activities into higher educational outcomes and abilities. The parental guidance provided by upper-class parents can help the child choosing a highly stimulating activity and the best way for doing it. The child, hence, can complement the stimuli received by the child during leisure activities with further explanations and stimuli that augment the benefits of the leisure activities. Furthermore, pupils who are engaged in cultivating cultural activities tend to interact more with teachers in an entitled and informed way, and consequently may receive from teachers a special attention and guidance and be perceived as abler. By contrast, the function of parent-child cultivation can be a mobility/equalizing one. According to this hypothesis, families are not necessarily bounded to the status culture that would be appropriate for their social class, but draw on the repertoire of cultures according to their preferences and plans. Given that cultural activities are only partly determined by the social class of origin, the participation in cultural leisure activities can be a useful means for lower class ambitious children to ascend the social stratification in relation to their parents' position.

4 Modeling strategy

The specification of the model derived from the theoretical perspective includes both direct and indirect effects. The main indirect effects are from parental educational level and economic resources to child's reading ability and the locus of control through the mediation of parent-child cultivation. It is also expected that parenting exerts its impact on a child's reading ability and the locus of control through the mediation of a child's engagement in leisure activities. A child's outcomes are directly influenced only by its participation in leisure activities, and parental educational level, economic resources and parenting styles are expected to have non-significant direct effects on the child's abilities once the child's participation in leisure activities is considered.

In order to test the tenability of the theorized model, path analysis will be used for its ability to decompose the relationships among variables in their direct and indirect components. Exogenous variables are assumed to be measured without measurement error, while endogenous variables are associated with a measurement term that is left free to vary. The model is a

recursive model, that is, measurement errors are uncorrelated and all causal effect are unidirectional. The residuals of any pair of endogenous variables are presumed to be uncorrelated, corresponding to the assumption that they do not share a common omitted cause. Furthermore, it is assumed, as in most path analysis, no association between exogenous variables and residuals of endogenous variables, implying the assumption of the absence of an omitted variable that causes both exogenous and endogenous variables. This assumption, is an in most applications of path analysis, is probably violated and the seriousness of this violation increases with the magnitude of the association between omitted variables and observed variables. This implies that the specification of an accurate model is of utmost importance (Kline, 2010).

The following equations will be simultaneously estimated to validate the proposed model:

- Parental educational expectations age 10 = parental education age 5 + parental social class age 5 + economic resources age 10 + error
- Interactions with school age 10 = parental education age 5 + parental social class age 5 + economic resources age 10 + error
- Direct stimulation age 5 = parental education age 5 + parental social class age 5 + economic resources age 10 + error
- Organized leisure activities age 16 = parental education age 5 + interactions with school age 10 + direct stimulation age 5 + error
- Cognitive leisure activities age 16 = parental educational expectations age 10 + interactions with school age 10 + direct stimulation age 5 + error
- Reading leisure activities age 16 = parental educational expectations age 10 + interactions with school age 10 + direct stimulation age 5 + error
- Locus of control age 16 = Organized leisure activities age 16 + Cognitive leisure activities age 16 + Reading leisure activities age 16 + locus of control age 10 + ethnic origin age 10 + family type age 10 + error
- Reading ability age 16 = Organized leisure activities age 16 + Cognitive leisure activities age 16 + Reading leisure activities age 16 + reading ability age 10 + ethnic origin age 10 + family type age 10 + error

The above hypothesized relationships are centered on the role of parent-child cultivation as mediating factor of the effect of parental educational level and economic resources on child's reading ability and the locus of control. This perspective is assessed versus the hypothesis that parent-child cultivation does not account for such an effect, that is, there still exists a direct relationship between parental educational level and economic resources and the child's outcomes.

5 Data

I use a longitudinal, uniquely rich dataset, the British Cohort Study 1970 (BCS70), which has collected information from a sample of 17200 individuals in the birth wave, all of whom were born in England, Scotland, Wales and Northern Ireland in one particular week in April 1970. [1] Individuals from Northern Ireland were dropped from all the subsequent surveys. Data have been collected on births and families. In the five-year and ten-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 broadened to include 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 percent of the 16461 estimated to be eligible. At age 10 the achieved sample was 14875 individuals, i.e. 92 percent 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 percent of the 16000 estimated to be eligible.

The sub-samples are derived from a more general sample consisting 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. Information on the locus of control and reading ability at age 16 are available for 6003 cohort members (plus 12688 missing values) and only a few of these cases have complete values on all variables. [2] Missing values

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

[2] During the sixteen-year follow-up, a teacher's strike at the time of collecting data has

are treated in the framework of maximum likelihood information. Estimates obtained by treating missing values are compared to estimates obtained with complete data (after listwise deletion of missing values).

6 Concepts and variables

6.1 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 criterion of operationalization is the following: when the variables selected to define a given trait are interval variables that 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. [3] 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 scores generated can be used in turn 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.

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reduced the sample size. Some children in the BCS70 data were not tested. It can be suspected that strike action did not take place randomly and some types of schools would have been more prone to strike action than others. For this reason, some researchers preferred not to use age 16 data (Feinstein, 2004). Others have argued that the strike did not affect the socio-demographic characteristics of the sample (Shepherd, 1997; Schoon and Parsons, 2002). Even in the case of a strike action not randomly distributed among schools, however, it can be expected that the factors causing strike action and thereby missing cases are related to socio-demographic factors known from previous surveys, so that MAR-based techniques of imputation can be applied to this kind of missing cases.

[3] MCA is performed using STATA 11 after list-wise deletion of missing values

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Parental class age 5	-4.235	1.108	-6	-1	12357
Economic resources age 10	0.022	1.051	-2.739	1.797	13696
Parental education age 5	15.673	1.406	1	27	13075
Direct simulation age 5	4.29	2.594	0	7	12560
Interactions with school age 10	6.633	1.299	2	8	11275
Parental educational expectations age 10	2.192	1.156	1	4	12758
Reading ability age 10	40.238	12.672	1	65	11640
Locus of control age 10	10.071	3.412	0	20	12699
Reading leisure activities age 16	7.829	2.599	3	12	6003
Cognitive leisure activities age 16	12.026	3.358	6	24	6003
Organized leisure activities age 16	7.077	2.213	5	20	6003
Reading ability age 16	39.974	14.969	0	74	6003
Locus of control age 16	11.941	5.019	0	23	6003

Table 2: Correlations among variables

	(1)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Parental highest social class age 5(1)	1												
Economic resources age 10 (2)	0.213***	1											
Parental highest educational level age 5 (3)	0.289***	0.317***	1										
Direct stimulation age 5 (4)	0.148***	0.238***	0.232***	1									
Parental educational expectations age 10 (5)	0.230***	0.327***	0.366***	0.257***	1								
Interactions with school age 10 (6)	0.128***	0.330***	0.263***	0.226***	0.334***	1							
Reading ability age 10 (7)	0.154***	0.291***	0.286***	0.259***	0.445***	0.385***	1						
Locus of control age 10 (8)	0.0671***	0.133***	0.129***	0.131***	0.247***	0.210***	0.351***	1					
Cognitive leisure activities age 16 (9)	0.0850***	0.134***	0.136***	0.159***	0.220***	0.146***	0.265***	0.161***	1				
Organized leisure activities age 16 (10)	0.0530***	0.102***	0.0897***	0.0714***	0.130***	0.0886***	0.0696***	0.110***	0.302***	1			
Reading leisure activities age 16 (11)	0.0579***	0.109***	0.0984***	0.136***	0.171***	0.123***	0.233***	0.132***	0.895***	0.187***	1		
Locus of control age 16 (12)	0.0820***	0.170***	0.145***	0.151***	0.233***	0.200***	0.302***	0.238***	0.483***	0.265***	0.467***	1	
Reading ability age 16 (13)	0.142***	0.209***	0.224***	0.229***	0.324***	0.279***	0.481***	0.229***	0.378***	0.119***	0.358***	0.435***	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Categorical variables: frequencies and percentages

Family income age 10				
		Freq.	Percent	Valid
	Under 35 pw	217	1.16	1.73
	Between 35 and 49 pw	676	3.62	5.39
	Between 50 and 99 pw	3775	20.2	30.1
	Between 100 and 149 pw	4294	22.97	34.24
	Between 150 and 199 pw	2053	10.98	16.37
	Between 200 and 249 pw	776	4.15	6.19
	250 or more pw	750	4.01	5.98
	Total	12541	67.1	100
Missing		3745	23.00	
Total		16286	100	
Family benefits age 10				
	No benefits	8316	44.49	72.74
	Benefits	3117	16.68	27.26
	Total	11433	61.17	100
Missing		4853	29.80	
Total		16286	100	
Ownership of the house age 10				
	Renting	5267	28.18	38.71
	Ownership	8340	44.62	61.29
	Total	13607	72.8	100
Missing		2679	16.45	
Total		16286	100	
Family type age 10				
	Intact family	11074	68.00	68.00
	Ever disrupted family	2385	14.64	82.64
	Total	13607	82.64	100
Missing		2827	17.36	
Total		16286	100	
Ethnic origin age 10				
	English	11356	69.73	69.73
	Non-english	1258	7.72	77.45
	Total	12614	77.45	100
Missing		3672	22.55	
Total		16286	100	

6.1.1 Parental socioeconomic background

Parental socioeconomic background is defined by three distinct constructs: parental educational level, economic resources and social class. The highest parental educational level is the highest number of years of education attained by parents derived from questions administered to parents from the 5-year-old wave. When information regarding one of the parents is missing, the other parent's educational level is used. The decision to select data from the 5-year-old survey is motivated by two reasons. It guarantees the most complete information in the BCS70 compared with later indicators which suffer from cumulative attrition. Second, 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. In the BCS70 parents' social class was composed using the Registrar General's indicator of social class, which combines information regarding current/last occupation, education and prestige (Leete and Fox, 1977). It is coded on a 6-point scale, ranging from professional (1) to unskilled (6). For ease of interpretation the scale has been reversed so that higher values indicate higher social class positions. I use the highest of the parental class positions from the 5-year-old survey. When information regarding one of the parents is missing, information on the other parent's social class is used. Economic resources are a composite indicator comprising family income (under 35 pounds per week (pw), between 35 and 49 pw, between 50 and 99 pw, between 100 and 149 pw, between 150 and 199 pw, between 200 and 249 pw, 250 or more pw), receipt of benefits, with the exclusion of pensions and child benefits, (versus not in receipt of any benefits), and ownership of the house (house owned or being bought versus rented), 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. It is not possible to theorize a priori how the categories of the selected variables are distributed along the dimension of economic resources. For example it is difficult to establish how important, for the definition of economic resources, ownership of a house is in relation to the receipt of benefits. In order to empirically assess the relative importance of the different categories of the three selected variables, I have applied a multiple correspondence analysis.

The first dimension captures 93% of the total inertia and shows an ac-

Table 4: Multiple correspondence analysis of economic resources

Economic resources							
		Inertia	Percent			Contribution (1st dimension)	Coordinate (1st dimension)
Dimensions	1	0.1054	92.6	Benefits	Benefits	0.240	1.797
	2	0.0009	0.8		No benefits	0.069	-0.515
	3	...[a]	...	Ownership of the house	Renting	0.186	1.189
Total		0.1138	100		Ownership	0.121	-0.775
				Income	Under 35 pw[b]	0.038	2.746
					Between 35 and 49 pw	0.135	2.950
					Between 50 and 99 pw	0.071	0.846
					Between 100 and 149 pw	0.011	-0.310
					Between 150 and 199 pw	0.043	-0.880
					Between 200 and 249 pw	0.034	-1.262
					250 or more pw	0.052	-1.624

[a] Remaining dimensions provide a negligible contribution
[b] Pounds per week

ceptable level of internal consistency (Cronbach's Alpha = .64). The other dimensions are progressively less important (the second accounts for only 0.8% of the total inertia and so on). The first dimension is therefore chosen to represent the concept of economic resources. It can be conceptualized as a continuum. One extreme is represented by the receipt of benefits (contribution = 0.24, coordinate = 1.797), house rental (contribution = 0.186, coordinate = 1.189) and earning an income between 50 and 99 pw (contribution = 0.135, coordinate = 2.95), whilst the lowest income group provides a minor contribution (0.038, coordinate = 2.746); the other extreme is represented by ownership of the house (contribution = 0.121, coordinate = -0.775), not receiving benefits (contribution = 0.069, coordinate = -0.515), being in the highest income group 250 or more pw, (contribution = 0.052, coordinate = -1.624). Intermediate values are represented by the income categories between 50 and 99 pw (contribution = 0.071, coordinate = 0.846), between 100 and 149 pw (contribution = 0.011, coordinate = -0.31), between 150 and 199 pw (contribution = 0.043, coordinate = -0.880), between 200 and 249 pw (0.034, coordinate = -1.262). For ease of interpretation, it has been transformed into its negative reciprocal so that high values represent greater economic resources (standardized scores).

6.1.2 Parenting styles

Parenting styles are defined by three distinct constructs: interactions with school, parental educational expectations and direct stimulation Interactions with school is operationalized as the additive index of both parents' interest in the child's education as perceived by the teacher. Responses derive from the 10-year-old sweep and are provided on a four-ladder-scale, ranging from very

interested (4), moderately interested/cannot say (3), very little interested (2), to uninterested (1). Direct stimulation is operationalized using mothers' responses in the 5-year-old sweep to the question concerning the frequency of reading to the child in the past week. Helping with homework is another candidate for completing the definition of direct parental stimulation. Such information is, however, available only from the 16-year-old survey. Combining information from two different developmental stages is likely to generate a fallacious synthesis of elements with different meaning. Reading to the child prior to school entry indicates an interest in the child's development from the early years of life, while helping with homework measured at age 16 is, at least partly, correlated to the child's school achievements. Parental educational expectations are operationalized as the expected age the child will leave school reported during the 10-year-old survey. They vary from 16-years-old (1), 17-years-old (2), 18-years-old (3), and university (4).

6.1.3 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. Ethnic origin is assumed to be an exogenous factor and thereby it is not associated with any measurement error.

6.1.4 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. Family type is assumed to be an exogenous factor and thereby it is not associated with any measurement error.

6.1.5 Participation in leisure activities

The considered leisure activities are organized leisure activities, cognitive leisure activities, and reading 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/not stated to more than once a week.

Engagement in cognitively stimulating activities is an additive index of frequency of reading comics/magazines, newspapers, books, playing a musical instrument, going to museum/galleries, and library visits. At age 16 cohort members reported a frequency of the mentioned activities along a 4-ladder scale from rarely/not stated to more-than-once-a-week. The reading leisure activities construct is created using the items of cognitively stimulating activities that refer to reading, such as reading comics/magazines, newspapers, and books.

6.1.6 Reading ability

The reading ability of ten-year old pupils has been operationalized using scores of a shortened version of the Edinburgh reading test (Hodder and Stoughton, 1979). At age 10 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. The test is designed to avoid large amounts of left censoring due to poor reading and it turns out not to be heavily right or left censored (Butler et al., 1982).

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). An additive index of the correct answers is computed.

6.1.7 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)). Pupils were asked to declare their agreement, disagreement or uncertainty in respect of several statements. The Caraloc test closely mirrors the locus of control test 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 0.7 for both the 10-year-old and 16-year-old data. The construct is operationalized by summing up the responses

revealing internal control.

7 Results

The chain of hypothesized mechanisms relate the level of socioeconomic background to parenting, parenting to child's leisure activities, child's leisure activities to child's locus of control and reading ability. The empirical analysis is conducted using a bottom-up procedure where subsequent levels are progressively added. At each stage, factors at the previous level are expected to impact factors at the subsequent level. This assumption is controlled by adding a direct path relating the two levels whose relationship is expected to be mediated by an intermediate level. If this path turns out to be non-significant, then the mediating function of the intermediate level is confirmed. The variables providing a non-significant contribution to the model are eliminated backward, one at a time (choosing the one with the largest P-value in the significance test for its effect, i.e., the one that is the least significant), until all remaining variables provide a significant contribution to explaining the outcome variable ($p < 0.05$). Path analysis is performed using the package STATA 12 in the framework of full-information maximum likelihood approach which is confirmed to be the most effective for path analysis with incomplete data (Schafer and Graham, 2002).

Reaching a statistical model containing only statistically significant paths ($p > 0.05$) will be the dominant criterion for model modification. Goodness-of-fit indexes are also provided. For statistical inference, only the Chi-square test is available. [4] The Akaike Information Criterion is used to compare any competing models, nested or not. The Tucker-Lewis Index (TLI) is another recommended index to reporting the relative fit. It compares the chi-square for the tested model to the one from the so-called null model (the one in which all measured variables are uncorrelated) and values equal to or larger than 0.95 are used as a conventional cutoff for model acceptance. Noncentrality-based indexes include the Root Mean Square Error of Approximation (RMSEA) and the comparative fit index (CFI), which derive from a

[4] It is the only one which is associated with a significance test. Values of the Chi-square index of goodness of fit are oversensitive to misspecification and deviations from multivariate normality when using large samples. Thereby they are likely to indicate that the hypothesized model apparently does not fit the data (significant values). Hence, chi-square values are not sufficient for model rejection (Joreskog, 1969)

function of chi-square, N and df. RMSEA is interpreted as a standardized difference between the observed covariance and predicted covariance, wherein values of .05 or less indicate a good fit. RMSEA is not recommended for model comparison. CFI values represent the percentage of covariation in data that can be reproduced by the tested model so that values larger than 0.9 document a good fit. CFI can be used to compare nested models, although it should be kept in mind that it penalizes model complexity (adding new parameters). When it is less than one, then it is always greater than the TLI. CFI is one of the indexes most often used for comparison of nested models (Chen et al., 2008; Fan and Sivo, 2007; Hu and Bentler, 1998). The results from the final model are reported both with treatment of missing values and after deleting list-wise missing values (complete data) to assess whether the analysis performed under the assumption of missing-at-random data gives similar estimates to analyzing the complete data.

Table 5: Mean participation in leisure activities by social class of origin (Sd in parentheses)

	Working class	Service class
Organized leisure activities	6.851	7.296
	(2.219)	(2.25)
Cognitive leisure activities	11.690	12.520
	(3.352)	(3.32)
Reading leisure activities	7.688	8.083
	(2.672)	(2.503)
N. of cases	523	557

The analysis consists of two parts. The first explores the relationships between parental socioeconomic background factors, parenting styles and the child's leisure activities (tab. 6). The second adds locus of control and reading ability as dependent factors of the child's leisure activities at age 16 (tab. 7, tab. 8). Before exploring the hypotheses, the correlations between factors of parent-child cultivation are inspected in order to ascertain whether they define a single construct or, as expected, whether they constitute different but related constructs. An assessment of the strength of the correlations among the factors of parent-child cultivation does not alert us to possible occurrence of collinearity among variables and suggests instead that such factors constitute different constructs and cannot be subsumed under

Table 6: Path models of parent-child cultivation, Betas (std. errrors)

	M 1	M 2	Nested models M 3	M 4	M 5	M 6	M 7	M 8	M 9	M 10	M 11
Dep. Variable: Direct simulation age 5											
Parental class age 5	0.064***	0.064***	0.065***	0.065***	0.065***	0.065***	0.065***	0.064***	0.064***	0.064***	0.064***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic resources age 10	0.180***	0.180***	0.180***	0.180***	0.180***	0.180***	0.180***	0.180***	0.180***	0.180***	0.180***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parental education age 5	0.154***	0.155***	0.155***	0.155***	0.155***	0.155***	0.155***	0.155***	0.155***	0.155***	0.155***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	0.174	0.162	0.161	0.161	0.161	0.160	0.161	0.161	0.161	0.161	0.162
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Dep. Variable: Interactions with school age 10											
Parental class age 5	0.023*	0.023*	0.023*	0.023*	0.023*	0.023*	0.023*	0.023*	0.023*	0.023*	0.023*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic resources age 10	0.285***	0.285***	0.285***	0.285***	0.285***	0.285***	0.285***	0.285***	0.285***	0.285***	0.285***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parental education age 5	0.191***	0.191***	0.191***	0.191***	0.191***	0.191***	0.191***	0.191***	0.191***	0.191***	0.191***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	3.007***	2.998***	3.000***	3.000***	3.001***	3.001***	2.999***	2.999***	2.999***	2.997***	2.997***
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
Dep. Variable: Parental educational expectations age 10											
Parental class age 5	0.102***	0.101***	0.101***	0.101***	0.101***	0.101***	0.101***	0.101***	0.101***	0.101***	0.101***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic resources age 10	0.216***	0.216***	0.217***	0.217***	0.217***	0.217***	0.217***	0.217***	0.217***	0.217***	0.217***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parental education age 5	0.282***	0.281***	0.281***	0.281***	0.281***	0.281***	0.281***	0.281***	0.281***	0.281***	0.281***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	-0.864***	-0.854***	-0.853***	-0.853***	-0.853***	-0.853***	-0.854***	-0.853***	-0.854***	-0.854***	-0.854***
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Dep. Variable: Organized leisure activities age 16											
Direct simulation age 5		0.046**	0.035*	0.036*	0.036*	0.036*	0.036*	0.036*	0.036*	0.038*	0.038*
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Interactions with school age 10		0.076***	0.056**	0.056**	0.056**	0.056**	0.056**	0.056**	0.057**	0.061***	0.062***
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental educational expectations age 10		0.111***	0.094***	0.094***	0.094***	0.094***	0.095***	0.095***	0.095***	0.101***	0.101***
		(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental class age 5			0.006								
			(0.02)								
Economic resources age 10			0.045**	0.046**	0.046**	0.046**	0.046**	0.046**	0.045**	0.049**	0.048**
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental education age 5			0.021	0.022	0.022	0.022	0.021	0.021	0.021		
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)		
Constant		2.502***	2.439***	2.402***	2.401***	2.401***	2.408***	2.410***	2.406***	2.604***	2.598***
		(0.09)	(0.20)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.09)	(0.09)
Dep. Variable: Reading leisure activities age 16											
Direct simulation age 5		0.121***	0.117***	0.117***	0.117***	0.117***	0.117***	0.117***	0.121***	0.120***	0.121***
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Interactions with school age 10		0.105***	0.096***	0.095***	0.095***	0.095***	0.095***	0.095***	0.102***	0.103***	0.104***
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental educational expectations age 10		0.148***	0.144***	0.143***	0.144***	0.144***	0.144***	0.144***	0.148***	0.148***	0.148***
		(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parental class age 5			0.007	0.007	0.006						
			(0.02)	(0.02)	(0.02)						
Economic resources age 10			0.021	0.021	0.020	0.021	0.021	0.021			
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)			
Parental education age 5			-0.004	-0.004							
			(0.02)	(0.02)							
Constant		1.963***	2.093***	2.091***	2.050***	2.025***	2.022***	2.022***	1.975***	1.974***	1.966***
		(0.09)	(0.20)	(0.20)	(0.12)	(0.10)	(0.10)	(0.10)	(0.09)	(0.09)	(0.09)
Dep. Variable: Cognitive leisure activities age 16											
Direct simulation age 5		0.130***	0.123***	0.123***	0.123***	0.123***	0.124***	0.125***	0.126***	0.126***	0.130***
		(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Interactions with school age 10		0.115***	0.100***	0.100***	0.100***	0.100***	0.103***	0.103***	0.105***	0.106***	0.114***
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental educational expectations age 10		0.188***	0.175***	0.176***	0.175***	0.176***	0.179***	0.182***	0.182***	0.183***	0.188***
		(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parental class age 5			0.017	0.016	0.016	0.015	0.017				
			(0.02)	(0.02)	(0.02)	(0.01)	(0.01)				
Economic resources age 10			0.024	0.024	0.024	0.024	0.026	0.029	0.026	0.026	
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	
Parental education age 5			0.012	0.012	0.013	0.013					
			(0.02)	(0.02)	(0.02)	(0.02)					
Constant		2.388***	2.419***	2.416***	2.409***	2.402***	2.537***	2.461***	2.447***	2.446***	2.392***
		(0.09)	(0.20)	(0.20)	(0.20)	(0.20)	(0.12)	(0.10)	(0.10)	(0.10)	(0.09)
N. of cases	15839	16026	16026	16026	16026	16026	16026	16026	16026	16026	16026
Chi-square	749.101***	10840.498***	10823.224***	10823.363***	10823.424***	10823.573***	10824.276***	10825.713***	10827.460***	10829.229***	10831.894***
Root mean squared error of approximation	0.125	0.212	0.335	0.311	0.290	0.274	0.260	0.248	0.237	0.228	0.220
Akaike's information criterion	253638.232	339489.904	339490.630	339488.769	339486.829	339484.978	339483.682	339483.119	339482.866	339482.635	339483.300
Bayesian information criterion	253776.296	339720.363	339790.226	339780.684	339771.062	339761.529	339752.551	339744.306	339736.371	339728.458	339721.441
Comparative fit index	0.874	0.355	0.356	0.356	0.356	0.356	0.356	0.356	0.356	0.356	0.356
Tucker-Lewis index	0.494	-0.418	-2.543	-2.037	-1.657	-1.362	-1.125	-0.932	-0.771	-0.635	-0.519

$*p < 0.05, **p < 0.01, ***p < 0.001$
Maximum likelihood estimation of missing values

Table 7: Path nested models of reading ability and locus of control at age 16. Betas (std. Errors). Continues on next table

	M 12	M 13	M 14	M 15	M 16	M 17	M 18	M 19	M 20	M 21	M 22	M 18 (list-wise)
Dep. variable: Direct simulation age 5												
Parental class age 5	0.065***	0.065***	0.065***	0.065***	0.065***	0.065***	0.065***	0.064***	0.064***	0.064***	0.064***	0.055**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Economic resources age 10	0.181***	0.181***	0.181***	0.181***	0.181***	0.181***	0.181***	0.181***	0.181***	0.181***	0.181***	0.164***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Parental education age 5	0.156***	0.156***	0.156***	0.156***	0.156***	0.156***	0.156***	0.157***	0.157***	0.157***	0.157***	0.174***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Constant	0.166	0.166	0.162	0.162	0.162	0.162	0.162	0.150	0.150	0.150	0.150	0.008
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.25)
Dep. variable: Interactions with school age 10												
Parental class age 5	0.027*	0.027*	0.027*	0.027*	0.027*	0.027*	0.027*	0.021*	0.021*	0.023*	0.023*	-0.002
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Economic resources age 10	0.286***	0.286***	0.286***	0.286***	0.286***	0.286***	0.286***	0.286***	0.286***	0.286***	0.286***	0.253***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Parental education age 5	0.201***	0.201***	0.201***	0.201***	0.201***	0.201***	0.201***	0.202***	0.202***	0.202***	0.202***	0.195***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Constant	2.916***	2.916***	2.914***	2.913***	2.911***	2.912***	2.912***	2.878***	2.878***	2.879***	2.879***	3.708***
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.26)
Dep. variable: Parental educational expectations age 10												
Parental class age 5	0.105***	0.105***	0.105***	0.105***	0.105***	0.105***	0.105***	0.113***	0.113***	0.112***	0.112***	0.079***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Economic resources age 10	0.214***	0.214***	0.215***	0.215***	0.214***	0.214***	0.215***	0.213***	0.213***	0.214***	0.214***	0.203***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Parental education age 5	0.288***	0.288***	0.288***	0.288***	0.288***	0.288***	0.288***	0.286***	0.286***	0.286***	0.286***	0.314***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Constant	-0.909***	-0.909***	-0.906***	-0.907***	-0.907***	-0.907***	-0.907***	-0.860***	-0.860***	-0.859***	-0.859***	-1.370***
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.23)
Dep. variable: Organized leisure activities age 16												
Direct simulation age 5	0.039*	0.039*	0.039*	0.039*	0.039*	0.039*	0.039*	0.039*	0.039*	0.040*	0.040*	0.049*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Interactions with school age 10	0.061***	0.061***	0.062***	0.062***	0.062***	0.062***	0.062***	0.062***	0.062***	0.062***	0.062***	0.043*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental educational expectations age 10	0.101***	0.101***	0.100***	0.100***	0.100***	0.100***	0.100***	0.100***	0.100***	0.100***	0.100***	0.094***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Economic resources age 10	0.048**	0.049**	0.048**	0.048**	0.048**	0.048**	0.048**	0.048**	0.048**	0.048**	0.048**	0.049*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Constant	2.601***	2.601***	2.597***	2.597***	2.597***	2.597***	2.597***	2.597***	2.597***	2.597***	2.597***	2.645***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.13)
Dep. variable: Reading leisure activities age 16												
Direct simulation age 5	0.122***	0.122***	0.123***	0.123***	0.123***	0.123***	0.123***	0.123***	0.123***	0.123***	0.123***	0.089***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Interactions with school age 10	0.104***	0.104***	0.105***	0.105***	0.105***	0.105***	0.105***	0.106***	0.106***	0.105***	0.105***	0.074***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental educational expectations age 10	0.148***	0.148***	0.145***	0.145***	0.145***	0.145***	0.145***	0.145***	0.145***	0.145***	0.145***	0.106***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Constant	1.967***	1.967***	1.964***	1.964***	1.964***	1.964***	1.964***	1.963***	1.963***	1.964***	1.964***	2.263***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.12)
Dep. variable: Cognitive leisure activities age 16												
Direct simulation age 5	0.132***	0.132***	0.132***	0.132***	0.132***	0.132***	0.132***	0.132***	0.132***	0.132***	0.132***	0.105***
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Interactions with school age 10	0.113***	0.113***	0.114***	0.114***	0.114***	0.114***	0.114***	0.114***	0.114***	0.114***	0.114***	0.087***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental educational expectations age 10	0.188***	0.188***	0.185***	0.185***	0.185***	0.185***	0.185***	0.185***	0.185***	0.185***	0.185***	0.149***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Constant	2.394***	2.394***	2.393***	2.394***	2.394***	2.394***	2.394***	2.393***	2.393***	2.393***	2.393***	2.639***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.12)

Table 8: Path nested models of reading ability and locus of control at age 16. Betas (std. Errors). Continued from previous table

	M 12	M 13	M 14	M 15	M 16	M 17	M 18	M 19	M 20	M 21	M 22	M 18 (list-wise)
Dep. variable: Reading ability age 16												
Organized leisure activities age 16	0.013											
	(0.01)											
Reading leisure activities age 16	0.104***	0.099***	0.114***	0.114***	0.114***	0.114***	0.114***	0.110***	0.110***	0.110***	0.110***	0.089*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Cognitive leisure activities age 16	0.191***	0.199***	0.151***	0.151***	0.151***	0.151***	0.151***	0.155***	0.155***	0.155***	0.155***	0.191***
	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Reading ability age 10	0.463***	0.462***	0.366***	0.366***	0.367***	0.367***	0.368***	0.367***	0.367***	0.367***	0.367***	0.359***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Direct simulation age 5			0.083***	0.083***	0.083***	0.083***	0.085***	0.083***	0.083***	0.083***	0.083***	0.087***
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Interactions with school age 10			0.096***	0.096***	0.097***	0.097***	0.100***	0.099***	0.099***	0.098***	0.099***	0.075***
			(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Parental educational expectations age 10			0.097***	0.097***	0.098***	0.098***	0.100***	0.103***	0.103***	0.103***	0.103***	0.072***
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Parental class age 5			0.026	0.026	0.027*	0.026*	0.028*	0.029*	0.029*	0.029*	0.029*	0.019
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Economic resources age 10			0.010	0.010	0.011	0.011						
			(0.01)	(0.01)	(0.01)	(0.01)						
Parental education age 5			0.006	0.006								
			(0.01)	(0.01)								
Ethnic origin age 10								-0.022	-0.022	-0.022	-0.021	
								(0.01)	(0.01)	(0.01)	(0.01)	
Family type age 10								0.006	0.005			
								(0.01)	(0.01)			
Constant	0.141*	0.168**	-0.177	-0.174	-0.114	-0.115	-0.132	-0.062	-0.061	-0.038	-0.041	-0.148
	(0.06)	(0.05)	(0.18)	(0.17)	(0.10)	(0.10)	(0.10)	(0.13)	(0.13)	(0.12)	(0.12)	(0.13)
R-squared	0.283	0.284	0.290	0.290	0.290	0.290	0.289	0.289	0.289	0.289	0.289	0.252
Dep. variable: Locus of control age 16												
Organized leisure activities age 16	0.153***	0.153***	0.140***	0.140***	0.140***	0.140***	0.140***	0.140***	0.140***	0.140***	0.140***	0.146***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Reading leisure activities age 16	0.257***	0.257***	0.258***	0.258***	0.258***	0.258***	0.258***	0.256***	0.256***	0.256***	0.257***	0.252***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Cognitive leisure activities age 16	0.212***	0.212***	0.170***	0.170***	0.170***	0.170***	0.170***	0.172***	0.172***	0.172***	0.170***	0.187***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Locus of control age 10	0.183***	0.183***	0.139***	0.139***	0.139***	0.139***	0.139***	0.138***	0.138***	0.138***	0.139***	0.142***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Direct simulation age 5			0.037**	0.037**	0.037**	0.038**	0.038**	0.037**	0.037**	0.037**	0.037**	0.037*
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Interactions with school age 10			0.085***	0.086***	0.086***	0.086***	0.086***	0.085***	0.085***	0.085***	0.086***	0.068***
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Parental educational expectations age 10			0.075***	0.077***	0.077***	0.078***	0.078***	0.079***	0.079***	0.079***	0.078***	0.073***
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Parental class age 5			0.006	0.007	0.007							
			(0.01)	(0.01)	(0.01)							
Economic resources age 10			0.044**	0.045**	0.045**	0.046**	0.046**	0.047**	0.046**	0.046**	0.046**	0.038*
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)
Parental education age 5			0.005									
			(0.01)									
Ethnic origin age 10								-0.010	-0.010	-0.010		
								(0.01)	(0.01)	(0.01)		
Family type age 10								0.004				
								(0.01)				
Constant	-0.042	-0.042	-0.442*	-0.388***	-0.388***	-0.419***	-0.421***	-0.393***	-0.380***	-0.380***	-0.420***	-0.387**
	(0.06)	(0.06)	(0.18)	(0.11)	(0.11)	(0.09)	(0.09)	(0.11)	(0.10)	(0.10)	(0.09)	(0.12)
R-squared	0.188	0.188	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.205
Variance reading ability age 16's error	0.717***	0.716***	0.710***	0.710***	0.710***	0.710***	0.711***	0.711***	0.711***	0.711***	0.711***	0.748***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Variance Locus of control age 16's errors	0.812***	0.812***	0.775***	0.775***	0.775***	0.775***	0.775***	0.775***	0.775***	0.775***	0.775***	0.795***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N. of cases	16087	16087	16087	16087	16087	16087	16087	16087	16087	16087	16087	2966
Chi-square	13861.489***	13862.757***	13523.686***	13523.824***	13524.005***	13524.285***	13524.833***	13929.122***	13929.204***	13828.181***	13828.713***	6169.740***
Root mean squared error of approximation	0.145	0.143	0.167	0.164	0.162	0.159	0.157	0.137	0.136	0.146	0.145	0.247
Akaike's information criterion	577643.717	577642.985	577331.914	577330.052	577328.233	577326.513	577325.061	593260.149	593258.231	582545.824	582544.356	177310.071
Bayesian information criterion	578028.006	578019.587	577816.117	577806.570	577797.064	577787.659	577778.522	593844.267	593834.664	583060.770	583051.616	177573.849
Comparative fit index	0.422	0.422	0.436	0.436	0.436	0.436	0.436	0.430	0.430	0.431	0.431	0.396
Tucker-Lewis index	0.042	0.065	-0.278	-0.237	-0.198	-0.162	-0.128	-0.042	-0.019	-0.081	-0.054	-0.207

$*p < 0.05, **p < 0.01, ***p < 0.001$
Maximum likelihood estimation of missing values
except model 18 (list-wise) that excludes missing values list-wise

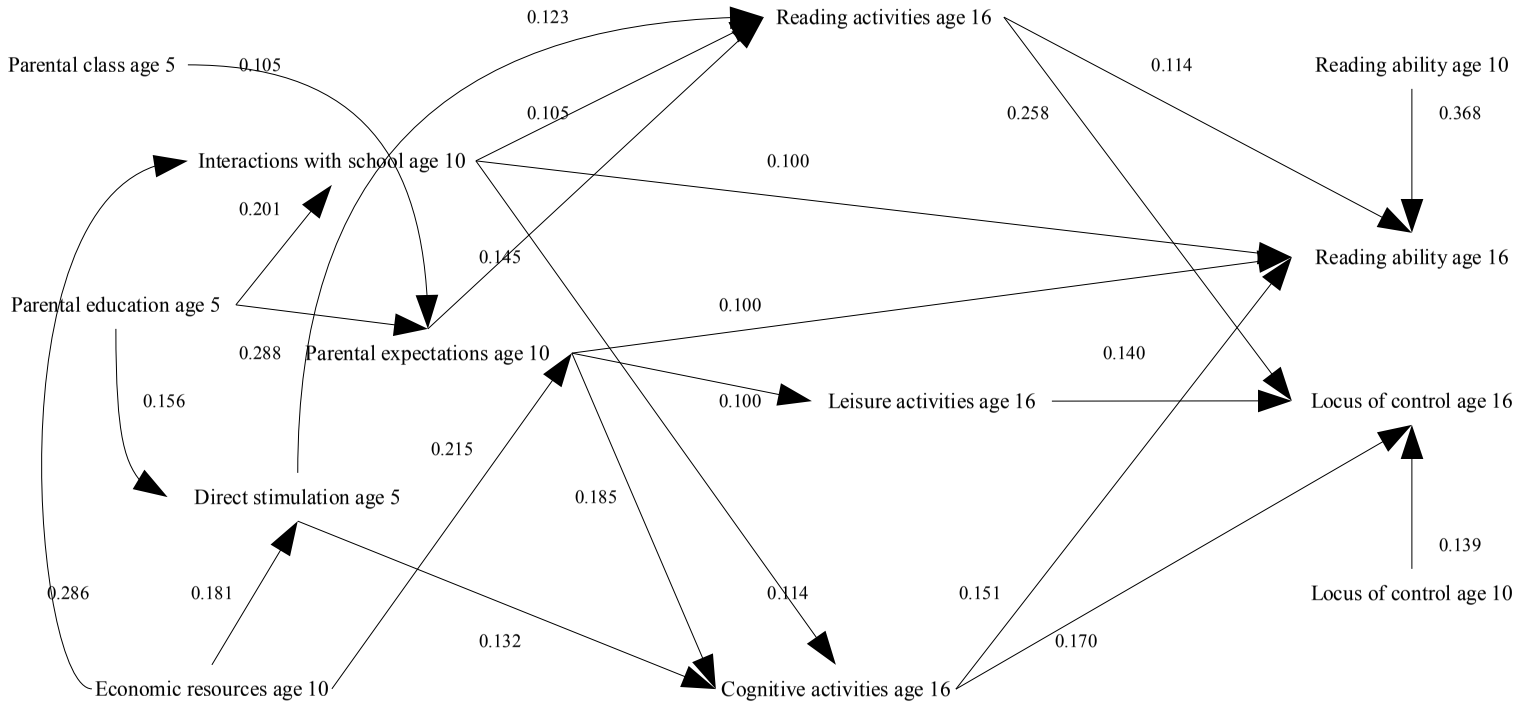

Figure 1: Preferred path model (18) of of reading ability and locus of control at age 16. Only betas greater than .09

the same category (tab. 2). The two groups of factors – parenting styles and the child's leisure activities – exhibit internal consistency as assessed by the magnitude of the within-group correlations is compared to the between-group correlations. Parental expectations, direct stimulation and interaction with school correlate with each other more than they do with the child's leisure activities. The same holds for child's leisure activities. A particularly strong correlation is found between cognitive leisure activities and reading activities (0.895). This is a consequence of the construction of reading activities that are defined using a sub-category of the variables used to define cognitive leisure activities. Apart from this expected strong correlation, the magnitude of other correlations is not large enough to suggest an underlying single factor and therefore factors are considered and treated as separate constructs, although they are regarded as aspects of the more general category of parent-child cultivation.

The first goal of the investigation is to show that the dimensions of parent-child cultivation are positively related to socioeconomic background (hypothesis 1). Socioeconomic background is expected to be related to parenting styles, which in turn determine the child's leisure activities. In Lareau's perspective, a clear distinction is made between the child-rearing approach of service class and working class families. The description of the mean frequencies of child's participation in organized activities by the social class of origin documents that children from a service class background participate more in leisure activities – either cognitive activities, reading, and organized activities – compared to children from a working class background [5]. The participation gap between those children from a service class background and children from a working class background do not seem to be large for each of the considered activities. Compared to children from a working class background (11.69), children from service class background are more engaged in cognitively stimulating activities (12.52), for example, by roughly one unit, which means that among the six types of activities considered, advantaged children participate more than once a week in a particular type of activities, while disadvantaged children participate only once a week in that particular type of activities (tab. 5). In comparing the participation differences in the three kind of activities between classes, it should be kept in mind that

[5]Service class corresponds to upper and lower managerial/professional occupations (combining categories 1 and 2), while working class corresponds to unskilled occupations in the Registrar index of social class

each type of activity is an additive index of a number of items that in case of organized activities is 5, in case of reading is 3, and in case of cognitive activities is 6, resulting in different ranges of variation of the corresponding variable. Hence, a 0.4 unit difference in case of reading activities is probably more relevant of a 0.45 unit difference in case of organized activities. Overall, the social class of origin does not seem to matter dramatically for the child's leisure activities. The concept of socioeconomic background is more nuanced than social class, and other dimensions should be included in its realm too. In the following path models, the power of social class in explaining differences in parent-child cultivation styles is validated in comparison to parental economic resources and parental education.

The hypothesized relationship between parenting styles and socioeconomic background is confirmed by the results presented in table 6 (Model 1): being a member of a higher socioeconomic position is reflected in higher levels of direct stimulation, expectations, and interactions with school. If one looks at components of family background, it can be seen that wealthier parents tend to stimulate more their children (0.180 standard deviations (SD)), to interact more with their teachers (0.285 SD), and to express more ambitious expectations (0.216 SD), as well as more educated parents (respectively 0.154 SD, 0.191 SD, and 0.282 SD)). Being a member of a upper class improves significantly the the parents' child rearing approach, although to a relatively minor extent. In particular the social class increases expectations by 0.102 SD, (Model 1, tab. 6). In general, the relation between parenting styles and socioeconomic background is not deterministic, suggesting a potentially unique contribution of parenting styles to the explanation of children's outcomes.

In model 2 the child's leisure activities – organized leisure activities, reading activities and cognitive activities – are added as an outcome of parenting styles. Parents adopting a cultivation strategy significantly increase, although weakly, their child's engagement in various leisure activities. In particular, a higher level of parents' expectations favor the child's engagement in each of the considered the child's leisure activities (respectively by 0.111 SD in organized leisure activities, by 0.148 SD in reading activities, and by 0.188 SD in cognitive leisure activities). In families in which parents stimulate more their children and interact more with their teachers, children tend to read more in the leisure time and to be engaged in cognitive activities, while less strong is their tendency to engage generically in organized activities. A higher level of direct stimulation determines, in fact, an increase

of cognitive activities by 0.130 SD and an increase in reading activities by 0.121 SD. More interactions with school positively influence the child's cognitive leisure activities (0.115 SD) and the its reading activities (0.105 SD, Model 2, tab. 6).

The direct impact of socioeconomic background on the child's leisure activities is added in order to assess whether the reason why children from socioeconomically advantaged background tend to engage more in leisure activities that might be consequential for their educational attainment is, as expected, that their parents adopt a cultivating parenting strategy. This means to control whether parenting styles mediate the impact that socioeconomic background exerts on the child's leisure activities, or whether there is a residual impact that is non-accounted for by parenting styles. The results confirm that children from higher socioeconomic backgrounds tend to be engaged more in the considered leisure activities because they are exposed to a cultivating parenting strategy. Parenting styles mediate, as expected, the impact of socioeconomic background on both reading and cognitive leisure activities, since no direct relationship between any of the socioeconomic background factors and the child's leisure activities has been confirmed. There is a residual direct effect between economic resources and organized leisure activities, although it is very small (0.048 SD, Model 11, 6. Therefore the results provide support to hypothesis 1, although a clarification is needed. Not all socioeconomic background factors are equally important for determining the diverse parenting styles, and not all parenting styles are equally important for determining the child's diverse leisure activities. Parental educational and economic resources overpower social class in accounting for parenting styles, while parental expectations are the key determinant of child's leisure activities.

In model 12 the outcomes of interest – locus of control and reading ability – are added as dependent factors of the child's leisure activities at age 16 (tab. 7, tab. 8). RMSEA, TLI and Chi-square values would tend to prefer models with less parameters to be estimated that do not directly relate parental background factors to the child's leisure activities (model 13 for RMSEA and TLI and model 14 for chi-square). By contrast CFI penalizes models with such a restriction and tends to favor models 14-18 that have direct linkages between parental background and the child's leisure activities. R-squared values for reading ability are larger in models 14-17 and R-squared values for the locus of control are larger in models 14-22 (tab. 8). The preferred model is the model resulting from eliminating non-significant paths and estimating

missing values with maximum likelihood techniques (Model 18, tab. 8, fig. 1). Such a choice is supported by CFI values.

The results provide only partial support to hypothesis 2 – A, which assumed that the child's participation in organized activities is consequential for its improvements in reading ability and the locus of control. An increased participation in generic organized activities does not payoff in terms of progresses in reading ability, but only in the locus of control. The results support hypothesis 2 – B, which assumed that cognitive leisure activities positively affects the locus of control and reading ability more than does participation in organized leisure activities. A cognitive advantage amounting to 0.191 SD is acquired by children that are more engaged in cognitive activities, and to 0.104 SD by children that read more, net of the previous level of cognitive development, while the participation in organized activities makes no significant difference (Model 12, tab. 8). The children who internalize more their locus of control, given their previous level of the locus of control, are those who are more engaged first of all in reading activities (0.257 SD) and cognitive activities (0.212 SD), and, second, in organized leisure activities (0.157 SD, Model 12, tab. 8).

The last stage consists in controlling whether parent-child cultivation mediates the effects of socioeconomic background on the child's reading ability and the locus of control (hypothesis 3, tables 7, 8, fig. 1). If this expectation is correct, no significant direct relationship should be found between socioeconomic background and the child's outcomes, once the effect of parent-child cultivation on the child's outcomes is considered. The residual direct effect of socioeconomic background on child's outcomes is negligible, confirming the validity of the hypothesis: the pattern of interactions between parents, the child and the school, defined as parent-child cultivation, is responsible for the advantage in reading ability and the locus of control that children from higher socioeconomic backgrounds have in comparison to their disadvantaged counterparts.

The parent-child cultivation patterns mediate the progresses in the locus of control accruing to children from higher socioeconomic background. This holds for all the socioeconomic background indicators, except for economic resources that improve the locus of control even once the parent-child cultivation patterns are considered (the direct effect of economic resources is significant, although very small: 0.046 versus an indirect effect of 0.099, Model 18, tab. 8). The parent-child cultivation patterns also mediate the progresses in reading ability accruing to children from higher socioeconomic

background, except for its social class component. Part of the social class advantages are not accounted for by parent-child cultivation (both direct and indirect effect are negligible though the direct one is larger: 0.028 against 0.026; Model 18, 8).[6].

Parenting styles are relevant for the child's reading ability and the locus of control because they encourage the child to engage in valuable leisure activities, which in turn positively affect the child's abilities. However, part of the positive influence of parenting styles are unmediated by the child's leisure activities. Those parents who directly stimulate the child boost their child's reading ability by 0.085 SD and their child's locus of control by 0.038 SD, independently from how he/she spend his/her leisure time. Those parents who expect more from their children boost their child's reading ability by 0.100 SD and their child's locus of control by 0.078 SD, independently from how he/she spend his/her leisure time. Those parents who interact more with school boost their child's reading ability by 0.100 SD and their child's locus of control by 0.086 SD, even after considering the composition of the child's leisure time (Model 18, tab. 8).

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. These factors, however, do not provide a significant contribution to the explanation of the given outcomes and can be omitted from the proposed model without any loss or bias (Models 19-22, tab. 8).

The preferred model is therefore the one prior to the introduction of family type and ethnic origin (model 18, tab. 8, fig. 1). It is replicated after the list-wise deletion of missing values (Model 18 (list-wise), tab. 8. Estimates obtained by treating missing values and after-list-wise deletion are in general alike. Differences are not relevant enough to alter conclusions and do not follow any patters. The general similarity of estimates between complete-data analysis and missing-values estimation provides supports to the assumption that data are missing at random and suggests that estimates

[6]as the direct effects of socioeconomic background on the child's outcomes are significant only in the two presented cases, the two corresponding indirect effects are not presented in a table but only in the text for economy of space

obtained with all available information are unlikely to be biased by missing values.

In order to analyze the disequalizing-reproduction/equalizing function of concerted cultivation, it will be explored whether the child's participation in leisure activities is more beneficial for children from higher class backgrounds than for children from lower class backgrounds. This is done by adding an interaction term in the preferred model between social class (a dummy distinguishing service class and working class) and each type of the child's leisure activities, which, in the proposed perspective, are the direct determinants of the child's abilities. A positive effect of the interaction term indicates a reproduction or disequalizing effect and vice versa.

The reproduction hypothesis is confirmed in the case reading activities, which show a relatively strong disequalizing effect on both reading ability (0.22 SD) and on the locus of control (0.24 SD), although the effect is not statistically significant in both cases (tab. 9). Contrary to expectations, the participation in organized activities has an equalizing effect, as it is more favorable to working class than to service class children in terms of reading ability (-0.093 SD) and the locus of control (-0.137 SD). The engagement in cognitively stimulating activities is not associated with either an equalizing or a disequalizing function (tab. 9).

8 Conclusions

Lareau proposes the study of socioeconomic inequalities in children's outcomes through the lens of child-rearing interactions within the home (Lareau, 2011, 2002). The concepts of concerted cultivation and accomplishment of natural growth are introduced to describe the patterns driving these interactions. Concerted cultivation is the 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 study 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, the engagement in cognitively stimulating activities produces advantages in children's outcomes more than the participation in organized activities does. Reading during leisure time was introduced as a control factor distinct from cognitive activities and it shows an independent

Table 9: Preferred path model (18) of reading ability and locus of control at age 16. (Dis)equalizing effect of parental class. Betas (std. Errors)

Dep. Variable: Organized leisure activities age 16		Dep. Variable: Locus of control age 16	
Direct simulation	0.039*	Organized leisure activities age 16	0.163***
	(0.02)		(0.01)
Interactions with school age 10	0.062***	Direct simulation	0.035*
	(0.02)		(0.01)
Parental educational expectations age 10	0.100***	Interactions with school age 10	0.081***
	(0.02)		(0.02)
Economic resources age 10	0.050**	Parental educational expectations age 10	0.063***
	(0.02)		(0.01)
Constant	2.597***	Reading leisure activities age 16	0.221***
	(0.09)		(0.03)
Dep. Variable: Direct simulation		Cognitive leisure activities age 16	0.171***
Economic resources age 10	0.181***		(0.04)
	(0.01)	Organized activities*Parental class	-0.137**
Parental class age 5	0.066***		(0.05)
	(0.01)	Economic resources age 10	0.040*
Parental years of education age 5	0.156***		(0.02)
	(0.01)	Locus of control age 10	0.131***
Constant	0.16		(0.01)
	(0.12)	Reading activities*Parental class	0.24
Dep. Variable: Interactions with school age 10			(0.14)
Economic resources age 10	0.286***	Cognitive activities*Parental class	-0.01
	(0.01)		(0.15)
Parental class age 5	0.027*	Constant	-0.488***
	(0.01)		(0.01)
Parental years of education age 5	0.201***	Dep. Variable: Reading ability age 16	
	(0.01)	Direct simulation age 5	0.088***
Constant	2.911***		(0.01)
	(0.14)	Interactions with school age 10	0.102***
Dep. Variable: Parental educational expectations age 10			(0.01)
Economic resources age 10	0.215***	Parental educational expectations age 10	0.100***
	(0.01)		(0.01)
Parental class age 5	0.105***	Reading leisure activities age 16	0.071*
	(0.01)		(0.03)
Parental years of education age 5	0.288***	Cognitive leisure activities age 16	0.157***
	(0.01)		(0.03)
Constant	-0.907***	Organized activities*Parental class	-0.093*
	(0.12)		(0.04)
Dep. Variable: Reading leisure activities age 16		Reading ability age 10	0.322***
Direct simulation	0.124***		(0.02)
	(0.02)	Parental class age 5	-0.04
Interactions with school age 10	0.105***		(0.02)
	(0.02)	Reading activities*Parental class	0.22
Parental educational expectations age 10	0.146***		(0.13)
	(0.01)	Cognitive activities*Parental class	0.03
Constant	1.962***		(0.15)
	(0.09)	Constant	-0.498**
Dep. Variable: Cognitive leisure activities age 16			(0.18)
Direct simulation	0.133***		
	(0.01)		
Interactions with school age 10	0.114***		
	(0.02)		
Parental educational expectations age 10	0.185***		
	(0.01)		
Constant	2.391***		
	(0.09)		
Variance locus of control age 16's error	0.739***		
Constant	-0.01		
Variance reading ability age 16's error	0.670***		
Constant	-0.01		
N. of cases	16087		
Chi-square	20951.56		
Root mean squared error of approximation	0.16		
Akaike's information criterion	594026.94		
Bayesian information criterion	594687.92		
Comparative fit index	0.33		
Tucker-Lewis index	-0.18		

$*p < 0.05, **p < 0.01, ***p < 0.001$

effect that is larger than that of organized leisure 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, dance classes and community work does not contribute to ability formation. This finding suggests that Lareau's conceptualization of cultural resources, which includes all styles 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 stimulating cognitive and reading abilities.

Furthermore, the results provide support for 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 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 dimensions of parent-child cultivation are split into two levels: parenting styles, and the child's engagement in leisure activities. Higher status parents are expected to engage their children more in leisure activities by means of a set of stimulating parenting styles. This implies that high socioeconomic background alone is not enough to account for child's achievements and should be associated with actual parental styles in order to generate beneficial outcomes. The effect of socioeconomic background on a child's engagement in activities is assumed to be indirectly exerted via parenting styles. A child's cognitive and reading leisure activities in turn foster its cognitive ability and enhance his/her locus of control. It must be noted that parenting styles also exert a direct impact on children's reading ability and the locus of control that is independent from children's leisure activities.

The disequalizing-reproduction/equalizing function of parent-child cultivation is analyzed too (DiMaggio, 1982). The reproduction hypothesis is confirmed in the case reading activities, while the participation in organized activities has an equalizing effect, as it is more favorable to working class than to service class children. The engagement in cognitively stimulating activities is not associated with either an equalizing or a disequalizing function. An explanation for the opposite effect of parental class across organized and reading activities is that the benefits of reading activities are reaped the

most by those children whose parents can provide guidance, models, books and related materials, and those parents are more likely to be found in the service class. By contrast, the way in which the child profit from a given organized leisure activity does not depend on the family of origin once the activity is chosen, but rather by the interaction between the child and club or organization where the activity takes place. This favors an equalizing function of parent-child cultivation in which the attempt of disadvantaged families to improve their offspring's academic performance is not halted by class barriers.

What are the theoretical implications of the presented results? The proposed refinement of the parent-child cultivation's perspective supports previous studies on family cultural resources distinguishing between reading climate and beaux arts participation (De Graaf et al., 2000; Crook, 1997). As in those studies, the results presented in this study suggest that the resources that bring about advantages in children's outcomes are those related to mundane cognitively oriented activities, such as reading to the 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 interactions with school and parental expectations.

The parent-child cultivation perspective underlines the importance of pedagogic effort in supporting the child's learning progresses and purports the idea that unequal outcomes between children are accounted for by differences in children's family cultural environment. The differences between classes in patterns of interactions among parents and children would explain the bulk of the differences in children's achievements from different class of origin. This perspective is quite different from the cultural capital one which, instead of focusing on the ineffective children's family environment, proposes cultural bias and discrimination in school as reasons for inequalities in education. The results proposed in this study are centered on the function of cognitive and reading leisure activities. A plausible explanation for their beneficial impact 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, 1984) that directly contribute to an improved performance on cognitive and attitudinal tests that are valued in school (such as the locus of control). Plausible mechanisms that explain the direct impact of parent-

ing styles on children's outcomes are verbal and reading training, help with school homework, transmission of determination and ambition.

There is also another reason for revisiting the cultural capital perspective, and in particular the idea that higher classes ensure academic success to their offspring by imposing their own cultural values on the educational system. The key importance of social class of origin in explaining educational inequalities must be reevaluated in light of the result that the effect of parent-child cultivation on the child's reading ability and the locus of control is stronger than socioeconomic background. The attempt to study how child rearing styles explain the intergenerational transmission of advantages has led to the conclusion that such styles explain not only "structural" privileges associated with parental education, class and economic resources, but that they themselves constitute a resource. A definition of parental background which did not include parent-child cultivation would therefore omit key aspects of parental background which enhances children's cognitive ability and the locus of control.

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