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Out of school activities during primary school and KS2 attainment

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Centre for Longitudinal Studies
Working paper 2016/1

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This working paper was first published in April 2016
by the Centre for Longitudinal Studies,
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March 2016

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About the study

This study is funded by the Nuffield Foundation and is carried out in collaboration by NatCen Social Research and Newcastle University. The findings presented here are based on analysis by NatCen Social Research. The study also includes qualitative case studies exploring the views and experiences of schools, parents, children and out of school activity providers to investigate the strength of different academic theories in explaining potential links between out of school activities and child outcomes. To find out more about the study visit our project webpage http://www.natcen.ac.uk/our-research/research/out-of-school-activities/.

Acknowledgements

We are grateful to The Centre for Longitudinal Studies, UCL Institute of Education for the use of these data and to the UK Data Service, including the Secure Lab, for making them available. NatCen Social Research takes full responsibility for the analysis and interpretation of these data.

The Nuffield Foundation is an endowed charitable trust that aims to improve social well-being in the widest sense. It funds research and innovation in education and social policy and also works to build capacity in education, science and social science research. The Nuffield Foundation has funded this project, but the views expressed are those of the authors and not necessarily those of the Foundation. More information is available at www.nuffieldfoundation.org.



Abstract

The aims of this working paper were to investigate whether taking part in out of school activities during primary school is linked with end of primary school attainment and social, emotional and behavioural outcomes, for all children and specifically for children from economically disadvantaged backgrounds. The analysis is based on the Millennium Cohort Study (MCS) survey data linked to administrative data holding the cohort children's Key Stage 1 (KS1) and Key Stage 2 (KS2) attainment scores. In addition to looking at KS2 attainment (total point score, English and maths) we also investigated social, emotional and behavioural outcomes using the Strengths and Difficulties Questionnaire (SDQ) total difficulties and prosocial skills scores. The results presented in this paper are based on logistic and multiple linear regression analysis. Results showed that sports clubs and 'other' (unspecified) club participation was positively associated with attainment outcomes at age 11, when controlling for prior attainment. Participating in organised sports or physical activity was also positively linked to social, emotional and behavioural outcomes. Among disadvantaged children, after school club emerged as the only organised activity linked to child outcomes; participation was linked to both higher KS2 attainment and prosocial skills. The implications of these findings for further research, policy and practice are discussed.

Summary

This working paper is part of a wider project investigating if and how out of school activities affect primary school children's attainment and social, emotional and behavioural outcomes, funded by the Nuffield Foundation. Much is known about the effect of the home learning environment on very young children but less about how the home/out of school environment affects older children. Much has changed in education policy and the economic context since the last time this topic was investigated and the recent availability of the linked Millennium Cohort Study (MCS) and National Pupil Database attainment data makes this an excellent time to extend our understanding. Previous research briefs from this project have reported how out of school activities (school clubs, sport, music, religious instruction, and so on) vary for children by their different socio-economic groups, gender, ethnicity, family and school characteristics, highlighting inequalities in access and participation. This paper is the first output showing how activity participation during primary school is associated with age 11 outcomes.

The analysis uses the Millennium Cohort Study (MCS) which has followed thousands of children from birth with data collected at five time points including ages 5, 7 and 11. Recently, the survey data was linked to administrative data holding the cohort children's Key Stage 1 (KS1) and Key Stage 2 (KS2) attainment scores. In addition to looking at academic attainment, we also investigated social, emotional and behavioural outcomes using the Strengths and Difficulties Questionnaire (SDQ). The results presented in this paper are based on analysis techniques which allowed us to measure the effects of activity participation while taking into account other factors that affect child outcomes such as social background and prior attainment. We investigated the relationship between activities and outcomes for all children and separately for disadvantaged children who have different patterns of activity participation.

The results showed that some formal activities were indeed associated with attainment and social, emotional and behavioural outcomes at age 11. Sports or physical activities as well as

after school clubs stood out as particularly important. Sports clubs and 'other' (unspecified) club participation was positively associated with attainment outcomes at age 11, when controlling for prior attainment. Participating in organised sports or physical activity was also positively linked to social, emotional and behavioural outcomes. Among economically disadvantaged children (income poor in two or three of the time points), after school club emerged as the only organised activity linked to child outcomes; participation was linked to both higher KS2 attainment and prosocial skills.

The findings have a number of implications for policy makers and practitioners concerned with educational enrichment, effective use of Pupil Premium funding and improving child outcomes during primary school. For children from economically disadvantaged backgrounds, who have lower take-up of formal out of school activities, school-based clubs offer an accessible, lower cost route for learning experiences outside of the school curriculum with potential benefits for social as well as academic development. More research is needed to understand the content of the after school clubs and what it is about the experience that results in improved outcomes.

1 Introduction

1.1 Policy and research context

Educational inequalities between children from different backgrounds at the end of primary school are pronounced. A quarter of children from the most disadvantaged backgrounds achieve below expected levels, compared to just 3 per cent of children from affluent backgrounds (Gregg & Goodman, 2010). Differences in attainment among children in their first years at school persist, with only a minority of those below expected levels at Key Stage 1 catching up by the time they leave school (Save the Children, 2013). This affects their lifelong outcomes including access to higher education, entry to the professions and financial independence (Milburn, 2012; SMCPC, 2013).

High expectations have been pinned on schools to close the education gap, most explicitly through Pupil Premium funding to support the learning of disadvantaged pupils (Stewart, 2013; Clifton & Cook, 2012; Carpenter et al, 2013). Recent research shows that these funds are mostly invested by schools in teaching and learning activities for which there is some evidence of effectiveness (McLeod et al, 2015)[1]. A large programme of research funded by the Education Endowment Foundation[2] is underway to evaluate the potential for school-based interventions to close the attainment gap, but the long-term impact is yet to be established.

One aspect of school provision that has been out of the spotlight recently is the care and education provided outside of the curriculum and formal school hours. In the early 2000s, the full-service extended schools (FSES) programme funded 138 schools to offer a comprehensive range of services including health, adult learning, study support and full day childcare. The evaluation of the programme found that FSES impacted positively on pupil attainment, and indicated the potential for extended schools to make a real difference to children's lives (Cummings et al, 2007). The extended schools programme was launched by the DfE in 2005 and required that schools offer activities before and after the curriculum school day. Since the extended schools funding ended in 2011, schools have made their own decisions about the extent to which they offer services before and after school. Recent evidence suggests that 64 per cent of primary schools provide access to before school care and 70 per cent to after school care, with 53 per cent providing both (TNS BMRB 2014). Two-thirds of schools reported using Pupil Premium funding for extended school provision (McLeod et al, 2015). Out of school care is more common in disadvantaged schools, in line with international evidence (Stearns & Glennie, 2010).

The idea of a longer school day clearly remains popular across the political spectrum[3], but the extent to which out of school provision should be a source of childcare for working parents or educational enrichment for children remains contentious. The policy debate on out of school provision lacks rigorous evidence about what schools currently provide, what it costs and potential benefits to pupils.

[1] See Sutton Trust/Education Endowment Foundation (EEF) Teaching and Learning Toolkit.

[2] https://educationendowmentfoundation.org.uk/toolkit/publications/.

[3] http://www.theguardian.com/politics/2013/apr/18/michael-gove-longer-school-day-holidays
http://www.bbc.co.uk/news/education-16427941

How children spend time out of school hours

Children spend a substantial amount of their waking time outside of school. Yet compared to early years research which has established the importance of the home learning environment and the activities in which young children participate, there has been much less research into how children of primary school age spend their time.

The main source of evidence for England comes from the Effective Provision of Pre-school Education (EPPE) study – a longitudinal study of children, accessed through a sample of early years' providers and followed through their school years. EPPE investigated participation in out of school hours learning during Key Stage 2, including activities such as sports classes, music tuition, ethos led groups and academic tuition taking place on and beyond school premises (Sylva et al, 2008). Just over three-quarters of children took part in such activities with participation found to be related to higher maternal qualifications, paternal socio-economic status, maternal employment, gender and ethnicity. This finding is also reflected in other research showing a link between family characteristics and uptake (McCoy et al, 2012: Wikeley et al, 2007; Demos 2014).

The most robust evidence about use of formal and informal childcare for this age group is from the Department for Education's survey of parents' use of childcare (Huskinson et al, 2013). In 2011, 67 per cent of 8-11 year olds were in some form of childcare outside of school hours. Nearly half the children attended an after school club and 29 per cent received informal childcare by family and friends.

The influence of out of school activities

Research suggests that participation in enriching activities outside of school can have positive outcomes, particularly for the most disadvantaged children (Cooper et al, 1999). The most recent and robust evidence of this for children in England comes from the EPPE longitudinal study which found that participation in learning outside of school hours was a predictor of progress in Maths and English between the ages of 7 and 11, after controlling for background characteristics (Sylva et al, 2008). This is supported by findings from evaluations of full service and extended school programmes (predominantly from the USA) but also the extended schools programme in the UK, funded under the previous government (Cummings et al, 2011). Evaluations of after school programmes and activities also indicate some positive outcomes although the research designs do not always support conclusions (Scott-Little et al, 2002).

A range of theories have been offered to explain the different pathways that may link out of school activities to attainment including academic enrichment, confidence and self-esteem, and positive identification with the school. The literature suggests that disadvantaged children have more to gain from out of school activities.

1.2 Aims and research questions

The current research aimed to build on the existing evidence by examining a range of out of school activities and their potential for helping to reduce the attainment gap. The research is timely from the point of view of policy as well as the Millennium Cohort Survey being linked to attainment outcomes for children at the end of primary school. This enabled us to investigate out of school activities using a nationally representative, large-scale longitudinal data set taking into account social background.

The aims of the analysis presented here were to investigate whether taking part in out of school activities during primary school is linked with end of primary school attainment and social,

emotional and behavioural outcomes, for all children and specifically for children from economically disadvantaged backgrounds. By taking advantage of the longitudinal structure of the data, and controlling for a range of factors measured both before and during primary school, we aimed to explore evidence of causal associations to find out whether taking part in out of school activities improved attainment for children in general and disadvantaged children in particular.

2 Data, methods and variables

The Millennium Cohort Study (MCS) is a national longitudinal birth cohort study with five sweeps of data currently available spanning from birth to the end of primary school (age 11). The MCS is an ideal data source for this project as it has collected data on children's organised and informal activities outside curriculum time at three key time points during primary school – at ages 5, 7 and 11 years, corresponding to the initial Reception year, the end of Key Stage 1 (KS1) and the last year of primary school which is the end of Key Stage 2 (KS2). The MCS includes 11,762 cohort children across the UK that responded in all three sweeps conducted during their primary school years and were therefore eligible for inclusion in the analysis for this project.

Importantly for this study, the survey has been linked to National Pupil Database (NPD) for cohort children attending schools in England. This allows for analysis of the relationship between out of school activities and attainment while controlling for a range of individual, family and contextual characteristics. The attainment analysis therefore relates to the 6,430[4] cohort children who attended school in England, responded in all three sweeps conducted during primary school, whose parent(s) gave permission for linkage to the NPD and for whom the records were successfully linked.[5]

The results presented in this paper are based on multiple linear regression analysis for continuous outcomes such as the KS2 'total point score' attainment measure, and binary logistic regression analysis for binary outcomes such as whether or not the child attained a certain level in English by the end of primary school. Each model was constructed using a manual step-wise approach, with variables entered into the model in blocks and (with the exception of the core control variables listed below), removed from the model at each stage if they were not significantly related to the outcome at the 10% level.

In the first stage of the model construction, the organised activities and control variables listed below were entered. This small set of core control variables that were retained in every model were the sex of the child, the child's ethnic group, the month of birth, the mother's age at the birth of the child, the family type at the first interview (two resident parents or one when the child was aged 9 months), and the highest parental occupational class at the time of the first interview. In the second stage, variables relating to the child's pre-school cognitive abilities and

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[4] Base sizes for analyses were lower that this due to non-response on certain items included in the analysis.

[5] University of London. Institute of Education. Centre for Longitudinal Studies. (2015). *Millennium Cohort Study: Linked Education Administrative Dataset (KS1), England: Secure Access. [data collection]. 2nd Edition.* UK Data Service. SN: 6862, http://dx.doi.org/10.5255/UKDA-SN-6862-3.
University of London. Institute of Education. Centre for Longitudinal Studies. (2015). *Millennium Cohort Study: Linked Education Administrative Dataset (KS2), England: Secure Access. [data collection].* UK Data Service. SN: 7712, http://dx.doi.org/10.5255/UKDA-SN-7712-1 .
University of London. Institute of Education. Centre for Longitudinal Studies. (2015). *Millennium Cohort Study: Fifth Survey, 2012. [data collection]. 2nd Edition.* UK Data Service. SN: 7464, http://dx.doi.org/10.5255/UKDA-SN-7464-2.
University of London. Institute of Education. Centre for Longitudinal Studies. (2015). *Millennium Cohort Study: Fourth Survey, 2008. [data collection]. 6th Edition.* UK Data Service. SN: 6411, http://dx.doi.org/10.5255/UKDA-SN-6411-6.
University of London. Institute of Education. Centre for Longitudinal Studies. (2012). *Millennium Cohort Study: Third Survey, 2006. [data collection]. 6th Edition.* UK Data Service. SN: 5795, http://dx.doi.org/10.5255/UKDA-SN-5795-3.
University of London. Institute of Education. Centre for Longitudinal Studies. (2012). *Millennium Cohort Study: Second Survey, 2003-2005. [data collection]. 8th Edition.* UK Data Service. SN: 5350, http://dx.doi.org/10.5255/UKDA-SN-5350-3.
University of London. Institute of Education. Centre for Longitudinal Studies. (2012). *Millennium Cohort Study: First Survey, 2001-2003. [data collection]. 11th Edition.* UK Data Service. SN: 4683, http://dx.doi.org/10.5255/UKDA-SN-4683-3.

social, emotional and behavioural measures were entered, followed by the block of variables capturing other home/family, school and area characteristics and finally informal activities. The final stage controlled for prior attainment at KS1 (the 'average point score').

In the remainder or this chapter we outline the key independent variables of interest, the organised out of school activities, the dependent variables of primary school attainment and social, emotional and behavioural outcomes at age 11, and the covariates included in the regressions.

2.1 Organised out of school activities

The MCS asked parents of the cohort child about a range of activities outside school lesson time, including childcare use, physical activities or sports clubs (which can include a wide range of organised physical activities, from swimming lessons and dance classes to football training), academic tuition and other activities such as music lessons, religious services or attendance at classes and other clubs. For some of the activities the MCS asked only whether or not the child took part in an activity (e.g. whether the child had received any extra tuition or lessons for musical instruments). However, where information on the *frequency* of taking part in activities was available, we focused on activities that the child participated in at least weekly. The types of measures available for the different organised activities at each of the three sweeps during primary school are summarised in the table below.

Table 2.1 Organised out of school activities in the MCS

MCS Sweep 3 – Age 5	MCS Sweep 4 – Age 7	MCS Sweep 5 – Age 11
Breakfast club • Number of days attended • Hours per session • Whether based on school premises • Whether primarily used for childcare reasons	Breakfast club • Number of days attended • Hours per session • Whether based on school premises • Whether primarily used for childcare reasons	Breakfast club • Number of days attended
After school club • Number of days attended • Hours per session • Whether based on school premises • Whether primarily used for childcare reasons	After school club • Number of days attended • Hours per session • Whether based on school premises • Whether primarily used for childcare reasons	After school club • Number of days attended
Informal childcare • Hours per week	Informal childcare • Hours per week	Informal childcare • Hours per week
Formal childcare • Hours per week	Formal childcare • Hours per week	Formal childcare • Hours per week
Sports club, training or lesson • Number of days attended	Sports club, training or lesson • Number of days attended	Sports club, training or lesson • Number of days attended
Religious service or lesson • Frequency of attendance	Religious service or lesson • Frequency of attendance	Religious service or lesson • Frequency of attendance
	Extra tuition • Whether received any • Subject(s) of tuition:	Extra tuition (any since age 7 including for secondary school entrance exams) • Whether received any

	Reading, Writing and/or Maths	• Subject(s) of tuition: English, Maths and/or Science
	'Other' club • Whether attends	Music tuition paid for by family • Whether attends

Participation in these activities, patterns of take-up and variation by age and home characteristics have already been discussed in earlier project outputs (Chanfreau et al, 2014; Chanfreau et al, 2015) and so will not be repeated in detail here. However, since the current paper focuses on the relationship between activities and outcomes for disadvantaged children specifically, we provide new detail on the variation in activity participation by economic disadvantage. In this study we have defined disadvantaged children as those whose family income was below the poverty line (below 60% of the median equivalised household income) in at least two of the three MCS interviews during primary school. The table below summarises the percentage of children taking part in each of the organised activities included in our analysis at ages 5, 7 and 11, by whether or not the child was disadvantaged.

The largest differences in participation were for sports, 'other' clubs at age 7 and music lessons at age 11, with lower participation in these activities among disadvantaged children. A higher proportion of disadvantaged children than non-disadvantaged children regularly attended religious activities and classes. For more discussion of religious activities and classes, including how this differed by different ethnic background, see the earlier research briefings from this project (Chanfreau et al, 2014; Chanfreau et al, 2015).[6]

Table 2.2 Out of school activity participation rates by disadvantage

		Disadvantaged %	Not disadvantaged %	All children %
Age 5				
Breakfast club	Using (not childcare)	3	1	1
	Using for childcare	1	4	3
After school club	Using (not childcare)	4	4	4
	Using for childcare	2	8	6
Informal childcare		20	33	30
Formal childcare		1	7	6
Sports club		23	60	51
Religious activity/ lessons		14	12	13
Age 7				
Breakfast club	Using (not childcare)	7	3	4
	Using for childcare	3	8	6
After school club	Using (not childcare)	14	13	13
	Using for childcare	2	10	8

[6] http://www.natcen.ac.uk/media/563125/out-of-school-resbr1.pdf and http://www.natcen.ac.uk/media/563160/out-of-school-resbr2.pdf

Informal childcare		25	36	34
Formal childcare		2	8	7
Sports club		41	75	67
Religious activity/ lessons		22	13	15
Extra tuition		6	5	5
Attended 'other' club		23	45	39
Age 11				
Breakfast club	Using (any reason)	14	12	12
After school club	Using (any reason)	32	32	32
Informal childcare		25	32	30
Formal childcare		1	5	4
Sports club		61	77	73
Religious activity/ lessons		24	13	16
Extra tuition since last	Any*	20	26	24
interview	English	13	15	14
	Maths	16	19	18
Music lessons or tuition paid for by family		6	26	21

* Any tuition includes extra lessons in English, maths, science or for a secondary school selection test (not necessarily paid for).
Note: breakfast club, after school club, informal and formal childcare, sports club, other club and religious activity/ lessons all counted if the child participates at least weekly. No timeframe was specified in the MCS question wording regarding extra tuition in the age 7 or music lessons at age 11 and extra tuition at age 11 relates to any tuition received since the last interview (age 7).
Source: MCS Sweeps 3, 4 & 5, authors' own analysis, base: children in England who responded in all three sweeps and agreed to the NPD linkage.

Table 2.2 and previous outputs show that take-up of activities varied in relation to child and family background characteristics. Our analysis of the relationship between participation and outcomes takes into account the influence of background characteristics which may influence both participation and outcomes, through multivariate statistical models. This allows us to understand the independent influence of activities. In the following sections we outline the measures that were included in our models, in addition to the formal activities, starting with the dependent variables for attainment and social, emotional and behavioural outcomes.

2.2 Attainment measures

Attainment measures are available for two time points during primary school, based on teacher assessments when the children were 7 years old at the end of KS1, and a combination of exam and teacher assessments in the last year of primary school when pupils were aged 11, at the end of KS2. The measures used in the analysis are those that have been recorded in the National Pupil Database and linked to the MCS data. The KS1 measure used in this analysis was the child's average point score (APS), i.e. the mean of the scores awarded for the child's reading, writing and maths assessment tests or tasks.

The KS2 attainment measures analysed were the 'total point score' (the sum of the points awarded for the levels achieved in English, maths and science) and also two binary measures of whether the child achieved a Level 5 in English and maths respectively. At KS2, the national expected attainment is Level 4 and most children in our analysis achieved this level or higher (88% in English and 87% in maths). A large minority of children achieved the higher benchmark of a Level 5 or above (41% in English and 42% in maths) and for this analysis the decision was therefore taken to model the odds of achieving a level above the expected level in addition to looking at the total points achieved across the three assessed subjects.[7]

A key measure of interest to this paper is the 'attainment gap'[8], that is the difference between the average attainment of disadvantaged pupils relative to those who are not from a disadvantaged background. In the MCS data the average KS2 total point score was 53 points among children who were from an economically disadvantaged background, and 58 points among children who were not from a disadvantaged background. The attainment gap is thus 5 KS2 points, almost equivalent to the difference between a Level 4 and a Level 5 on one assessed KS2 subject[9].

2.3 Social, emotional and behavioural measures

In addition to educational outcomes, we also included two measures derived from the Strengths and Difficulties Questionnaire (SDQ) completed by the parent about the child as part of the MCS data collection. The SDQ (Goodman, 1997) is a short-format behavioural screening questionnaire designed for use by researchers as well as clinical and educational professionals. It consists of five sub-scales covering emotional symptoms, conduct / behavioural problems, hyperactivity / inattention and problems with peer relationships, which taken together form a measure of total difficulties, as well as prosocial behaviour scale (covering items such as social skills and showing empathy towards others). While the primary focus of the project was on attainment, the social, emotional and behavioural outcomes were included to provide a more rounded view of child outcomes.

For this analysis, we focused on two SDQ measures. Firstly, the total difficulties score, which ranges from 0 to 36 with a mean score of 8.1 among the MCS children at the age of 11[10]. On this scale higher scores indicate a higher level, or greater range, of social, emotional and behavioural difficulties and therefore a worse outcome for the child. Secondly, we also looked at the prosocial score which ranges from 0 to 10. At the age of 11 the mean of score among the MCS children included in the analysis was 8.7[11], with 45% having the highest possible score on the scale. On the prosocial scale a higher score is indicative of better social skills and therefore a positive outcome. As the prosocial scale is only an 11-point scale and it is so heavily skewed

[7] By comparison, in DfE statistics show that in England overall in the same academic year (2011/12), 85% of all children achieved a Level 4 or above, and 48% achieved a Level 5 or above, in their KS2 English assessment while 84% a Level 4 or above, and 39% achieved a Level 5 or above, in their KS2 maths assessment. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/219151/sfr33-2012v2.pdf

[8] DfE policy discourse now refers to 'raising the attainment of disadvantaged children' rather than 'closing the attainment gap'. We retain the language used since the start of our research project, with the concept 'closing the gap' referring to raising the attainment of disadvantaged children rather than reducing the attainment of advantaged children.

[9] There is a 6-point difference in the points awarded for a Level 4 (27) and a Level 5 (33). http://www.education.gov.uk/schools/performance/2012/16to18_12/PointsScoreAllocation2012.pdf

[10] This is close to the national average of 8.2 in normative data for Great Britain (Meltzer et al, 2000). http://www.sdqinfo.com/norms/UKNorm3.pdf [accessed 11-1-16]

[11] Again, this is close to the national norm of 8.6 (Meltzer et al, 2000).

towards the top end of the scale, with nearly half of the children having the highest possible score, for this analysis we used binary logistic regression to look at the odds of having the maximum score of 10, compared with a score of 9 or below. Therefore, decreased odds of having the maximum score does not imply a 'poor' child outcome (i.e. unsocial or not pro-social).

2.4 Other time use, child measures and home circumstances

In addition to the small set of core control variables outlined above, a longer list of covariates was also entered using a manual stepwise approach and retained in the model if they were significantly related to the outcome at the <10% level. The rationale for the inclusion of these additional covariates was to help account for potential selection effects into out of school activities which may explain any association between the activities and attainment. Each model was also run firstly without controlling for attainment at KS1 and then including KS1 attainment. The covariates tested during the model-selection are set out in the table below.

Table 2.3 Covariates

Type	Detail	Age of child
Strengths and Difficulties Questionnaire (SDQ)	Total difficulties score	5
	Prosocial score	5
Pre-school ability	Bracken school readiness score	3
	British Ability Scales (BAS) naming vocabulary score	3
Early years home and family circumstances	Home learning environment	3
	A derived composite measure of home learning support	5
	Whether a language other than English was spoken in the home	3
	Housing tenure	3
Home-school environment and local area circumstances during primary school	Region	11
	Whether living in an urban or rural area	5, 7, 11
	Number of siblings	5, 7, 11
	Parental work status	5, 7, 11
	Household income (quintiles)	5, 7, 11
	Child-related deprivation level of the area of the school attended (IDACI)	7, 11
	Whether moved schools	7, 11
	FSM eligibility	7, 11
	Receipt of any Special Educational Needs provision	7, 11

Finally, while the focus for this working paper is on the organised activities children took part in outside school hours, the project also took into consideration other informal activities. The rationale for including information on other time use was two-fold. Firstly, this allowed us to investigate whether it was the activity per se or the fact that it was an adult-organised and supervised activity that matters for child outcomes. For example in the case of physical activity – is it being part of a sports club or team or having formal training or lessons that matters or is it being active in general, for example in a park with friends, that is associated with child outcomes? Secondly, it allowed us to take some account of the variation in what children do

when they are not at school or in formal activities, including screen time, housework, reading for pleasure and homework time. As with organised activities, where possible we focused on activities that were experienced at least weekly. The other types of time use that were included in the analysis are presented in the table below.

Table 2.4 Other activities in the MCS

Type	Activity	Age of child
Academic	How often anyone at home helps with learning/ homework	5, 11
	How often anyone at home makes sure homework is done before the child does other activities	11
	Hours spent doing homework per term-time week	7, 11
	How often reads for enjoyment (not school)	7, 11
Responsibilities	Frequency involved in household chores	7, 11
	How often looks after elderly, sick or disabled family members	11
Physical	How often plays sports or active games inside or outside (other than at clubs or classes)	7, 11
	Frequency playing active games with parent(s)	5, 7, 11
	Whether usually walks (or cycles) to school	5, 7, 11
Socialising	Frequency of playing indoor games with parent(s)	5, 7, 11
	Frequency of spending time with friends	5, 7, 11
	How often allowed unsupervised time outside the home with friends on weekdays	11
	How often allowed unsupervised time outside the home with friends on weekends	11
	How often spends time with friends at the weekend	11
	How often spends time with friends after school	11
Other	Whether plays a musical instrument (not in paid-for lessons)	11
	Hours per week spent watching TV or videos	5, 7, 11
	Hours per week spent playing computer or video games	5, 7, 11

3 The effect of out of school activities on child outcomes

In this section we discuss the results from the regression models, investigating the association between formal out of school activities and child outcomes (attainment, social, emotional and behavioural outcomes). The models control for other factors, including prior measures of attainment and child outcomes. The activities are grouped into physical activities and sports, academic activities, other activities and informal time use. For the full tables of results, please see Appendix A for the KS2 attainment model results and Appendix B for the social, emotional and behavioural outcomes results.

3.1 Physical activities and sports

Attendance at organised physical activities or sports clubs between ages 5 and 11 was associated with positive academic outcomes, specifically with higher odds of receiving a Level 5 in maths. Children who started a sports club from age 7 onwards, and were taking part at age 11, and children who took part in such organised physical activities at all three age points were more likely to achieve a Level 5 in maths, compared with children who had never taken part in such activities. Doing some organised sports at age 5 and/or 7, but not at the age of 11, was not related to the odds of achieving a Level 5 in maths when compared with those who had never taken part in organised sports. These patterns remained when controlling for KS1 attainment.

The frequency of *informal* physical activities at age 7, which may include playing active games with friends, was also significantly associated with KS2 attainment. However, when controlling for KS1 attainment, the relationship between the frequency of informal sports activities and KS2 attainment did not follow a linear pattern for any of the KS2 attainment measures. Being active informally several times a week (but not as much as every day), at age 7 was associated with higher attainment at age 11.

Organised physical activity was also positively associated with total difficulties and prosocial outcomes. Controlling for total difficulties at age 5, and other factors, children who had started doing organised physical activities by the age of 11 had significantly lower total difficulties score at the age of 11. Controlling for prosocial skills at age 5, and other factors, the odds of having the highest prosocial score at the age of 11 increased with the number of days per week doing organised sports or physical activities at the age of 11.

In summary, the main finding was that organised physical activities and sports club attendance at age 11 was associated with both higher odds of high attainment in maths at KS2, and with better social, emotional and behavioural outcomes at age 11.

3.2 Academic activities

Extra tuition

Receiving extra tuition at some point between the ages of 7 and 11, in English or maths, was associated with KS2 attainment (both the total point score and the odds of achieving a Level 5 in maths). However, the results differed by the subject of tuition. Tuition in English was positively associated with both attainment measures. On the other hand, extra tuition in maths was associated with lower total point scores and lower odds of achieving a Level 5 in maths. These effects remained significant when controlling for KS1 attainment. Neither type of tuition was significantly related to attaining a Level 5 in English at KS2.

These results are hard to explain. On first reading, they appear to show that English tuition helps to raise attainment while maths tuition has an adverse effect. By controlling for KS1

attainment, we had attempted to take into account the likelihood that children struggling academically are more likely to receive tuition during KS2 and to measure the effect of tuition over and above prior attainment. However, it seems likely that some selection effects remain, meaning that the observed association between tuition and attainment may in fact be explained by an unmeasured variable associated with the take-up of tuition as well as lower attainment. There are a number of ways in which this might play out.

First, bearing in mind the four year gap between the attainment measures, it is possible that academic difficulties emerged for some children after the KS1 measures at age 7 and explain both the take-up of tuition and the lower attainment scores at age 11. The MCS data does not reveal when exactly the child started receiving tuition, only that it was at some point between the ages of 7 and 11.

Secondly, it is possible that the tuition received was not of sufficient duration, frequency or quality to impact on pupils' ability which, in combination with pupils' academic needs, might explain the association between tuition and lower attainment.

A third possibility is that the reasons for having extra tuition vary by the subject, so for example, a larger proportion of those receiving maths tuition may do so because they are finding maths difficult rather than to provide an extra challenge beyond the expectations of the standard primary curriculum. We found a slightly higher proportion of children who had English tuition also entered selection tests or entrance exams for secondary school when they were aged 11 (34% compared with 30% among those who had maths tuition).

Finally, the explanation for the different outcomes of English and maths tuition may be related to pupil characteristics. The only notable difference between the children receiving English and maths tuition was their language. A higher proportion of children who received English tuition (either on its own or in combination with maths), came from a family where a language other than English was spoken at home (23%)[12], than those who had maths tuition only (12%) or all children (13%). As a result, it may be that English tuition pupils had a different starting point and more to gain from extra tuition than maths pupils.

In terms of social, emotional and behavioural outcomes, receiving extra tuition either in a subject studied at school or in order to prepare for a secondary school selection test, at some point between the ages of 7 and 11 was also associated with a slightly higher total difficulties score at the age of 11. When controlling for the child's total difficulties score at the age of 5, children who received extra tuition between 7 and 11, had a total difficulties score that was on average 0.4 points higher than children who did not have extra tuition, which although a small difference was statistically significant.

It is difficult to draw conclusions regarding the direction of this association. It is possible that for some children the higher total difficulties score is a reflection of additional stress of tuition outside school and potentially secondary school selection tests in Year 6. However it is equally plausible that while the model controls for prior total difficulties, many of the children who received additional tuition did so either because they developed difficulties that were interfering with their learning, or that the influence of their pre-existing difficulties on their learning and attainment was becoming more apparent as they progressed through primary school, and their

[12] Most of these children were from bilingual homes: 18% had both English and another language spoken at home and 5% were from families where English was not spoken at home.

family felt they needed additional support. Either way, the importance for this finding should not be overstated considering the small size of the difference. Taken together, the evidence in this section points to the need for a more nuanced understanding of who receives tuition and for what reasons.

Informal academic activities

Time spent on academic activities informally, such as doing homework and reading for pleasure was also related to attainment. After controlling for KS1 attainment, there seemed to be a positive linear relationship between amount of time spent on homework per week and KS2 total point score. Children who spent 5 or more hours on homework per week at the age of 11 had the highest KS2 total point scores, on average, while those who spent less than an hour or no time at all on homework per week had the lowest total point score.

The hours per week spent doing homework at the age of 11 was also related to prosocial skills at the age of 11 (controlling for prior prosocial skills at age 5). Compared with those who spent less than an hour per week or no time at all on homework, children who spent at least an hour on homework per week had increased odds of having the highest possible score on the prosocial scale at age 11. The odds were the highest among those who spent 5 or more hours per week on homework.

Finally, reading for enjoyment (rather than as a requirement of school), was significantly related to attainment both on the total point score measure and to the odds of achieving a Level 5 in English at KS2. Almost half of the children reported reading for enjoyment (i.e. not including any reading done for school or homework purposes) 'most days' (45%) while a further 30% reported reading for enjoyment at least weekly. The most frequent readers had the highest total point scores at KS2, and the highest odds of receiving a Level 5 in English, controlling for their KS1 attainment.

In summary, time spent reading for leisure and doing homework were found to be positively related to KS2 attainment, as was receiving additional English tuition. The results overall were mixed regarding extra tuition, with maths tuition being associated with lower KS2 attainment and extra tuition in general being associated with slightly higher total difficulties scores. These findings might tentatively be interpreted as suggesting that that encouraging self-directed and intrinsically motivated additional academic activity, through homework and reading, may be better than extending curriculum learning through formal tuition. However, more research is needed to better understand the mixed results for formal tuition.

3.3 Other organised activities

Attending an after school club during primary school was associated with higher odds of achieving a Level 5 in KS2 maths, compared with not taking part in an after school club at any of the three time points. However, this association was no longer significant after controlling for KS1 average point score attainment. There are a couple of possible interpretations for this. Firstly, it may suggest a selection effect among those children who started attending after school clubs at the age of 7 or 11; that children with higher maths ability were more likely to participate in after school club from age 7 onwards. However, for the children who attended after school clubs at ages 5, 7 and 11 it may suggest instead that the effect of after school club on attainment occurs earlier in primary, i.e. that the effect occurred at KS1 and that it is not cumulative and so a further difference is not observed at KS2 when the earlier higher KS1 attainment is accounted for.

Taking part in 'other' clubs at age 7 was positively linked with both the total points score and with the odds of achieving a Level 5 in maths. For example, controlling for a range of other factors, including KS1 attainment, children who had taken part in 'other' clubs had on average approximately half a point (0.513) higher total point score at KS2, compared with children who had not taken part in such clubs. It is difficult to distil what it is about 'other' clubs that is valuable for age 11 outcomes given that this category could cover a broad range of activities. In short the question captures any organised out of school activity that is not a physical activity, academic tuition, religious activity, childcare or breakfast or after school club. As music tuition was not asked about at age 7 those children who received instrumental lessons at age 7 might have been included under this 'other' club, and this could also include a whole host of other activities such as the cub scouts and brownies, choir, arts, crafts, chess or drama clubs.

Prior to controlling for KS1 attainment, receiving instrumental music tuition or lessons paid for by a family member at age 11 was positively associated with both total point score and the odds of achieving a Level 5 in maths. However, when controlling for prior attainment, instrumental tuition was not significantly related to total point score and the relationship with Level 5 maths was borderline significant (p=0.05). A possible explanation is that children who were performing better academically at the age of 7 were both more likely do well at school at the end of primary and also more likely to take up a musical instrument during KS2. However, it should be remembered that we do not actually know at what age these children started receiving instrumental lessons. So we can only conclude that receiving instrumental lessons is associated with attainment but that the direction of this association cannot be established using the data available.

3.4 Informal time use

Helping with household chores or helping a sick, elderly or disabled family member was associated with attainment outcomes. Some regular involvement in household chores at age 11 was positively associated with KS2 total point scores; children who did household chores several times a week had the highest total point score on average, while the KS2 results of those who did chores once or twice a week, or daily or almost daily, did not differ significantly from the children who did chores less than weekly or never. In terms of social outcomes at age 11, doing chores regularly was not significantly related to total difficulties but it was significantly related to prosocial skills. Children who did household chores several times a week or every day at the age of 7 had significantly higher odds of having the highest prosocial score at age 11, as did children who did household chores at least once or twice a week at the age of 11, compared with those who did household chores less than weekly or never, when controlling for prosocial skills at age 5.

On the other hand, having frequent *caring* commitments, looking after an elderly, sick or disabled family member every day or almost every day was associated with lower odds of achieving a Level 5 in maths, compared with those who did this less than weekly or never. About 3% of the children had this level of caring responsibilities, with almost a further 6% helping or caring several times a week (2.5%) or once or twice a week (3.3%). Providing care was also significantly related to social, emotional and behavioural outcomes at age 11. Controlling for the total difficulties score at age 5, and compared with children who provided care less often than weekly or never, children who looked after an elderly, sick or disabled family member either most days or daily or almost daily had significantly higher total difficulties scores. On the other hand, children who provided care either once or twice a week or most days had significantly higher odds of having the highest prosocial score on the scale, while those who

provided care daily did not differ significantly from those who provided care less than weekly or never. In summary, some regular caring responsibilities is positively related to prosocial skills (and unrelated to attainment), and very frequent caring is linked to more difficulties and lower attainment in maths.

Screen time, measured as the amount of time spent watching TV, and the amount of time spent playing computer or video games, on a regular weekday during term-time at ages 5, 7 and 11, did not emerge as a consistently important factor in the regression analyses. Computer gaming at any age, and TV time at age 11, were unrelated to attainment at KS2 in all the models. However, there is some suggestion that time spent watching TV at ages 5 and 7 is linked to later attainment, when controlling for KS1 attainment, and that TV time at age 11 is linked to more social, emotional and behavioural difficulties at age 11.

- Children who watched more than an hour of TV on a typical school day at the age of 5 had significantly higher odds of getting a Level 5 in English at KS2, in comparison with those who watched less than an hour or no TV (controlling for KS1 attainment).
- On average, children who watched the most TV (3 or more hours per term-time weekday) at the age of 7 had the highest total point score, while those who watched 1-3 hours per week had the lowest attainment on average.
- On the other hand, controlling for total difficulties at age 5, watching TV 3 hours or more on a typical weekday during term time was associated with significantly higher total difficulties at age 11.

The content of the TV programmes watched at ages 5, 7 and 11 are likely to differ greatly and so to the extent that younger children are more likely to watch age-appropriate children's programmes with some educational content this might explain the positive association with later attainment. However, without any information about the content of the TV programmes watched it is not possible to draw firm conclusions from these findings.

One aspect of organised out of school activities is that they may provide the child with enriching opportunities to socialise with their peers outside the school setting. We therefore also wanted to look at whether and how informal socialising with friends was related to child outcomes. Frequent socialising with peers, spending time with friends daily or almost every day, at age 11 was associated with significantly lower total point scores on average, and significantly lower odds of achieving a Level 5 in English, compared with those who spent time with friends outside school on a school day less often than weekly. Those who socialised with their friends in this way weekly or up to several times per week did not differ significantly in their attainment from those who spent time with friends less than weekly.

The results based on parent report of a child's time use were similar. Closely related to spending time with friends on a school day outside school hours is how often the parent reported that the child was allowed unsupervised time out with their friends. Compared with those whose parents reported that the child was never allowed unsupervised time out with their friends on a school day at the age of 11, the children whose parents reported they allowed this regularly, at least once a week or most days, had significantly lower odds of attaining a Level 5 in maths at KS2, controlling for their prior attainment at KS1.

Finally, spending time with friends outside school was also positively linked with emotional and behavioural child outcomes at age 11 when controlling for the same measure at age 5. Regularly socialising with friends at age 11, whether once or twice a week up to daily or almost daily, was associated with lower total difficulties scores on average, and higher odds of having the highest prosocial score, compared with those who did so less than weekly or never.

4 Potential for activities to close the education gap?

A key aim for this project was to investigate whether out of school activities might play a role in closing the attainment gap between children from economically disadvantaged backgrounds and children with more family resources.

In order to address this question more directly, we conducted some analyses on the sub-sample of children who were from economically disadvantaged families. As mentioned earlier, we define disadvantage in this analysis as the family being income poor (measured as family income below 60% of the median equivalised income) in at least two of the three MCS interviews during primary school.[13] These analyses included a regression model again looking at the relationship between formal activities and the total point scores when controlling for other factors, and also an individual progress analysis looking at the role of formal activities in attainment progress between KS1 and KS2. Focusing these analyses solely on disadvantaged children allows us to identify any activities that are specifically associated with attainment among disadvantaged children.

Our individual progress analysis is based on the difference between the child's actual KS2 total point score and the predicted KS2 total points score, based on a regression model that includes the KS1 average point score and other child, family and school circumstances.[14] An actual total points score higher than the predicted score, resulting in a positive progress score, suggests that the child has made more educational progress between KS1 and KS2 than expected based on their prior attainment and other characteristics. Conversely a negative progress score suggests that the child has not made as much progress between KS1 and KS2 as expected based on their attainment and characteristics at age 7.

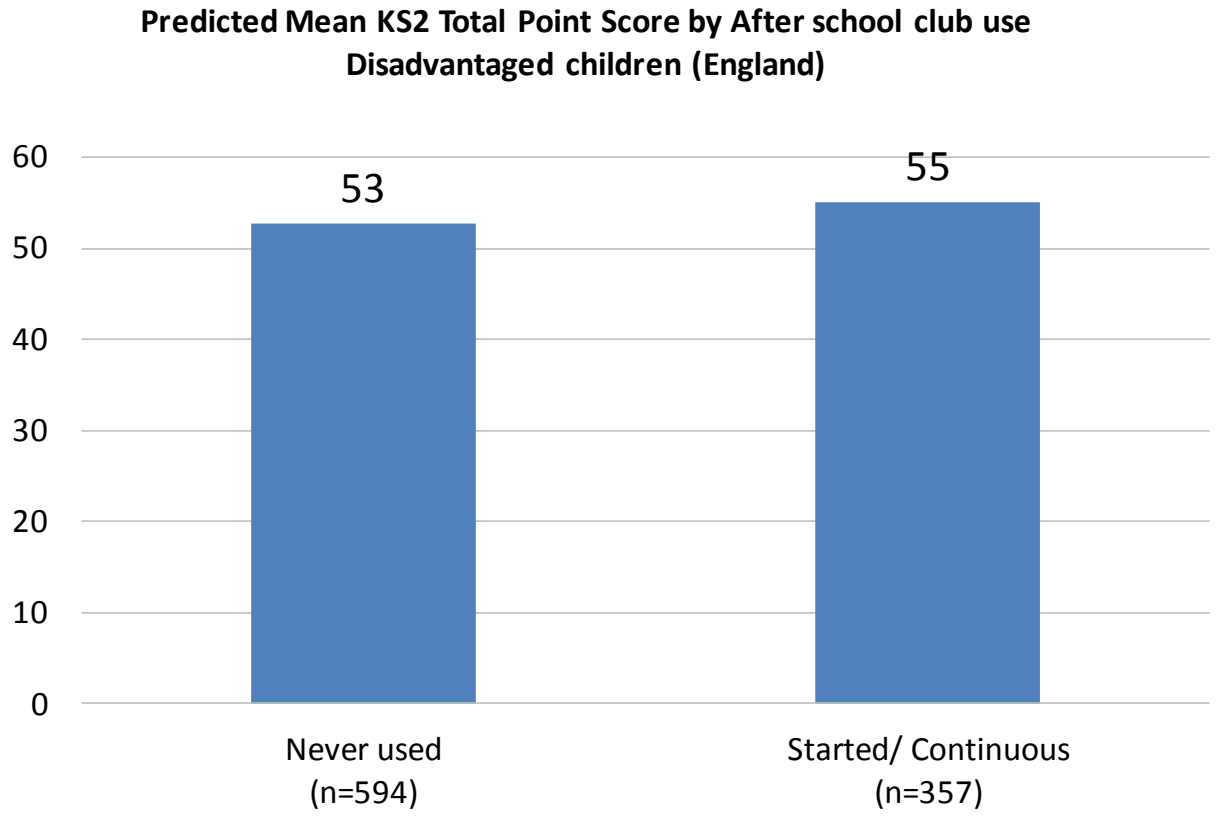
After school club was the only organised activity that was significantly related to disadvantaged children's KS2 attainment. Compared with disadvantaged children who had never attended after school club, those who had either attended after school club at ages 5, 7 and 11 or who attended at the age of 11 having started after the age of 5 or after the age of 7, had significantly higher total point scores on average. This effect was strengthened when controlling for KS1 attainment. The figure below illustrates this finding using the predicted KS2 total point scores based on the regression model for disadvantaged children who never went to after school club during primary school and those who started after the age of 5 or had after school club in each of the three time points. The difference looks quite small on average, just two points, but that is

[13] This measure is associated with, but not entirely equivalent to, eligibility for free school meals (FSM). The MCS did ask parents about free school meals, however, in the age 5 interview parents were only asked whether the child usually had a meal provided by the school, and if so whether they paid for this or received free meals, not whether they were eligible for FSM. The administrative data on the child's free school meal eligibility matched on from the NPD only covered the end of KS1 and the end of KS2 school years. About half of the pupils classified as disadvantaged according to our definition were eligible for Free School Meals at age 7 and/or 11 (53% at age 7 and 51% at age 11), by comparison overall 16-17% of children in were eligible for FSM at those age points.

[14] The following variables were included in the model to predict KS2 total point scores for the value added analysis: KS1 average point score, child's sex, month of birth, mother's age at the birth of the child, family type when the child was 9 months, highest parental occupation group when the child was aged 9 months, school readiness score at age 3, BAS naming vocabulary score at age 3, SDQ total difficulties score at age 5, SDQ prosocial score at age 5, family income quintile at age 5, whether the child received any SEN provision at school at age 7.

nonetheless two-fifths of the 5-point 'attainment gap' between disadvantaged children overall and those who are from a more affluent background.

Figure 4.1 Mean predicted KS2 total point scores by after school club participation



Unsurprisingly then, after school club also emerged as significantly related to individual progress. Compared with disadvantaged children who did not attend after school club at the age of 11, those who attended after school club one or two days per week had made significantly more progress than predicted. Those who attended after school club one day per week had on average a 1.7 point higher actual KS2 score than predicted based on their prior attainment and circumstances, while those who attended after school club two days per week had on average a 3 point higher actual total point score than predicted. However, the relationship between after school club attendance and progress was not linear as children who attended after school club three days per week or more at the age of 11 did not differ significantly from those who did not go to after school club at all.

We also explicitly tested whether the relationship between after school club differed among disadvantaged children compared with non-disadvantaged children by running the progress analysis on all children and including an interaction effect between disadvantage status and after school club attendance. The significant interaction effect confirmed that while attending after school club was not significantly related to progress among the non-disadvantaged, it was positively related to progress among disadvantaged children.

After school club attendance was also the only organised activity to be significantly related to social outcomes, with attendance being significantly and positively associated with prosocial skills among disadvantaged children. Compared with those who had not attended after school club at any of the three age points, the following had higher odds on average of scoring the top prosocial score at age 11:[15]

- children who attended after school club at age 5 and/or 7 (but not 11),
- children who attended after school club at age 11, having started after the age of 5, and
- children who had attended after school club at all three age points.

In order to try to better understand what it is about after school club that might be driving this finding we looked at additional information about the after school club at age 7 (this information was not asked again at age 11). The majority (88%) of disadvantaged children who used after school club at age 7 reported that this was on the school site. Comparing the disadvantaged children who had started after school club after the age of 5 and continued to the age of 11 with those who had stopped after school club by the age of 11, a similarly low proportion of children in the two groups were reported to use after school club for childcare reasons at the age of 7 (12% and 14% respectively). This seems to suggest that perhaps after school club is serving the enrichment rather than mainly childcare purposes, and that the convenience, and perhaps the lower cost of out of school activities provided on school premises, are key reasons for disadvantaged children taking part in these activities in similar proportions to non-disadvantaged children.

Informal time use

The direction of significant associations between informal time use and child outcomes at 11 for disadvantaged children were broadly similar to those found among all children.

Regularly providing care is somewhat more common among disadvantaged children, with 6% helping an elderly, sick or disabled family member every day or almost every day at the age of 11, 3% doing so several times a week and 5% once or twice a week. As for all children, caring was associated with prosocial scores at age 11. Regularly helping an elderly, sick or disabled family member either once or twice a week or every day or almost every day at the age of 11 was significantly related to higher odds of having the highest prosocial score at age 11, compared with providing such help or care less than weekly or never and controlling for age 5 prosocial score. However, among disadvantaged children, providing care was not significantly related to KS2 attainment.

Socialising with friends also emerged as significantly and positively related to child outcomes among disadvantaged children, when in moderation. Spending time with friends outside school once or twice a week was associated with higher academic total point scores at age 11, on average and when controlling for prior attainment. Disadvantaged children who spent time with friends outside school, whether once or twice a week or most days (but not every day or almost every day) also had significantly higher odds of having the highest possible prosocial score, compared with those who never spent time with friends outside school on a weekday, or did so less than weekly.

[15] No organised activities were significantly related to *total difficulties* among disadvantaged children (analysis not shown).

As found in the analysis of all children, the results were mixed with regards to screen time among disadvantaged children. Firstly, compared with watching less than an hour or no TV at all on a typical school day, disadvantaged children who watched TV between 1 and 3 hours a day at the age of 5 had higher total points scores on average at KS2 (controlling for prior attainment at KS1). However, those who watched TV between 1 and 2 hours or 3 hours or more a day at the age of 11 had lower odds of the highest prosocial score at age 11. Playing computer games for 1 to 3 hours on a typical term time weekday at the age of 7 was also associated with lower odds of the highest prosocial score at age 11, compared with not playing computer or video games at all or playing for less than an hour a day.

5 Conclusions

This research set out to investigate the association between taking part in out of school activities during primary school and attainment, social, emotional and behavioural outcomes at age 11. Children from economically disadvantaged backgrounds have poorer outcomes, on average, at age 11 than their more affluent peers and a great deal of policy and research interest is focused on ways to close this gap. This research project funded by the Nuffield Foundation aimed to address the evidence gap by finding out how participation in activities varied for children from different backgrounds and whether there was evidence suggesting a causal association between activities and outcomes. Patterns of take-up of out of school activities have been reported previously. This paper focuses on the link between activity participation and age 11 outcomes, particularly for disadvantaged children.

This analysis has shown significant inequalities in the take-up of out of school activities among primary school children. Children from disadvantaged backgrounds had substantially lower take up of most of the organised activities investigated in this paper. This finding is also reflected in other research showing a link between family characteristics and uptake (McCoy et al, 2012: Wikeley et al, 2007; Demos, 2014).

These inequalities are likely to be largely driven by the costs of participation in organised activities, including not just the direct cost of the fees for the activity but also the associated cost of travel to and from the activity, the cost of uniforms, kit or materials (e.g. instruments). Another barrier to community-based, as opposed to school-based, activities may also be to do with the scheduling of activities in afternoons and the difficulties getting to and from and the travel time. Such challenges may also be more difficult for more disadvantaged families who may be more reliant on public transport to get to and from activities, making school-based clubs not just a potentially cheaper but also potentially a more logistically manageable option as it would require a later pick-up from school rather than separate journeys to and from the activity following school pick-up.[16] And as we have shown, breakfast and after school clubs, both generally available on school premises, showed parity in uptake between disadvantaged children and others from more economically advantaged backgrounds.

Furthermore, our results suggest that disadvantaged children who take part in after school clubs during primary school have higher KS2 results than those who do not, and higher KS2 results than predicted based on their KS1 results and other background characteristics and circumstances. Of course it needs to be borne in mind that while the analyses which these results are based on did include a range of background measures as controls it is possible that some unobserved characteristics, either not measured in the MCS or not included in the analysis could be driving the observed relationship between club participation and attainment.

School-based clubs is also one type of out of organised school activity that is most obviously within policy control. While there are indications that primary schools are becoming increasingly focused on core curriculum this is in parallel with a wider recognition of the importance of schools also fostering character, grit, resilience and general moral education. After school clubs, based on school premises, seem to be an easy vehicle for policy makers and educators to ensure that children have access to both the core curriculum and wider enriching activities. At

[16] The qualitative strand of the project explored both parents' motivations for out of school activities and their reported barriers to taking up such activities. These findings will be reported on separately.

first glance they appear to be a golden opportunity to provide enrichment, recognizing that it's the most open and accessible out of school activity for children across the income range.

However, we also urge the use of caution here. A limitation of the MCS data is that we have no information on what the children are doing when they attend after school club. At the ages of 5 and 7 there is information on whether the parents' motivation for using after school club is that they require childcare, but even so we do not know if the child is attending clubs that are focusing on an organised activity (such as art, drama, sport or chess club held at school after the end of the curriculum school day) or whether it is a 'working parents' club where the children get a snack and are free to engage in self-directed play in a safe and supervised environment. Both types of clubs may indeed be beneficial for children, our point is just that more information is required to understand what types of activities, and under what conditions, are most beneficial, before any policy recommendation to invest in after school clubs in order to help close the attainment gap could be made.

However, we do know from evidence on childcare and primary school education that the quality of provision is of key importance. For example, findings from the EPPE research has shown that teaching quality in primary school is more important for some attainment measures than the influence of some pupil background characteristics (Sammons et al., 2008) and the positive effects on both attainment and social and emotional outcomes of having attending good quality pre-school education persist to the age of 11, and that the benefit was especially important for disadvantaged pupils (Sylva et al., 2008). While we have no information on the quality of out of school activity provision in this study, it is reasonable to assume that quality of provision will matter also in the link between out of school activities and child outcomes.

To the extent that the parity in take-up of school-based clubs among disadvantaged and other children suggests that they are attending the same clubs together, it may also be that it is not just that accessing enriching after school club activities is associated with positive outcomes for disadvantaged children but that doing so with children from different backgrounds matters. Evidence from meta analyses of learning in the classroom suggests that pupils with low to average level attainment benefit from learning in mixed ability groups[17] and while the processes might be quite different in a non-classroom setting, diversity of pupil backgrounds could potentially be an influencing factor. This is something that requires further investigation, in order to better understand the potential for after school clubs to help close the attainment gap, as it would have implications for policy decisions in terms of targeting provision or aiming for universal and inclusive access.

Finally, educators who are considering how to use their after school club provision to help close the education gap may wish to look at the activities that were positively linked with child outcomes among all children. Organised sports activities and other clubs (which again can include a wide range of not purely academic or physical activities) were associated with both higher attainment at KS2 and doing sports was also associated with better social, emotional and behavioural outcomes at age 11.

[17] For an overview of evidence see https://educationendowmentfoundation.org.uk/toolkit/toolkit-a-z/ability-grouping

Bibliography

Carpenter, H., Papps, I., Bragg, J., Dyson, A., Harris, D., Kerr, K., Todd, L., and Laing, K. (2013) Evaluation of Pupil Premium. DfE RR282.

Chanfreau, J., Tanner, E., Callanan, M., Laing, K., Paylor, J., Skipp, A. and Todd, L. (2015) Unequal access to out of school activities. www.natcen.ac.uk/media/563125/out-of-school-resbr1.pdf

Chanfreau, J., Tanner, E., Callanan, M., Laing, K., Paylor, J., Skipp, A. and Todd, L. (2015) Out of school activities: understanding who does what. www.natcen.ac.uk/media/563160/out-of-school-resbr2.pdf

Clifton, J. and Cook, W. (2012) A long division: closing the attainment gap in England's secondary schools. IPPR.

Cooper, H., Valentine, J. C., Nye, B. & Lindsay, J. J. (1999). Relationships between five after-school activities and academic achievement. Journal of Educational Psychology 91(2): 369.

Cummings, C., Laing, K., Law, J., McLaughlin, J., Papps, I., Todd, L. and Woolner, P. (2011). Can changing aspirations and attitudes impact on educational attainment: A review of interventions. Joseph Rowntree Foundation.

Cummings, C., Todd, L., Dyson, A., Muijs, D., Papps, I., Pearson, D., Raffo, C., Tiplady, L., Crowther, D. Evaluation of the full service extended schools initiative: final report. Nottingham: Department for Education and Skills, 2007. DfES Research Brief and Report 852.

Cummings, C., Dyson, A., and Todd, L. (2011) Beyond the School Gates: Can full service and extended schools overcome disadvantage? Routledge: London & New York.

Demos Learning by Doing (ET ADD REFERENCE)

Feldman, A. F. and Matjasko, J. L. (2005) The role of school-based extra-curricular activities in adolescent development: a comprehensive review and further directions. Review of Educational Research 75(2): 159-210.

Gregg, P. and Goodman, A. (2010) Poorer children's educational attainment: how important are attitudes and behaviours? Joseph Rowntree Foundation.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. Journal of Child Pshychology and Psychiatry: 38(5), 581-586.

Huskinson, T., Pye, J., Medien, K., Dobie, S., Ferguson, C., and Gardener, C. (2013). Childcare and Early Years Survey of Parents 2011. DfE: SFR08/2013.

McCoy, S., Quail, A. and Smyth, E. (2012). Growing Up in Ireland - Influences on 9 year olds' learning: home, school and community. Government Publications, Dublin.

Meltzer, H., Gatward, R., Goodman, R., and Ford, F. (2000) *Mental health of children and adolescents in Great Britain*. London: The Stationery Office.

Milburn, A. (2012) Fair Access to Professional Careers: A progress report by the Independent Reviewer on Social Mobility and Child Poverty, London: Cabinet Office.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B., Barreau, S., and Grabbe, Y. (2008) Effective pre-school and primary education 3-11 Project (EPPE 3-11): The influence of school and teaching quality on children's progress in primary school. DfE: Research Brief DCSF-RB028.

Save the Children (2013). Too Young to Fail: Giving all children a fair start in life.

Scott-Little, C., Hamann, M., and Jurs, S. (2002) Evaluations of After-School Programs: A Meta-Evaluation of Methodologies and Narrative Synthesis of Findings. American Journal of Evaluation 23: 387.

Shulruf, B. (2010) Do extra-curricular activities in schools improve educational outcomes? A critical review and meta-analysis of the literature. International Review of Education 56(5-6):691-612.

Shulruf, B. and Ying Wang, G. Extracurricular Activities in Secondary Schools. In Hattie, J. and Anderman, E. M. (Eds) (2013) International Guide to Student Achievement. Routledge: New York & London.

Social Mobility and Child Poverty Commission (October 2013). State of the Nation 2013: Social mobility and child poverty in Great Britain. HMSO.

Stearns, E. and Glennie, E. J., (2010) Opportunities to participate: Extracurricular activities' distribution across and academic correlates in high schools. Social Science Research 39 (2): 296-309.

Stewart, K. (2013) Labour's Record on the Under Fives: Policy, Spending and Outcomes 1997-2010, Social Policy in a Cold Climate, Working Paper 4, LSE & Centre for Analysis of Social Exclusion.

Sylva, K., Melhuish, E. C., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2008). Final Report from the Primary Phase: Pre-School, School and Family Influences on Children's Development during Key Stage 2 (7-11). DCSF Research Report 61.

TNS BMRB (2014) Primary schools providing access to out of school care. DfE Research Report 349.

Wikeley, F., Bullock, K., Mushamp, Y. and Ridge, T. (2007). Educational relationships outside school: Why access is important. Joseph Rowntree Foundation.

APPENDIX A KS2 Attainment regression tables

Table A.1 KS2 Total point score linear regression – All children

ALL CHILDREN IN ENGLAND		MODEL 1				CONTROLLING FOR KS1			
		Coef.	P>t	[95% Conf.	Interval]	Coef.	P>t	[95% Conf.	Interval]
Extra tuition in English age 11	Yes	1.051	**0.007**	0.291	1.810	1.282	**0.000**	0.602	1.962
Extra tuition in Maths age 11	Yes	-1.512	**0.000**	-2.224	-0.800	-1.224	**0.000**	-1.873	-0.574
Paid for music lessons age 11	Yes	0.710	**0.010**	0.167	1.253				
Other' club age 7	Yes	0.815	**0.000**	0.383	1.246	0.513	**0.008**	0.136	0.891
Frequency reading for enjoyment age 7 (Ref: At least several times a week)	Never or less than monthly	-2.230	**0.000**	-3.105	-1.355				
	At least once a month	-1.043	**0.016**	-1.890	-0.196				
	At least once a week	-0.874	**0.006**	-1.497	-0.251				
Help with reading age 7	Yes	-1.029	**0.000**	-1.448	-0.610				
Hours per week spent doing homework age 11 (Ref: None or <1hour)	1 hour	0.763	**0.023**	0.106	1.421	0.786	**0.014**	0.159	1.412
	2 hours	0.833	**0.027**	0.096	1.570	0.954	**0.006**	0.270	1.639
	3 or 4 hours	1.217	**0.003**	0.411	2.024	1.291	**0.001**	0.545	2.037
	5 or more hours	1.361	**0.005**	0.404	2.317	1.568	**0.001**	0.663	2.474
Frequency reads for enjoyment (not school) age 11 (Ref: Most days)	Never or less than monthly	-0.964	**0.003**	-1.595	-0.334	-0.614	0.050	-1.227	-0.001
	At least once a month	-1.199	**0.001**	-1.882	-0.516	-0.953	**0.005**	-1.613	-0.292
	At least once a week	-1.125	**0.000**	-1.607	-0.643	-0.778	**0.000**	-1.208	-0.348
How often anyone at home helps with homework age 11 (Ref: Sometimes)	Never or almost never	1.426	**0.001**	0.622	2.230	1.155	**0.001**	0.454	1.855
	Usually	-1.090	**0.000**	-1.654	-0.526	-0.542	**0.042**	-1.064	-0.019
	Always	-2.187	**0.000**	-2.808	-1.565	-1.332	**0.000**	-1.916	-0.747
Frequency of doing hosehold chores age 11 (Ref: Less than weekly)	Once or twice a week	0.380	0.154	-0.143	0.903	0.446	0.065	-0.029	0.920
	Several times a week	0.642	**0.019**	0.104	1.181	0.482	**0.046**	0.010	0.955
	Every day or almost every day	-0.221	0.480	-0.835	0.393	-0.131	0.651	-0.700	0.438
Frequency of non-club/class physical activities age 7 (Ref: Less than weekly)	Once or twice a week	0.559	0.276	-0.447	1.564	0.488	0.239	-0.325	1.302
	Several times a week	1.291	**0.007**	0.357	2.224	1.032	**0.014**	0.209	1.856
	Every day or almost every day	0.451	0.335	-0.468	1.370	0.427	0.259	-0.316	1.169
Frequency of spending time with friends age 7 (Ref: Less than weekly)	Once or twice a week	-0.580	**0.020**	-1.067	-0.094	*-0.477*	***0.032***	*-0.914*	*-0.041*
	Several times a	-0.504	0.122	-1.142	0.135	*-0.305*	*0.290*	*-0.872*	*0.262*

ALL CHILDREN IN ENGLAND		MODEL 1				CONTROLLING FOR KS1			
		Coef.	P>t	[95% Conf.	Interval]	Coef.	P>t	[95% Conf.	Interval]
	week								
	Every day or almost every day	-1.378	**0.001**	-2.156	-0.600	*-0.830*	***0.024***	*-1.548*	*-0.112*
Frequency of spending time with friends age 11 (Ref: Less than weekly)	Once or twice a week	0.038	0.911	-0.639	0.716	*0.020*	*0.943*	*-0.528*	*0.568*
	Several times a week	0.032	0.923	-0.611	0.674	*-0.001*	*0.998*	*-0.593*	*0.591*
	Every day or almost every day	-1.175	**0.005**	-1.999	-0.351	*-0.726*	***0.043***	*-1.428*	*-0.024*
Hours per term-time weekday watching TV age 7 (Ref: None of <1 hour)	1-3 hours	-0.315	0.258	-0.861	0.232	-0.167	0.490	-0.641	0.308
	3 hours or more	0.469	0.192	-0.237	1.175	0.571	0.090	-0.091	1.233
Income quintile age 7 (Ref: Top)	Lowest quintile	-2.195	**0.000**	-3.170	-1.220	-1.122	**0.011**	-1.987	-0.258
	2nd	-1.578	**0.000**	-2.379	-0.778	-0.793	**0.027**	-1.495	-0.092
	3rd	-1.158	**0.000**	-1.747	-0.570	-0.742	**0.007**	-1.284	-0.201
	4th	-0.602	**0.017**	-1.095	-0.109	-0.279	0.216	-0.720	0.163
SEN provision at school age 7 (Ref:None)	School Action	-2.764	**0.000**	-3.612	-1.915	-0.734	0.073	-1.535	0.067
	School Action Plus	-1.394	**0.029**	-2.643	-0.144	0.321	0.603	-0.889	1.530
	Statement	1.475	0.552	-3.394	6.344	3.972	**0.041**	0.170	7.775
SEN provision at school age 11 (Ref:None)	School Action	-5.062	**0.000**	-6.086	-4.037	-2.013	**0.000**	-2.897	-1.129
	School Action Plus	-7.583	**0.000**	-8.897	-6.270	-3.929	**0.000**	-5.190	-2.667
	Statement	-16.411	**0.000**	-20.034	-12.789	-9.292	**0.000**	-12.361	-6.222
Region in England (Ref: South East)	North East	1.408	**0.025**	0.174	2.642				
	North West	0.583	0.275	-0.466	1.632				
	Yorkshire and the Humber	0.703	0.114	-0.169	1.575				
	East Midlands	1.272	**0.009**	0.325	2.218				
	West Midlands	0.103	0.834	-0.864	1.071				
	East of England	-0.091	0.851	-1.047	0.864				
	London	0.537	0.280	-0.439	1.512				
	South West	-0.714	0.093	-1.547	0.119				
Bracken school readiness score age 3 (Ref: Average)	Very delayed or Delayed	-2.299	**0.000**	-3.288	-1.311	-0.986	**0.043**	-1.942	-0.030
	Advanced or Very advanced	2.023	**0.000**	1.578	2.468	0.702	**0.001**	0.275	1.129
BAS naming vocabulary score age 3		0.080	**0.000**	0.056	0.105	0.032	0.032	**0.007**	0.009
SDQ Total difficulties score age 5		-0.140	**0.000**	-0.195	-0.085	-0.068	-0.068	**0.004**	-0.114
SDQ Pro social skills score age 5		-0.190	**0.012**	-0.338	-0.042	-0.162	-0.162	**0.009**	-0.283
Home language age 3 (Ref: English only)	English and other	1.210	**0.009**	0.303	2.117				
	Other only	1.405	0.237	-0.929	3.739				

ALL CHILDREN IN ENGLAND		MODEL 1				CONTROLLING FOR KS1			
		Coef.	P>t	[95% Conf.	Interval]	Coef.	P>t	[95% Conf.	Interval]
KS1 APS						1.458	**0.000**	1.360	1.556
Child's sex	Female	-1.481	**0.000**	-2.012	-0.950	-0.934	**0.000**	-1.392	-0.477
Child's ethnic group (Ref: White)	Mixed	0.725	0.199	-0.384	1.834	0.557	0.270	-0.435	1.548
	Indian	1.534	**0.015**	0.303	2.764	1.673	**0.000**	0.880	2.467
	Pakistani and Bangladeshi	1.525	0.091	-0.245	3.294	2.417	**0.004**	0.787	4.048
	Black or Black British	2.232	**0.002**	0.798	3.666	2.303	**0.000**	1.168	3.438
	Other (inc Chinese)	3.431	**0.003**	1.169	5.693	2.156	**0.044**	0.059	4.252
Month of birth		0.129	**0.000**	0.071	0.187	-0.082	**0.004**	-0.139	-0.026
Mother's age at birth of MCS child		0.018	0.416	-0.026	0.062	0.032	0.100	-0.006	0.070
Family type at 9 months (Ref: Two parents)	Single parent	-0.044	0.930	-1.034	0.945	0.259	0.586	-0.677	1.196
Highest parental occupation class at 9 months (Ref: Manager/ Professional)	Intermediate	-0.319	0.296	-0.918	0.280	0.065	0.796	-0.428	0.558
	Small emp and self-em	-1.310	**0.028**	-2.475	-0.144	-0.606	0.242	-1.623	0.411
	Low sup and tech	-1.212	**0.009**	-2.123	-0.302	-0.280	0.497	-1.089	0.529
	Semi-routine and rout	-0.500	0.185	-1.239	0.240	0.159	0.668	-0.569	0.886
	Non-working household	1.453	**0.046**	0.026	2.880	2.125	**0.001**	0.838	3.412
Constant		59.440	**0.000**	56.582	62.299	35.450	**0.000**	32.375	38.524
Subpop. no. Obs = 4,847						Subpop. no. Obs = 4,874			
R-squared = 0.4613						R-squared = 0.5736			

Table A.2 KS2 English Level 5 binary logistic regression – All children

ALL CHILDREN IN ENGLAND		Odds Ratio	P>t	[95% Conf.	Interval]	Odds Ratio	P>t	[95% Conf.	Interval]
Extra tuition in English age 11	Yes	0.760	0.065	0.568	1.017	0.761	0.053	0.576	1.004
Extra tuition in Maths age 11	Yes	0.816	0.093	0.643	1.035				
Paid for music lessons age	Yes	1.212	0.052	0.998	1.471				
Frequency reading for enjoyment age 7 (Ref: At least several times a week)	Never or less than monthly	0.376	**0.000**	0.277	0.511	0.748	0.099	0.529	1.057
	At least once a month	0.424	**0.000**	0.291	0.617	0.641	**0.032**	0.427	0.962
	At least once a week	0.581	**0.000**	0.480	0.703	0.735	**0.008**	0.586	0.923
Anyone at home help with reading age 7	Yes	0.844	**0.048**	0.713	0.998	1.097	0.350	0.903	1.331

Anyone at home help with maths age 7	Yes	0.778	**0.005**	0.654	0.925	0.812	**0.037**	0.667	0.988
Frequency reads for enjoyment (not school) age 11 (Ref: Most days)	Never or less than monthly	0.474	**0.000**	0.365	0.614	0.467	**0.000**	0.351	0.621
	At least once a month	0.493	**0.000**	0.391	0.621	0.477	**0.000**	0.364	0.625
	At least once a week	0.481	**0.000**	0.398	0.581	0.503	**0.000**	0.409	0.618
How often anyone at home helps with homework age 11 (Ref: Sometimes)	Never or almost never	1.544	**0.008**	1.123	2.123	1.488	**0.031**	1.036	2.136
	Usually	0.747	**0.001**	0.629	0.887	0.893	0.276	0.727	1.095
	Always	0.513	**0.000**	0.420	0.627	0.634	**0.000**	0.508	0.790
Frequency of non-club/class physical activities age 7 (Ref: Less than weekly)	Once or twice a week	1.521	**0.031**	1.039	2.226	1.633	**0.019**	1.085	2.458
	Several times a week	1.677	**0.011**	1.125	2.500	1.820	**0.009**	1.166	2.841
	Every day or almost every day	1.181	0.350	0.832	1.677	1.298	0.176	0.889	1.895
Walks or cycles to school age 11	Yes	0.867	0.077	0.740	1.016	0.806	**0.012**	0.682	0.953
Frequency of spending time with friends age 11 (Ref: Less than weekly)	Once or twice a week	0.838	0.162	0.654	1.074	0.823	0.137	0.636	1.064
	Several times a week	0.832	0.145	0.650	1.065	0.797	0.091	0.614	1.037
	Every day or almost every day	0.582	**0.000**	0.440	0.769	0.619	**0.001**	0.465	0.824
Hours per term-time weekday watching TV age 5 (Ref: None of <1 hour)	1-3 hours	1.323	**0.008**	1.078	1.624	1.314	**0.011**	1.064	1.623
	3 hours or more	1.262	0.102	0.955	1.667	1.365	**0.045**	1.007	1.850
Household income quintile (equivalised) age 5 (Ref: Highest)	Lowest	0.554	**0.000**	0.400	0.765	0.573	**0.002**	0.403	0.815
	2	0.571	**0.000**	0.425	0.768	0.587	**0.001**	0.434	0.793
	3	0.681	**0.005**	0.522	0.888	0.715	**0.012**	0.550	0.929
	4	0.679	**0.001**	0.541	0.851	0.702	**0.005**	0.549	0.897
Whether eligible for FSM age 7 (Ref: No)	Yes	0.686	**0.037**	0.482	0.977				
Household income quintile (equivalised) age 11 (Ref: Highest)	Lowest	0.739	0.143	0.492	1.109				
	2	0.701	**0.022**	0.518	0.949				
	3	0.695	**0.005**	0.538	0.898				
	4	0.871	0.229	0.694	1.091				
SEN provision at school age 7 (Ref:None)	School Action	0.448	**0.000**	0.331	0.607				
	School Action Plus	0.924	0.775	0.537	1.590				

	Statement	0.518	0.534	0.065	4.149				
SEN provision at school age 7 (Ref:None)	School Action	0.272	**0.000**	0.193	0.384				
	School Action Plus	0.350	**0.000**	0.221	0.554				
	Statement	0.350	0.173	0.077	1.586				
Region in England (Ref: South East)	North East	1.586	0.055	0.989	2.544	1.272	0.385	0.738	2.193
	North West	1.975	**0.000**	1.535	2.542	2.311	**0.000**	1.723	3.101
	Yorkshire and the Humber	1.537	**0.003**	1.158	2.039	1.793	**0.001**	1.291	2.490
	East Midlands	1.783	**0.001**	1.261	2.519	1.854	**0.004**	1.224	2.808
	West Midlands	1.465	**0.037**	1.024	2.096	1.868	**0.002**	1.269	2.750
	East of England	1.370	**0.025**	1.041	1.804	1.553	**0.009**	1.118	2.159
	London	1.669	**0.000**	1.268	2.195	2.086	**0.000**	1.516	2.871
	South West	1.035	0.813	0.776	1.380	1.433	**0.030**	1.035	1.984
School mobility: moved schools between year 3 and 4 (Ref: No)	Yes	0.831	**0.033**	0.700	0.985	0.611	**0.000**	0.488	0.766
Bracken school readiness score age 3 (Ref: Average)	Very delayed or Delayed	0.770	0.117	0.555	1.068	0.995	0.979	0.673	1.470
	Advanced or Very advanced	1.864	**0.000**	1.542	2.254	1.315	**0.013**	1.060	1.631
BAS naming vocabulary score age 3		1.036	**0.000**	1.026	1.046	1.026	**0.000**	1.015	1.037
SDQ Total difficulties score age 5		0.965	**0.001**	0.946	0.985	0.985	0.182	0.963	1.007
SDQ Pro social skills score age 5		1.647	**0.024**	1.067	2.542	1.588	**0.045**	1.011	2.496
Home language age 3 (Ref: English only)	English and other language(s)	2.423	0.067	0.938	6.259	2.430	0.090	0.871	6.775
	Other language(s) only	1.162	**0.001**	1.068	1.266	1.155	**0.007**	1.041	1.282
KS1 APS						1.759	**0.000**	1.673	1.850
Child's sex	Female	1.138	0.152	0.954	1.358	1.437	**0.000**	1.178	1.752
Child's ethnic group (Ref: White)	Mixed	1.391	0.207	0.833	2.324	1.132	0.648	0.664	1.929
	Indian	1.033	0.915	0.564	1.894	0.785	0.499	0.389	1.585
	Pakistani and Bangladeshi	1.711	0.126	0.860	3.405	1.912	0.096	0.891	4.101
	Black or Black British	1.285	0.392	0.723	2.284	0.972	0.935	0.494	1.914
	Other (inc Chinese)	2.691	**0.040**	1.045	6.934	1.387	0.547	0.478	4.026
Month of birth		1.050	**0.000**	1.026	1.074	0.983	0.190	0.958	1.009
Mother's age at birth of MCS child		1.013	0.093	0.998	1.028	1.020	**0.015**	1.004	1.036
Family type at 9 months (Ref: Two parents)	Single parent	1.151	0.362	0.850	1.558	1.247	0.218	0.877	1.773
Highest parental	Intermediate	0.811	**0.039**	0.665	0.989	0.910	0.382	0.737	1.124

occupation class at 9 months (Ref: Manager/ Professional)	Small emp and self-em	0.650	**0.008**	0.473	0.894	0.766	0.107	0.554	1.059
	Low sup and tech	0.623	**0.003**	0.459	0.846	0.758	0.067	0.564	1.019
	Semi-routine and rout	0.763	**0.045**	0.585	0.995	0.904	0.502	0.674	1.214
	Non-working household	1.467	0.176	0.842	2.555	1.537	0.133	0.876	2.695
Constant		0.130	**0.000**	0.052	0.331	0.000	**0.000**	0.000	0.000
					Subpop. no. Obs = 4,819			Subpop. no. Obs = 4,820	

Table A.3 KS2 Maths Level 5 binary logistic regression – All children

ALL CHILDREN IN ENGLAND		Odds Ratio	P>t	[95% Conf.	Interval]	Odds Ratio	P>t	[95% Conf.	Interval]
Extra tuition in English age 11	Yes	1.710	**0.000**	1.300	2.249	1.951	**0.000**	1.476	2.579
Extra tuition in Maths age 11	Yes	0.417	**0.000**	0.324	0.535	0.434	**0.000**	0.343	0.550
Paid for music lessons age	Yes	1.330	**0.002**	1.114	1.587	1.213	0.050	1.000	1.471
Sports club attendance (Ref: Never used)	Some/ stopped	1.124	0.492	0.805	1.570	1.182	0.341	0.837	1.668
	Started	1.382	**0.034**	1.024	1.863	1.439	**0.020**	1.060	1.952
	Continuous use	1.495	**0.012**	1.094	2.045	1.453	**0.020**	1.061	1.990
After school club attendance (Ref: Never used)	Some/ stopped	0.793	**0.012**	0.662	0.950	0.816	0.050	0.666	1.000
	Started	1.011	0.897	0.852	1.200	1.039	0.708	0.850	1.270
	Continuous use	1.410	0.087	0.951	2.092	1.266	0.259	0.840	1.909
Other' club age 7	Yes	1.265	**0.007**	1.066	1.501	1.233	**0.029**	1.021	1.487
Frequency reading for enjoyment age 7 (Ref: At least several times a week)	Never or less than monthly	0.490	**0.000**	0.353	0.680				
	At least once a month	0.775	0.129	0.558	1.078				
	At least once a week	0.847	0.084	0.701	1.023				
Anyone at home help with reading age 7	Yes	0.900	0.276	0.743	1.089				
Anyone at home help with writing age 7	Yes	0.772	**0.005**	0.645	0.923				
Frequency reads for enjoyment (not school) age 11 (Ref: Most days)	Never or less than monthly	0.729	**0.011**	0.572	0.929				
	At least once a month	0.877	0.185	0.723	1.065				
	At least once a	0.810	**0.017**	0.682	0.962				

	week								
How often anyone at home helps with homework age 11 (Ref: Sometimes)	Never or almost never	1.569	**0.005**	1.145	2.148	1.381	0.075	0.967	1.972
	Usually	0.614	**0.000**	0.519	0.726	0.690	**0.000**	0.572	0.833
	Always	0.495	**0.000**	0.395	0.620	0.559	**0.000**	0.445	0.702
Frequency provides care for sick, elderly or disabled family member age 11 (Ref: Never or less than weekly)	Once or twice a week	1.045	0.836	0.688	1.587	1.064	0.785	0.681	1.663
	Several times a week	0.895	0.656	0.549	1.459	0.901	0.726	0.502	1.616
	Every day or almost every day	0.328	**0.000**	0.199	0.539	0.355	**0.000**	0.205	0.615
Frequency of non-club/class physical activities age 7 (Ref: Less than weekly)	Once or twice a week	1.364	0.109	0.933	1.993	1.570	**0.026**	1.056	2.334
	Several times a week	1.588	**0.009**	1.123	2.247	1.857	**0.001**	1.283	2.688
	Every day or almost every day	1.213	0.271	0.859	1.713	1.533	**0.019**	1.072	2.191
Frequency playing indoor games with parent(s) age 11 (Ref: Less than weekly)	Once or twice a week	1.195	0.052	0.999	1.431	1.268	**0.006**	1.070	1.501
	Several times a week or daily	1.347	**0.036**	1.020	1.779	1.475	**0.011**	1.093	1.990
Allowed unsupervised time outside home with friends age 11 (Ref: Never)	Less often	0.953	0.671	0.763	1.190	0.911	0.453	0.715	1.162
	At least once a week	0.780	**0.014**	0.641	0.950	0.735	**0.003**	0.599	0.903
	Most days	0.719	**0.003**	0.577	0.896	0.756	**0.019**	0.599	0.955
Income quintile (Ref: Top)	Lowest quintile	0.719	0.003	0.577	0.896				
	2nd	0.729	**0.027**	0.551	0.965				
	3rd	0.847	0.177	0.665	1.079				
	4th	0.974	0.818	0.780	1.217				
SEN provision at school age 7 (Ref:None)	School Action	0.430	**0.000**	0.317	0.582				
	School Action Plus	0.986	0.955	0.596	1.629				
	Statement	2.066	0.426	0.345	12.367				
SEN provision at school age 11 (Ref:None)	School Action	0.219	**0.000**	0.153	0.311				
	School Action Plus	0.240	**0.000**	0.155	0.371				
	Statement	0.088	**0.001**	0.021	0.381				
Region in England (Ref: South East)	North East	1.310	0.226	0.845	2.029				
	North West	1.027	0.869	0.745	1.416				
	Yorkshire and the Humber	0.962	0.821	0.688	1.346				
	East Midlands	1.221	0.287	0.845	1.765				

	West Midlands	0.898	0.591	0.607	1.330				
	East of England	1.000	0.999	0.696	1.437				
	London	1.242	0.268	0.846	1.823				
	South West	0.737	0.051	0.542	1.001				
Bracken school readiness score age 3 (Ref: Average)	Very delayed or Delayed	0.737	0.051	0.542	1.001	0.852	0.229	0.655	1.107
	Advanced or Very advanced	2.243	**0.000**	1.880	2.676	1.578	**0.000**	1.317	1.892
BAS naming vocabulary score age 3		2.243	0.000	1.880	2.676				
SDQ Total difficulties score age 5		0.970	**0.001**	0.952	0.987				
KS1 APS						1.776	**0.000**	1.699	1.857
Child's sex	Female	0.399	**0.000**	0.335	0.476	0.433	**0.000**	0.363	0.518
Child's ethnic group (Ref: White)	Mixed	0.399	0.000	0.335	0.476	1.347	0.228	0.829	2.187
	Indian	2.765	**0.000**	1.787	4.276	2.956	**0.000**	1.797	4.864
	Pakistani and Bangladeshi	2.429	**0.000**	1.503	3.925	2.139	**0.001**	1.353	3.382
	Black or Black British	1.448	0.159	0.864	2.428	1.377	0.201	0.843	2.250
	Other (inc Chinese)	1.448	0.159	0.864	2.428	2.138	0.069	0.941	4.859
Month of birth		1.054	**0.000**	1.029	1.078	0.985	0.257	0.960	1.011
Mother's age at birth of MCS child		1.008	0.253	0.994	1.023	1.014	0.079	0.998	1.030
Family type at 9 months (Ref: Two parents)	Single parent	1.117	0.445	0.841	1.482	1.146	0.388	0.840	1.564
Highest parental occupation class at 9 months (Ref: Manager/ Professional)	Intermediate	0.846	0.178	0.664	1.079	0.959	0.769	0.724	1.270
	Small emp and self-em	0.738	0.071	0.531	1.026	0.886	0.471	0.638	1.232
	Low sup and tech	0.705	**0.026**	0.518	0.958	0.843	0.307	0.606	1.171
	Semi-routine and rout	0.705	0.026	0.518	0.958	0.826	0.158	0.634	1.077
	Non-working household	1.428	0.189	0.839	2.431	1.536	0.179	0.820	2.876
Constant		0.913	0.835	0.385	2.164	0.000	**0.000**	0.000	0.000
Subpop. no. Obs = 4,852						Subpop. no. Obs = 5175			

Table A.4 KS2 Total point score linear regression – Disadvantaged children

DISADVANTAGED CHILDREN IN ENGLAND		**MODEL 1**				**CONTROLLING FOR KS1**			
		Coef.	**P>t**	**[95% Conf.**	**Interval]**	**Coef.**	**P>t**	**[95% Conf.**	**Interval]**
After school club attendance trajectory age 5-11 (Ref: Never used)	Some/ stopped	0.494	0.575	-1.237	2.225	0.546	0.478	-0.964	2.056
	Started/ Continuous	1.587	**0.002**	0.609	2.565	1.755	**0.000**	0.794	2.716
Anyone at home helps with	Neve or almost never	0.704	0.425	-1.029	2.436				

DISADVANTAGED CHILDREN IN ENGLAND		MODEL 1				CONTROLLING FOR KS1			
		Coef.	P>t	[95% Conf.	Interval]	Coef.	P>t	[95% Conf.	Interval]
homework age 11 (Ref: Sometimes)	Usually	-1.481	0.084	-3.163	0.200				
	Always	-2.037	**0.003**	-3.394	-0.680				
Frequency of non-club/class physical activity age 7 (Ref: Every day or almost)	Once or twice a week	0.358	0.728	-1.661	2.378				
	Several times a week	2.677	**0.015**	0.529	4.825				
	Every day or almost every day	0.047	0.959	-1.766	1.861				
Walks or cycles to school age 7	Yes	-1.395	**0.020**	-2.564	-0.225	-1.219	**0.012**	-2.173	-0.265
Frequency spending time with friends age 11 (Ref: Less than weekly)	Once or twice a week	1.720	**0.021**	0.266	3.175	1.436	**0.031**	0.128	2.744
	Several times a week	0.781	0.314	-0.742	2.304	0.605	0.352	-0.673	1.884
	Every day or almost every day	-1.120	0.157	-2.672	0.432	-0.114	0.878	-1.577	1.348
Hours spent watching TV on schoolday age 5 (Ref: Less than an hour)	1-3 hours	1.973	**0.004**	0.645	3.302	1.486	**0.013**	0.314	2.659
	3 hours or more	1.353	0.105	-0.286	2.992	1.133	0.100	-0.218	2.484
Number of children in family at age 5		-0.696	0.054	-1.404	0.013				
SEN provision at school age 7 (Ref:None)	School Action	-2.676	**0.000**	-4.002	-1.349				
	School Action Plus	-0.966	0.373	-3.098	1.166				
	Statement	4.251	0.238	-2.822	11.323				
SEN provision at school age 11 (Ref:None)	School Action	-4.821	**0.000**	-6.605	-3.038	-2.190	**0.005**	-3.721	-0.660
	School Action Plus	-8.890	**0.000**	-11.346	-6.434	-4.455	**0.000**	-6.569	-2.340
	Statement	-16.304	**0.000**	-22.222	-10.387	-6.413	**0.002**	-10.358	-2.469
Bracken school readiness score age 3 (Ref: Average)	Very delayed or Delayed	-0.949	0.164	-2.287	0.388	0.588	0.352	-0.652	1.828
	Advanced or Very advanced	3.185	**0.000**	1.500	4.871	1.793	**0.007**	0.487	3.099
SDQ Total difficulties score age 5		-0.213	**0.000**	-0.316	-0.110				
KS1 APS						1.518	**0.000**	1.317	1.719
Child's sex	Female	-0.474	0.434	-1.665	0.717	-0.417	0.429	-1.451	0.618
Child's ethnic group (Ref: White)	Mixed	0.384	0.701	-1.577	2.344	0.260	0.786	-1.622	2.143
	Indian	3.748	**0.000**	2.138	5.359	2.004	0.094	-0.341	4.349
	Pakistani and Bangladeshi	1.990	**0.045**	0.048	3.931	1.665	0.150	-0.605	3.935
	Black or Black British	1.993	0.067	-0.140	4.126	2.951	**0.000**	1.557	4.344
	Other (inc Chinese)	3.130	0.076	-0.324	6.584	0.800	0.625	-2.415	4.015
Month of birth		-0.003	0.975	-0.167	0.162	-0.159	**0.027**	-0.300	-0.018
Mother's age at birth of MCS child		0.027	0.554	-0.064	0.118	0.029	0.411	-0.041	0.099
Family type at 9 months	Single parent	-0.560	0.512	-2.237	1.117	-0.313	0.644	-1.644	1.018

DISADVANTAGED CHILDREN IN ENGLAND		MODEL 1				CONTROLLING FOR KS1			
		Coef.	P>t	[95% Conf.	Interval]	Coef.	P>t	[95% Conf.	Interval]
(Ref: Two parents)									
Highest parental occupation class at 9 months (Ref: Manager/ Professional)	Intermediate	1.089	0.410	-1.506	3.684	1.164	0.319	-1.132	3.460
	Small emp and self-em	0.132	0.942	-3.436	3.699	0.735	0.641	-2.362	3.831
	Low sup and tech	0.600	0.647	-1.972	3.172	0.921	0.482	-1.652	3.494
	Semi-routine and rout	1.430	0.205	-0.784	3.644	1.859	0.076	-0.192	3.909
	Non-working household	2.558	0.072	-0.226	5.343	2.554	**0.049**	0.016	5.092
Constant		57.571	**0.000**	53.943	61.200	30.494	**0.000**	25.915	35.073
		Subpop. no. obs =995				Subpop. no. Obs = 1086			
		R-squared =0.3809				R-squared = 0.481			

Table A.5 KS1-KS2 Individual progress linear regression – Disadvantaged children

DISADVANTAGED CHILDREN IN ENGLAND		Coef.	P>t	[95% Conf.	Interval]
Days attend after school club age 11 (Ref: 0)	1	**1.658**	**0.024**	0.221	3.095
	2	**2.991**	**0.000**	1.558	4.424
	3+	0.616	0.551	-1.412	2.644
Frequency of household chores age 11 (Ref: < weekly)	Once or twice a week	1.331	0.118	-0.341	3.003
	Several times a week	1.021	0.190	-0.510	2.551
	Every day or almost every day	-0.825	0.419	-2.828	1.178
Constant		-0.897	0.248	-2.421	0.627
		Subpop. no. obs = 965			
		R-squared = 0.0321			

Note: Individual progress is based on the difference between predicted and actual KS2 scores. A positive individual progress score indicates an actual KS2 score that is higher than predicted based on KS1 attainment and other circumstances. Predicted scores are modeled based on KS1 APS and the child's sex, ethnicity, month of birth, mother's age at birth of the child, family type at age 9 months, highest parent occupational group at age 9 months, Bracken school readiness score age 3, BAS naming vocabulary score age 3, total difficulties score age 5, pro social score age 5, family income quintile at age 5 and whether in receipt of any school SEN provision at age 7. Therefore the model does not further control for any background characteristics but estimates whether any organised or informal activities are associated with individual progress.

Table A.5 KS1-KS2 Individual progress linear regression – All children

ALL CHILDREN IN ENGLAND		Coef.	P>t	[95% Conf.	Interval]
Extra tuition in English age 11	Yes	0.973	0.016	0.180	1.766
Extra tuition in Maths age 11	Yes	0.973	0.016	0.180	1.766
Days per week attended sports club		0.132	0.074	-0.013	0.277
Whether disadvantaged (Ref: No)	Yes	0.132	0.074	-0.013	0.277
Attends after school club	Yes	0.301	0.155	-0.114	0.716
Interaction disadvantage* after school club	Yes	0.301	0.155	-0.114	0.716
Hours per week spent doing homework age 11 (Ref: None or <1hour)	1 hour	0.893	0.023	0.124	1.661
	2 hours	0.893	0.023	0.124	1.661
	3 or 4 hours	1.478	0.001	0.570	2.386
	5 or more hours	1.478	0.001	0.570	2.386
Frequency reads for enjoyment (not school) age 11 (Ref: Most days)	Never or less than monthly	-0.600	0.055	-1.214	0.014
	At least once a month	-0.600	0.055	-1.214	0.014
	At least once a week	-0.793	0.001	-1.266	-0.319
How often anyone at home helps with homework age 11 (Ref: Sometimes)	Never or almost never	-0.793	0.001	-1.266	-0.319
	Usually	-0.554	0.034	-1.067	-0.041
	Always	-0.554	0.034	-1.067	-0.041
Frequency of doing household chores age 11 (Ref: Less than weekly)	Once or twice a week	0.427	0.111	-0.099	0.954
	Several times a week	0.427	0.111	-0.099	0.954
	Every day or almost every day	-0.301	0.356	-0.941	0.339
Parental work status age 11 (Ref: Full-time)	Not working	-0.301	0.356	-0.941	0.339
	Part-time	0.522	0.022	0.076	0.968
Constant		0.522	0.022	0.076	0.968
		Subpop. no. Obs = 4,834			
		R-squared = 0.031			

APPENDIX B SDQ outcomes regression tables

Table B.1 Total difficulties score age 11 linear regression – All children in the UK

ALL CHILDREN IN THE UK		Coef.	P>t	[95% Conf.	Interval]
Receives extra tuition aged 11	Yes	0.375	**0.014**	0.075	0.674
Attended sports club 5 - 11 (Ref: Never)	Some/ stopped	0.150	0.557	-0.352	0.652
	Started	-0.560	**0.025**	-1.048	-0.072
	Continuous use	-0.214	0.383	-0.696	0.268
Attended religious service/ lessons 5 -11 (Ref: Never)	Some/ stopped	0.447	**0.017**	0.081	0.813
	Started	0.401	0.085	-0.055	0.858
	Continuous use	-0.051	0.809	-0.465	0.363
Hours per week spent doing homework age 11 (Ref: None or <1hour)	1 hour	-0.240	0.279	-0.675	0.195
	2 hours	-0.412	**0.036**	-0.797	-0.027
	3 or 4 hours	-0.590	**0.020**	-1.087	-0.094
	5 or more hours	-0.918	**0.000**	-1.423	-0.413
Frequency reading for enjoyment age 7 (Ref: At least several times a week))	Never or less than monthly	0.561	**0.018**	0.096	1.025
	At least once a month	0.488	0.073	-0.045	1.021
	At least once a week	0.098	0.476	-0.173	0.369
Frequency reads for enjoyment (not school) age 11 (Ref: Most days)	Never or less than monthly	0.519	**0.009**	0.129	0.909
	At least once a month	0.180	0.354	-0.201	0.560
	At least once a week	0.080	0.572	-0.198	0.357
Does anyone at home help with maths age 7 (Ref: No)	Yes	0.271	**0.028**	0.030	0.512
How often anyone at home check homework is done before other activities age 11(Ref: Always)	Never or almost never	0.809	**0.003**	0.278	1.341
	Sometimes	1.093	**0.000**	0.648	1.538
	Usually	0.764	**0.000**	0.484	1.044
How often anyone at home helps with homework age 11 (Ref: Sometimes)	Never or almost never	-0.089	0.705	-0.551	0.372
	Usually	0.686	**0.000**	0.427	0.946
	Always	1.184	**0.000**	0.840	1.528
Frequency provides care for sick, elderly or disabled family member age 11 (Ref: Never or less than weekly)	Once or twice a week	0.103	0.753	-0.538	0.744
	Several times a week	0.914	**0.044**	0.023	1.806
	Every day or almost every day	0.804	**0.048**	0.006	1.603
Frequency of non-club/class physical activities age 7 (Ref: Less than weekly)	Once or twice a week	-0.566	**0.002**	-0.919	-0.213
	Several times a week	-0.622	**0.005**	-1.050	-0.194
	Every day or almost every day	-0.405	0.077	-0.854	0.044
Frequency of playing active games with parents age 7 (Ref: Less than weekly)	Once or twice a week	-0.461	**0.001**	-0.724	-0.199
	Several times a week	-0.292	0.129	-0.670	0.086
	Every day or almost every	-0.026	0.938	-0.683	0.631

	day				
Frequency of playing active games with parents age 11 (Ref: Less than weekly)	Once or twice a week	-0.210	0.170	-0.511	0.091
	Several times a week or daily	-0.796	**0.002**	-1.303	-0.290
Frequency of playing indoor games with parents age 7 (Ref: Less than weekly)	Once or twice a week	0.065	0.634	-0.204	0.335
	Several times a week	0.439	**0.013**	0.091	0.787
	Every day or almost every day	0.613	**0.018**	0.108	1.119
Frequency of spending time with friends age 11 (Ref: Less than weekly)	Once or twice a week	-1.065	**0.000**	-1.431	-0.699
	Several times a week	-1.504	**0.000**	-1.861	-1.146
	Every day or almost every day	-1.696	**0.000**	-2.089	-1.302
Hours per term-time weekday watching TV age 11 (Ref: None of <1 hour)	1-2 hours	-0.019	0.901	-0.317	0.279
	2-3 hours	0.063	0.735	-0.303	0.430
	3 hours or more	0.602	**0.005**	0.186	1.019
Family work status age 11 (Ref: Full-time)	Not working	0.966	**0.000**	0.437	1.494
	Part-time	0.345	**0.017**	0.062	0.628
Family work status age 5 (Ref: Full-time)	Full-time	-0.511	0.118	-1.151	0.130
	Part-time	0.235	0.053	-0.004	0.474
Number of children in the family age 5		-0.320	**0.000**	-0.486	-0.155
Income quintile age 5 (Ref: Top)	Lowest quintile	0.891	**0.008**	0.234	1.548
	2nd	0.804	**0.000**	0.378	1.231
	3rd	0.367	**0.038**	0.020	0.713
	4th	0.388	**0.033**	0.031	0.745
Income quintile age 11 (Ref: Top)	Lowest quintile	0.787	**0.026**	0.095	1.479
	2nd	1.034	**0.000**	0.536	1.532
	3rd	0.389	**0.023**	0.055	0.723
	4th	0.370	**0.020**	0.057	0.683
Ever been told by the school that has SEN age 7 (Ref: No)	Yes	1.885	**0.000**	1.317	2.454
Region in UK (Ref: South East)	North East	-0.396	0.290	-1.131	0.339
	North West	-0.738	**0.007**	-1.269	-0.207
	Yorkshire and the Humber	-0.462	0.107	-1.023	0.099
	East Midlands	-0.929	**0.002**	-1.502	-0.356
	West Midlands	-0.809	**0.005**	-1.377	-0.241
	East of England	-0.431	0.108	-0.958	0.095
	London	-0.560	0.065	-1.154	0.034
	South West	-0.800	**0.010**	-1.407	-0.192
	Wales	-0.754	**0.004**	-1.261	-0.247
	Scotland	-0.920	**0.000**	-1.407	-0.432
	Northern Ireland	-0.185	0.523	-0.755	0.385
Bracken school readiness score age 3 (Ref: Average)	Very delayed or Delayed	0.560	**0.011**	0.132	0.989
	Advanced or Very	-0.324	**0.014**	-0.582	-0.067

	advanced				
SDQ Total difficulties score age 5		0.561	**0.000**	0.530	0.592
Child's sex	Female	-0.348	**0.006**	-0.596	-0.100
Child's ethnic group (Ref: White)	Mixed	-0.273	0.478	-1.029	0.483
	Indian	-1.531	**0.003**	-2.553	-0.509
	Pakistani and Bangladeshi	-2.282	**0.000**	-3.002	-1.562
	Black or Black British	-1.627	**0.000**	-2.523	-0.731
	Other (inc Chinese)	-1.815	**0.000**	-2.716	-0.913
Month of birth		-0.034	0.059	-0.070	0.001
Mother's age at birth of MCS child		-0.009	0.464	-0.034	0.015
Family type at 9 months (Ref: Two parents)	Single parent	-0.086	0.691	-0.513	0.340
Highest parental occupation class at 9 months (Ref: Manager/ Professional)	Intermediate	-0.138	0.440	-0.489	0.213
	Small emp and self-em	-0.118	0.643	-0.620	0.383
	Low sup and tech	-0.205	0.362	-0.648	0.237
	Semi-routine and rout	0.112	0.581	-0.287	0.511
	Non-working household	0.428	0.361	-0.492	1.349
Constant		5.171	**0.000**	3.886	6.455
		Subpop. no. Obs = 8,776			
		R-squared = 0.420			

Table B.2 Score of 10 in prosocial scale age 11 binary logistic regression – All children in the UK

ALL CHILDREN IN THE UK		Odds Ratio	P>t	[95% Conf.	Interval]
Number of days at sports club age 11		1.038	**0.028**	1.004	1.072
Hours per week doing homework age 11 (Ref: None or less than 1 hour)	1 hour	1.257	0.005	1.071	1.475
	2 hours	1.274	0.004	1.079	1.503
	3 or 4 hours	1.213	0.045	1.004	1.464
	5 or more hours	1.462	0.001	1.180	1.812
How often anyone at home check homework is done before other activities age 11(Ref: Always)	Never or almost never	0.913	0.423	0.731	1.141
	Sometimes	0.725	0.001	0.598	0.878
	Usually	0.785	0.000	0.693	0.889
Frequency of doing household chores age 7 (Ref: Less than weekly)	Once or twice a week	1.033	0.646	0.898	1.189
	Several times a week	1.465	0.000	1.250	1.716
	Every day or almost every day	1.486	0.000	1.291	1.711
Frequency of doing household chores age 11 (Ref: Less than weekly)	Once or twice a week	1.251	0.007	1.064	1.470
	Several times a week	1.368	0.000	1.150	1.628
	Every day or almost every day	1.335	0.000	1.145	1.558
Frequency provides care for sick,	Once or twice a week	1.572	0.001	1.202	2.057

elderly or disabled family member age 11 (Ref: Never or less than weekly)	Several times a week	1.730	0.002	1.222	2.449
	Every day or almost every day	1.112	0.477	0.830	1.490
Frequency of playing indoor games with parents age 11 (Ref: Less than weekly)	Once or twice a week	1.081	0.211	0.957	1.221
	Several times a week or daily	1.277	0.020	1.040	1.570
Frequency of spending time with friends age 11 (Ref: Less than weekly)	Once or twice a week	1.235	0.007	1.061	1.438
	Several times a week	1.285	0.004	1.083	1.526
	Every day or almost every day	1.399	0.001	1.144	1.711
Allowed unsupervised time outside home with friends age 11 (Ref: Never)	Less often	0.953	0.484	0.833	1.090
	At least once a week	0.863	0.037	0.751	0.991
	Most days	0.789	0.008	0.662	0.940
SDQ Total difficulties score age 5		0.956	0.000	0.943	0.969
SDQ Pro social skills score age 5		1.439	0.000	1.385	1.496
Home language age 3 (Ref: English only)	English and other language(s)	1.398	0.005	1.107	1.765
	Other language(s) only	1.273	0.306	0.802	2.020
Child's sex	Female	1.665	0.000	1.503	1.845
Child's ethnic group (Ref: White)	Mixed	0.858	0.372	0.614	1.201
	Indian	0.757	0.207	0.492	1.167
	Pakistani and Bangladeshi	1.052	0.767	0.753	1.469
	Black or Black British	0.857	0.364	0.614	1.196
	Other (inc Chinese)	0.719	0.153	0.457	1.131
Month of birth		1.004	0.558	0.990	1.020
Mother's age at birth of MCS child		1.013	0.011	1.003	1.023
Family type at 9 months (Ref: Two parents)	Single parent	0.885	0.190	0.737	1.063
Highest parental occupation class at 9 months (Ref: Manager/ Professional)	Intermediate	0.986	0.861	0.844	1.153
	Small emp and self-em	1.031	0.775	0.836	1.272
	Low sup and tech	1.214	0.041	1.008	1.461
	Semi-routine and rout	1.021	0.787	0.875	1.192
	Non-working household	0.818	0.285	0.566	1.183
Constant		0.012	0.000	0.007	0.021
		Subpop. no. obs =	10,278		

Table B.3 Score of 10 in prosocial scale age 11 binary logistic regression – Disadvantaged children in the UK

DISADVANTAGED CHILDREN IN THE UK		Odds Ratio	P>t	[95% Conf.	Interval]
After school club attendance 5-11 (Ref: Never used)	Some/Stopped	1.415	**0.038**	1.020	1.963
	Started/ Continuous	1.317	**0.029**	1.029	1.687
Frequency of looking after elderly or	Once or twice a week	2.273	**0.001**	1.380	3.743

sick family (Ref: Less than weekly)	Several times a week	1.564	0.137	0.867	2.819
	Every day or almost every day	1.622	**0.039**	1.025	2.567
Frequency spend time with friends age 7 (Ref: Less than weekly)	Once or twice a week	1.766	**0.001**	1.260	2.476
	Several times a week	1.495	**0.047**	1.005	2.223
	Every day or almost every day	1.218	0.256	0.866	1.711
Hours per weekday playing computer or video games age 7 (Ref: None or <1hour)	1-3 hours	0.778	**0.042**	0.612	0.991
	3 hours or more	1.327	0.225	0.840	2.097
Hours per weekday watching TV age 11 (Ref: None or <1hour)	1-2 hours	0.644	**0.016**	0.450	0.922
	2-3 hours	0.785	0.186	0.548	1.125
	3 hours or more	0.532	**0.003**	0.351	0.806
SDQ Total difficulties score age 5		0.967	**0.003**	0.947	0.988
SDQ Pro social skills score age 5		1.356	**0.000**	1.262	1.458
Urban/rural classification or local area age 5 (Ref: Urban)	Town, Fringe, Mixed Urban/Rural	0.618	**0.038**	0.393	0.973
	Village, Hamlet & Rural	1.284	0.166	0.901	1.828
Child's sex	Female	1.568	**0.000**	1.241	1.981
Child's ethnic group (Ref: White)	Mixed	1.678	0.074	0.950	2.964
	Indian	0.449	0.060	0.195	1.034
	Pakistani and Bangladeshi	1.336	**0.030**	1.028	1.735
	Black or Black British	1.068	0.821	0.604	1.889
	Other (inc Chinese)	0.731	0.455	0.322	1.664
Month of birth		1.000	0.983	0.968	1.034
Mother's age at birth of MCS child		1.021	**0.025**	1.003	1.040
Family type at 9 months (Ref: Two parents)	Single parent	0.785	0.067	0.605	1.018
Highest parental occupation class at 9 months (Ref: Manager/ Professional)	Intermediate	0.669	0.171	0.377	1.190
	Small emp and self-em	0.853	0.590	0.478	1.522
	Low sup and tech	0.828	0.475	0.492	1.393
	Semi-routine and rout	0.798	0.302	0.520	1.226
	Non-working household	0.615	0.105	0.342	1.108
Constant		0.044	**0.000**	0.015	0.127
		Subpop. no. Obs = 2,206			