

Accessing free childcare in the Millennium Cohort Study

Kirstine Hansen

Brussels, December 2013

Part of a larger project on

The impact of access to free part-time nursery education

Jo Blanden
Emilia del Bono
Kirstine Hansen
Sandra McNally
Birgitta Rabe

Research supported by the Nuffield Foundation and the ESRC
SDAI

Motivation

- Gaps in cognitive ability emerge at early ages
- Bradbury, Corak, Washbrook and Waldfogel (2011) show that these early gaps are observed in a variety of countries but are greater in the UK and US than elsewhere.
- Evidence shows that early differences are highly related to later outcomes in a variety of areas including education, employment, childbearing and even crime.
- Investment in Early Years has become a key policy solution
- This has been encouraged by Heckman's work on the efficiency of early investment, and the idea of dynamic complementarities between early achievements and subsequent investments – skills beget skills.

Literature: Survey evidence

- There is a large amount of survey evidence on the impact of childcare on child outcomes.
- Tends to use rich controls to account for endogeneity.
- In the UK evidence from ALSPAC, MCS, LSYPE and BCS mostly point in a positive direction.

Differences by:

- Type of care
- Hours
- Start date
- Quality of provision
- Qualifications of providers
- Some evidence that some types of care can have more of an effect on those at the bottom of the distribution.

Evidence from interventions

- Randomised programmes offer the best available evidence on the effectiveness of early year interventions (US based)
 - Perry Preschool Project
 - Abecedarian Project
- But these programmes are particular so findings may not be generalizable
 - Small scale
 - Highly targeted
 - Include a mixture of interventions (e.g., home visits in Perry Preschool Project)
 - Well funded
- Growing literature analysing the effect of policy interventions, which generate variation in eligibility rules for free or subsidized childcare which create large differences between otherwise similar individuals.

Variation in eligibility rules:

Gormley and Goye (2005) (Oklahoma)

- Universal pre-K enrolment for 4 year olds governed by a strict rule based on date of birth.
- They find large positive effects on K test scores which are larger for low income children.

Black, Devereux, Loken and Salvanes (2012) (Norway)

- Use discontinuities in the price of child care by income.
- They find small/no effects on attendance and maternal employment, but significant effects on child outcomes which they interpret as evidence of income effects.

Cornelissen, Dustmann and Trentini (2013) (UK)

- Estimate the effects of receiving additional early schooling before age 5 using date of birth rules governing school entry date and geographic variation in school entry age policies.
- They find smallish but positive effects on cognitive and non-cognitive test scores, largely driven by low income boys.

The UK policy development

- Childcare investments are thought to have a 'double dividend' by supporting parents to work and closing gaps.
- This policy principle was enshrined in the 1998 National Childcare Strategy.
- In 2000 all 4 year olds were offered 12.5 hours of free childcare per week for 33 weeks per year.
- This was extended to all 3 year olds by 2004.
- Entitlement has increased in terms of weeks and hours.
- Now 15 hours a week for 38 weeks.
- This initiative costs the Government £2bn a year.

Our strategy:

- Children are eligible to 15 hours of free provision the term after they turn 3.
- We exploit these differences to examine the impact of child care on child outcomes.

Term of Birth	Month of birth	Entitlement start	Terms before reception year
Autumn	September – December	January	5
Spring	January – March	After Easter	4
Summer	April- August	September	3

The Data

- The Millennium Cohort Study
- Longitudinal survey of around 19,000 children born in the UK over a 12 month period between 2000 and 2001.
- Allows us to create 3 terms of births – those born Sept-Dec 2000, Jan-Mar 2001 and April-Aug 2001.
- We have a wealth of information collected about these children and their families and education at 9 months, 3, 5, 7 and 11 years.

Information on childcare

- We have data on the start dates of every childcare episode the children have used.
- So we can see exactly when children start childcare and what type of care they start.
- By the time children reach school most children in the MCS have been exposed to multiple childcare arrangements.

Outcome measures at age 5

- British Ability Scale
 - Pictorial reasoning
 - Naming vocabulary
- SDQ Problem behavior score

Foundation Stage Profile score

- Teachers are asked to assess children at the end of their first year of school giving them a score of 1-9 on the following criteria:
 - Personal, social and emotional development
 - Communication, language and literacy
 - Mathematics
 - Knowledge and understanding of the world
 - Physical development
 - Creative development

Outcomes at age 7

- BAS – Word Reading
- NFER – Maths skills
- SDQ – Problem behaviour

Childcare start dates

Term of Birth	Month of birth	No of Children	Episodes already started before entitlement	Episodes that start at entitlement date	Sept before	Sept After
Autumn	September – December	2301	62.2	10.3	20.6	17.5
Spring	January – March	1615	62.1	9.0	19.8	23.0
Summer	April- August	2764	66.0	33.6	Sept= entitlement	

Are those who start at entitlement date different?

Sept-dec born	Before	Entitlement	After
% female	51	48	47
LP family	23	21	28
<60% med inc	27	35	39
Mother has degree	41	41	36
Nursery	22	53	30
Play group	32	8	5
Pre school	24	17	16
Child minder	10	11	8
Day nursery	12	12	25

Policy not as clean cut as we would like in these data

- Not everyone starts a care episode at the entitlement date.
- Most children start childcare before – regardless of their term of birth.
- There are peaks in the data at the entitlement period – but muddied by Sept intakes for certain types of provision.
- Those that start at the entitlement date (or later) do look poorer and are more likely to use nursery care. This is reassuring for this policy.

What size of difference does term of birth produce in terms of exposure to childcare?

Term of Birth	Entitlement start	Terms before school	Term diff from Autumn borns
Autumn	Jan	5	-
Spring	After Easter	4	1
Summer	Sept	3	2

In the MCS when we run a regression of childcare exposure and term of birth we get:

	No controls	With controls
Base (Autumn born)		
Spring born	-3.3***	-1.4***
Summer born	-5.7***	-1.7***
Controls	No	Yes
Obs	5684	5684
RSquared	.012	.090

Controls: Gender, ethnicity, lone parent family, mothers and fathers qualification, LEA, month of birth.

Age 5 outcomes

Compared to Autumn born	Spring born	Summer born
Foundation Stage Profile	-.129***	-.202***
Picture Similarities	-.181***	-.257***
Naming Vocab	-.129***	-.133***
Problem behaviour	.020	.016

Controls: Gender, ethnicity, lone parent family, mothers and fathers qualification, LEA, month of birth, age at test.

Results – term of birth and exposure to childcare

- Autumn born children receive more childcare than those born later in the year – even in the model with full controls they receive over half a term more care than spring born children and around $\frac{3}{4}$ of a term more than summer born children.
- Lower than we would expect if everyone took up care at the point of entitlement.
- However, many families need to make care arrangements before then – so mothers can work.
- Plus many providers have a Sept start date.

Results – term of birth and child outcomes

- Autumn born children do better than other children in cognitive tests at age 5.
- There is no difference in behaviour.
- No difference in tests at age 7.
- However, this is work in progress.

Next steps:

- An IV approach where term of birth is used as an instrument for childcare more formally.
- Examine smaller windows around the entitlement dates so we are comparing more similar people.
- Analysis by gender and poverty measure.