

# Caring (about) Policies: Child Care and Child Outcomes in UK and in Italy

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## Idea of the work

- We study the association between formal child care attendance under 3 and later child outcomes using UK and Italian data
- We allow the effect of formal child care to be different for children from different family backgrounds
- Exploiting the heterogeneity of the child care effects, we simulate
  - ▶ The impact of providing free child care to children from more disadvantaged families (UK - private system)
  - ▶ The impact of different selection criteria (Italy - mainly public system)
- For both countries, we present
  - ▶ Methods, data, and results
  - ▶ Heterogeneous effects of child care
  - ▶ Simulations

# United Kingdom

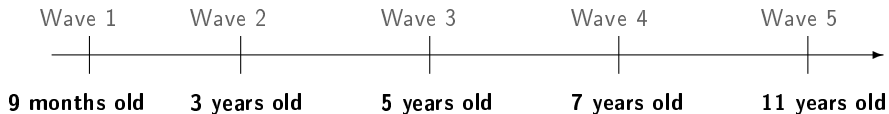
## UK outline

1. We study the association between formal child care and child cognitive outcomes at age 3, 5, 7, and 11, using data from the Millennium Cohort Study
2. We control for a large number of variables (child and household characteristics, other schooling and family inputs, past child outcomes)
3. We allow the effect of formal child care to be different for children from families with different level of income
4. We simulate how an increase in formal child care attendance can affect inequalities across children

## Data & Variables

### Millennium Cohort Study:

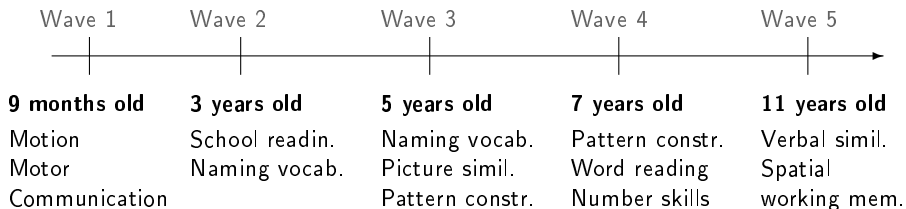
About 19,000 children born in UK in 2000/2001.



## Data & Variables

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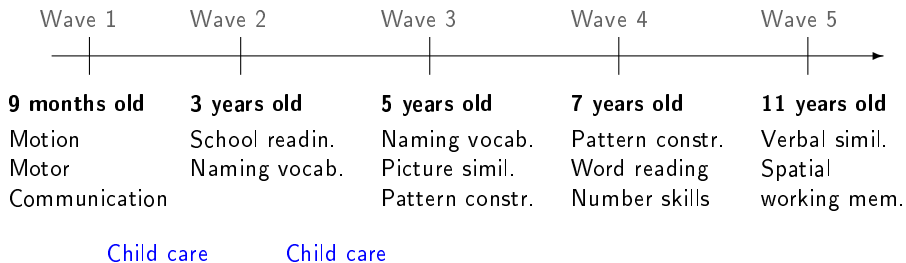
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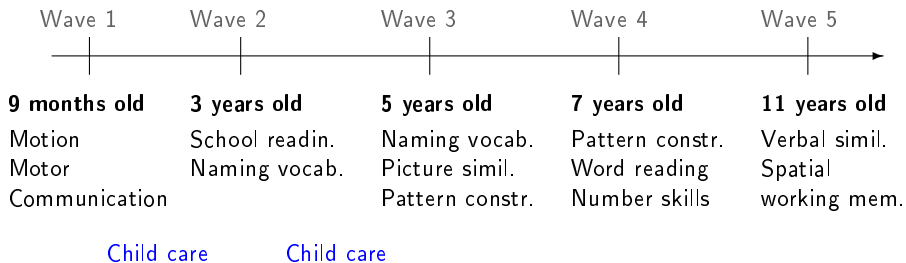
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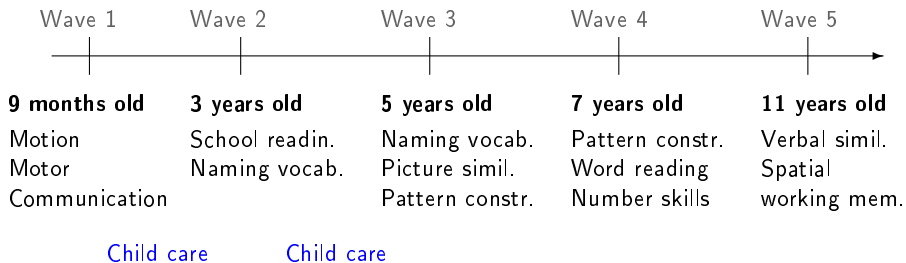
Child,  
family,  
mother,  
and father  
characteristics.



## Data & Variables

### Millennium Cohort Study:

About 19,000 children born in UK in 2000/2001.



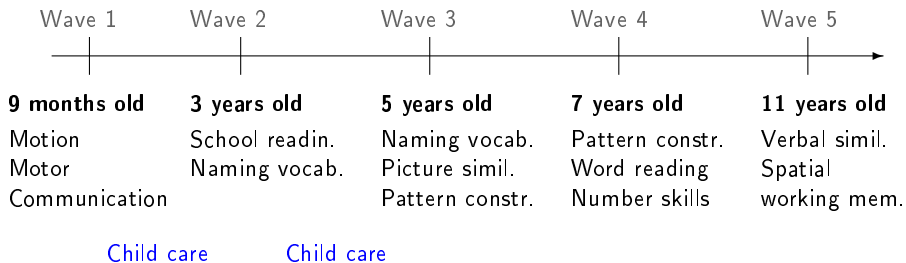
Child,  
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Father at home, new partner, hh income, new siblings

## Data & Variables

### Millennium Cohort Study:

About 19,000 children born in UK in 2000/2001.



Child,  
family,  
mother,  
and father  
characteristics.

Father at home, new partner, hh income, new siblings

Final sample: 7,240 children observed five times

Reduction due to: attrition and filter questions

Consequences: slightly older and more educated parents

## Child outcomes at age 3

	(1)	(2) <sup>a</sup>		(3) <sup>b</sup>	
	Formal 18 m.	Formal 18 m.	Formal 3-5 yo.	Formal 18 m.	Formal 3-5 yo.
School Readiness	0.06* (0.03)	–	–	0.06* (0.03)	–
Naming Vocabulary	-0.11*** (0.03)	–	–	-0.11*** (0.03)	–

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Robust standard errors in parentheses.

Total number of observations: 7,240.

<sup>a</sup> Controlling also for formal care between age 3 and 5 y.o.

<sup>b</sup> Controlling also for past cognitive outcomes.

## Child outcomes at age 5

	(1)		(2) <sup>a</sup>		(3) <sup>b</sup>	
	Formal 18 m.	Formal 18 m.	Formal 3-5 yo.	Formal 18 m.	Formal 3-5 yo.	Formal 3-5 yo.
Naming Vocabulary	0.01 (0.03)	0.00 (0.03)	-0.08*** (0.02)	0.03 (0.03)	-0.07*** (0.02)	
Picture Similarity	0.10*** (0.04)	0.10*** (0.04)	0.03 (0.02)	0.10*** (0.04)	0.04 (0.02)	
Construction Score	0.00 (0.04)	0.00 (0.04)	-0.00 (0.02)	0.00 (0.03)	0.00 (0.02)	

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Robust standard errors in parentheses.

Total number of observations: 7,240.

<sup>a</sup> Controlling also for formal care between age 3 and 5 y.o.

<sup>b</sup> Controlling also for past cognitive outcomes.

## Child outcomes at age 7

	(1)	(2) <sup>a</sup>		(3) <sup>b</sup>	
	Formal 18 m.	Formal 18 m.	Formal 3-5 yo.	Formal 18 m.	Formal 3-5 yo.
Construction Score	0.04 (0.04)	0.03 (0.04)	-0.03 (0.02)	0.02 (0.03)	-0.03 (0.02)
Word Reading	0.01 (0.03)	0.01 (0.03)	0.03 (0.02)	-0.00 (0.03)	0.05** (0.02)
Number Skills	0.07** (0.03)	0.07** (0.03)	0.00 (0.02)	0.05* (0.03)	0.02 (0.02)

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Robust standard errors in parentheses.

Total number of observations: 7,240.

<sup>a</sup> Controlling also for formal care between age 3 and 5 y.o.

<sup>b</sup> Controlling also for past cognitive outcomes.

## Child outcomes at age 11

	(1)	(2) <sup>a</sup>		(3) <sup>b</sup>	
	Formal 18 m.	Formal 18 m.	Formal 3-5 yo.	Formal 18 m.	Formal 3-5 yo.
Verbal Similarities	-0.01 (0.03)	-0.01 (0.03)	0.00 (0.02)	-0.01 (0.03)	0.02 (0.02)
SWM Strategy	0.03 (0.03)	0.02 (0.03)	-0.05** (0.02)	0.00 (0.03)	-0.05** (0.02)
SWM Time	0.06 (0.04)	0.06 (0.04)	0.00 (0.03)	0.04 (0.04)	0.01 (0.02)
SWM Errors	0.11*** (0.04)	0.11*** (0.04)	-0.04 (0.02)	0.08** (0.03)	-0.04 (0.02)

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Robust standard errors in parentheses.

Total number of observations: 7,240.

<sup>a</sup> Controlling also for formal care between age 3 and 5 y.o.

<sup>b</sup> Controlling also for past cognitive outcomes.

## Possible cumulative impact of child care

- Child endowments at 9 months have a positive and significant effect on outcomes at age 3
- All cognitive outcomes from age 3 have a positive and significant impact on subsequent outcomes, with School Readiness being one of those with the largest predictive power
- Pattern Construction at age 5 is highly correlated with Number Skills at age 7
- Pattern Construction and Number Skills at age 7 are highly correlated with Spatial Working Memory outcomes at age 11

## Heterogeneous impacts of childcare

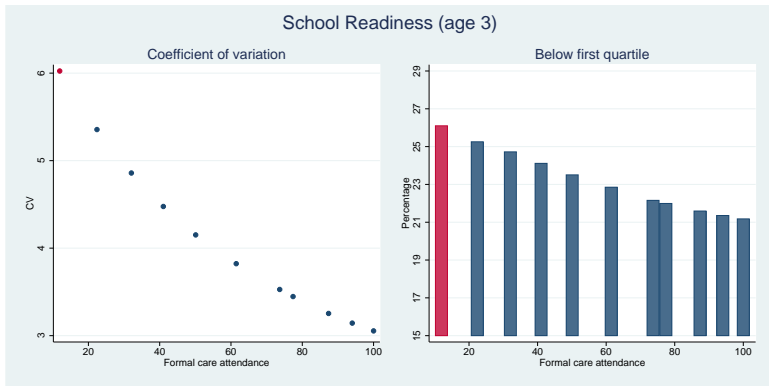
- The effect on Schooling Readiness, Number Skills, and Spatial Work Memory is positive and significant for children from low-income families
- The effect on Naming Vocabulary is negative and significant for children from high-income families
- The effect on Picture Similarity is positive and significant homogeneously across children



## Child care attendance and inequality

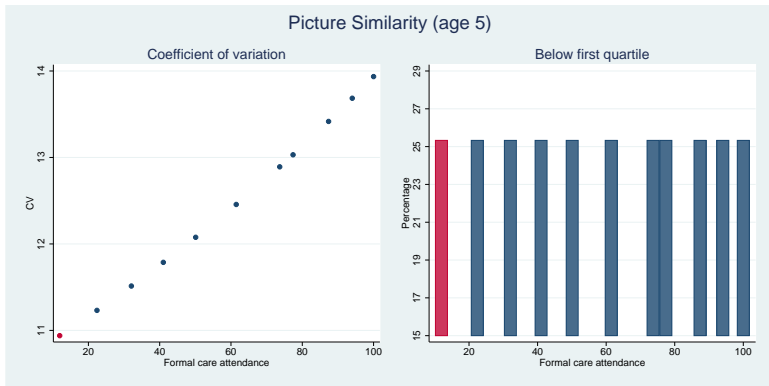
- Only 12% of children were attending formal child care when 18 months old
- Would it be possible to reduce inequality in cognitive outcomes across children making easier the access to children from more disadvantaged background?
- We investigate the effects of introducing free formal child care for children in the first, second,... decile of income
- And simulate the impact on:
  - ▶ The coefficient of variation
  - ▶ Percentage of children with low scores

# Inequality in School Readiness at age 3



Note: the red point/line represents the baseline condition, before the simulation.

# Inequality in Picture Similarity at age 5



Note: the red point/line represents the baseline condition, before the simulation.

# Italy

## Italy outline

1. We study the association between formal child care and child outcomes at age 7, using own collected data from Northern Italy
2. We match treated children with untreated children with a close probability of demanding the service and a close probability of being offered the service
3. We allow the effect of formal child care to be different for children from intact/non-intact families, parents experiencing/not experiencing unemployment, only child/children with siblings
4. We simulate how different selection criteria (in six Italian municipalities) lead to different population of users and, therefore, to different gains

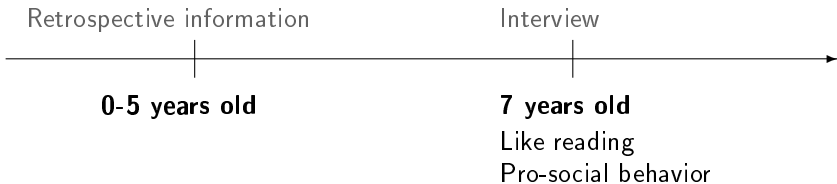
## Data & variables

Children born in 2006 and interviewed in 2013



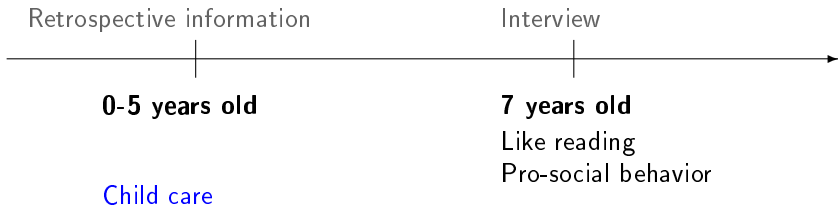
## Data & variables

Children born in 2006 and interviewed in 2013



## Data & variables

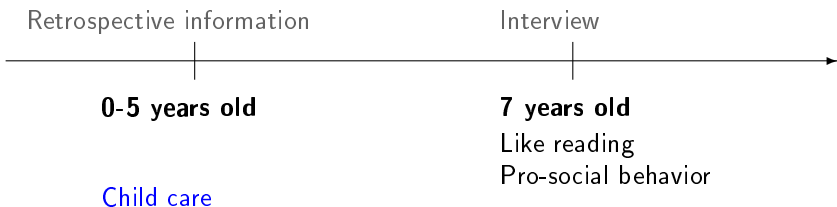
Children born in 2006 and interviewed in 2013





## Data & variables

Children born in 2006 and interviewed in 2013



- Supply is a function of scores assigned to each applicant
- Demand depends on the distance to the closest public child care centre, living in a single-headed household, having grandparents who live nearby, and the family's immigrant status
- Other control variables: gender, age in months, siblings, parental education
- Sample: 880 children

## Like Reading at age 7

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Both parents	One parent	No parent. unempl.	Parental unempl.	Only child	With sibling	Whole sample
Formal child care	0.11** (0.05)	0.32 (0.21)	0.09 (0.06)	0.25*** (0.08)	0.11 (0.11)	0.15*** (0.05)	0.06 (0.10)
FCC*Single-head hh.							0.23 (0.19)
FCC*One par. unempl.							0.09 (0.11)
FCC*Siblings							0.034 (0.11)
Observations	449	43	308	184	114	378	492
$R^2$	0.11	0.34	0.11	0.17	0.16	0.12	0.16

FCC: Formal child care.

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Robust standard errors in parentheses.

## Pro-social behavior at age 7

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Both parents	One parent	No parent. unempl.	Parental unempl.	Only child	With sibling	Whole sample
Formal child care	0.67*** (0.16)	1.81* (0.91)	0.70*** (0.20)	0.71*** (0.26)	1.17*** (0.30)	0.59*** (0.19)	1.15*** (0.33)
FCC*Single-head hh.							1.08* (0.64)
FCC*One par. unempl.							-0.34 (0.35)
FCC*Siblings							-0.47 (0.36)
Observations	455	43	310	188	118	380	498
R <sup>2</sup>	0.21	0.24	0.29	0.20	0.32	0.19	0.20

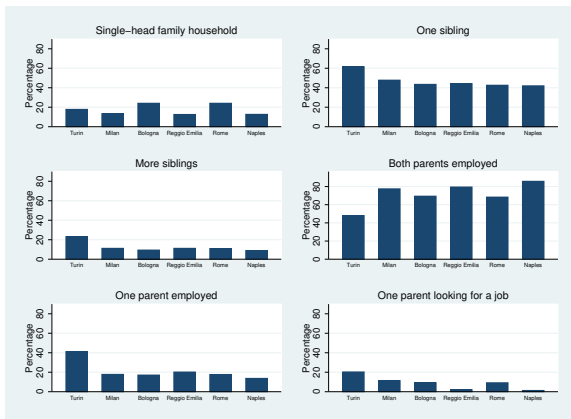
FCC: Formal child care.

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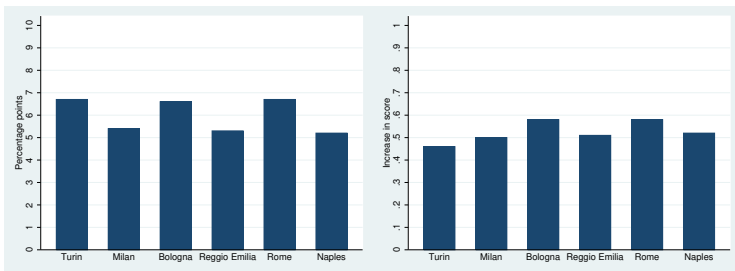
## Selection criteria and child outcomes

- We use data from the Italian part of the European Survey on Living and Income Conditions (EU-SILC) for 2010
- We select the 1210 households with at least one child younger than three years old
- We use the criteria used by Turin, Milan, Bologna, Reggio Emilia, Rome, and Naples to assign scores to each household
- We rank households according to the scores
- We assign child care slots to the 50% with higher priority (N=605)
- We obtain six different populations of users

# Selection criteria and users composition



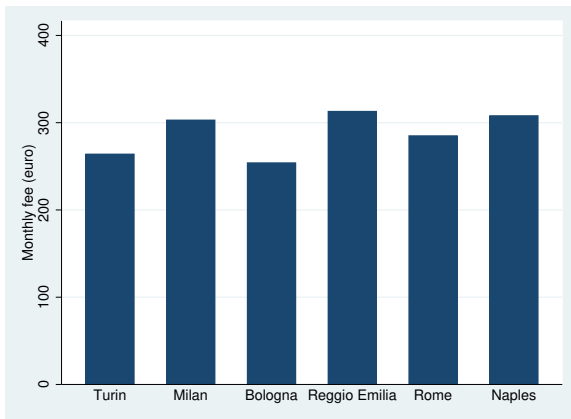
# Selection criteria and child outcomes at age 7



(a) Like reading

(b) Pro-social behavior

## Selection criteria and municipality revenues



## Conclusions

- We explored the link between early formal child care and child cognitive outcomes in the United Kingdom and in Italy
- What we found is that attendance of formal child care under the age of 3 is positively associated with many child outcomes
- Our results confirm previous findings showing that pre-school formal education improves the cognitive outcomes of disadvantaged children
- We simulated the impact of two policies that increase the number/change the composition of children attending formal child care
- Results of the simulations are valid assuming that child care effects are causal