## The Impact of Maternal Care on Child Development: Evidence from Sibling Spillover Effects of a Parental Leave Expansion

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- Study the effects of maternal care on the cognitive, non-cognitive and health outcomes of children aged 2-3 years old
- Rise of maternal employment during the last half century
  - Increase in the use of non-maternal care
  - Debate: Is maternal care or non-maternal care better for children?

• Early developmental outcomes predict economic success in adulthood (Thomas and Strauss 1997; Heckman, Stixrud and Urzua 2006)

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• Why do we care about the 2-3 year olds?

- Parents possess a high degree of control over the choice of using non-maternal care
- Empirical evidence:
  - Maternal care: not enough evidence for the general population (Baker and Milligan 2010)
  - Maternal employment: mixed evidence (Waldfogel et al. 2002; Rhum 2008)
- Striking differences in family policies for this age group among OECD countries.

- Parental leave reform implemented in Canada on December 31st, 2000:
  - 12 months of partially-paid parental leave for eligible mothers delivering after the reform
  - 6 months for eligible mothers delivering before the reform
- Baker and Milligan (2010) show that the reform:
  - Increased the time mothers spend with their newborns
  - Did not change mothers' income net of taxes, benefits and child care costs

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- Apply a difference-in-differences methodology:
  - Compare children aged 2-3 years old who got a sibling before and after the reform with children of the same birth cohorts who did not get a sibling in the period surrounding the reform
  - Cognitive, non-cognitive and health outcomes

	Children with	Children wih no
	younger sibling	younger sibling
Before the reform	6 months	х
After the reform	12 months	х



- The Canadian National Longitudinal Survey of Children and Youth (NLSCY)
- The sample consists of:
  - Children aged 2-3 years old in Cycles 3 (1998-1999) and 5 (2002-2003)

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- Living outside Quebec
- Two parent families
- 4985 observations

## $y_{it} = \beta_0 + \beta_1 sibling_i + \beta_2 post_t + \beta_3 sibling x post_{it} + \theta X_{it} + u_{it}$

y<sub>it</sub>: non-maternal care, cognitive, non-cognitive and health variables
sibling<sub>i</sub>: dummy equal 1 if child has a sibling, 0 otherwise
post<sub>t</sub>: dummy equal 1 if child is observed after the reform, 0 otherwise
siblingxpost<sub>it</sub>: isolates children with a sibling born after the reform
X<sub>it</sub>: child, parents and family controls; province fixed effects and city size

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	(1)	(2)	(3)
	(p-value)	(p-value)	(p-value)
Use of non-maternal care	0.04	0.03	0.02
	(0.15)	(0.32)	(0.50)
Informal care	-0.01	-0.02	-0.02
	(0.78)	(0.83)	(0.84)
Center based care	-0.04	0.01	0.01
	(0.03)**	(0.92)	(0.93)
Weekly hours in all non-maternal care	-3.52	-4.41	-4.47
	(0.02)**	(0.03)**	(0.03)**
Weekly hours in informal care	-4.45	-6.59	-6.63
	(0.04)**	(0.02)**	(0.02)**
Weekly hours in center based care	1.86	1.19	1.32
	(0.67)	(0.83)	(0.83)
Controls			
Child age, gender, language, nbr siblings	no	yes	yes
Provincial dummies and city size	no	yes	yes
Parents' age, education, immigration	no	yes	yes
Household income	no	no	yes

### Difference-in-differences results for non-maternal care

Each row corresponds to an outcome variable. Wild cluster bootstrap p-values reported in parentheses.

\*\*\*,\*\*,\* correspond to a significance at the 1 percent, 5 percent and 10 percent respectively

	(1)	(2)	(3)
	(p-value)	(p-value)	(p-value)
Hyperactivity score	0.03	0.03	0.03
	(0.47)	(0.64)	(0.61)
Emotional disorder score	-0.17	-0.16	-0.16
	(0.33)	(0.35)	(0.35)
Physical aggression score	-0.02	-0.01	-0.01
	(0.94)	(0.83)	(0.84)
Separation anxiety score	0.07	0.10	0.10
	(0.32)	(0.11)	(0.11)
Motor and development score	-0.08	-0.04	-0.05
	(0.57)	(0.92)	(0.94)
Controls			
Child age, gender, language, nbr siblings	no	yes	yes
Provincial dummies and city size	no	yes	yes
Parents' age, education, immigration	no	yes	yes
Household income	no	no	yes

# Difference-in-differences results for non-cognitive and pre-cognitive outcomes

Each row corresponds to an outcome variable. Wild cluster bootstrap p-values reported in parentheses.

\*\*\*,\*\*,\* correspond to a significance at the 1 percent, 5 percent and 10 percent respectively

	(1)	(2)	(3)
	(p-value)	(p-value)	(p-value)
Underweight	-0.02	-0.02	-0.03
	(0.53)	(0.41)	(0.40)
Overweight	0.03	0.04	0.04
	(0.22)	(0.21)	(0.24)
Obese	0.01	-0.01	-0.01
	(0.73)	(0.89)	(0.90)
Excellent health	-0.02	-0.01	-0.01
	(0.48)	(0.75)	(0.70)
Injured in the last 12 months	0.01	0.02	0.02
	(0.80)	(0.69)	(0.69)
Ear infection in the last 12 months	0.02	0.01	0.01
	(0.36)	(0.71)	(0.70)
Throat/nose infection in the last 12 months	-0.01	0.02	0.02
,	(0.87)	(0.93)	(0.93)
Controls			
Child age, gender, language, nbr siblings	no	yes	yes
Provincial dummies and city size	no	yes	yes
Parents' age, education, immigration	no	yes	yes
Household income	no	no	yes

### Difference-in-differences results for health outcomes

Each row corresponds to an outcome variable. Wild cluster bootstrap p-values reported in parentheses

\*\*\*,\*\*,\* correspond to a significance at the 1 percent, 5 percent and 10 percent respectively

- Study the effects of maternal care on the developmental outcomes of children aged 2-3 by applying a difference-in-differences methodology to the NLSCY
- Maternal care does not positively affect the cognitive, non-cognitive or health outcomes of children aged 2-3 years old
- If income positively affects child development:
  - Maternal employment is beneficial for children aged 2-3 years old
  - Unpaid parental leave extending after the second birth might not be helpful for children
- Policy recommendations:
  - Encourage maternal employment when children are aged 2-3 years old

# THANK YOU!

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## Parental Leave Reform

	Before Reform	After Reform
Maternity Leave (weeks)	15	15
Parental Leave (weeks)	10	35
Replacement Rate (% insurable earning)	55	55
Insurable Earning Cap (\$Can)	39,000	39,000
Eligibility (hours worked in the 12 months preceding the claim)	700	600

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