

Human capital effects of one-on-one time with parents

Evidence from a Swedish childcare access reform



Anna Sjögren¹ and Malin Tallås Ahlén²

¹IFAU, Uppsala Center for Labor Studies (UCLS). ²SOFI (Stockholm University).



We study the effects of increased opportunities for one-on-one time with a parent during infancy on the human capital formation of children. To this end, we exploit a nationwide reform that mandated Swedish municipalities to offer childcare for infants' older siblings, while parents were on parental leave to care for their infants. We find no robust overall effects on the children's 6th grade test scores, but we find evidence of positive effects on test scores for sons of less than university educated mothers and daughters of highly educated mothers. Exploring potential pathways, we find no evidence of changes in quantity of parental time, suggesting instead improved quality of parent-child interactions during infancy as a result of less competition for parental time.

MOTIVATION: There is growing evidence that early childhood conditions are important determinants of children's human capital development.

- Socioeconomic skill gaps are associated with gaps in child related investments, such as language exposure and human capital enhancing parenting styles (Francesconi and Heckman, 2016).
 - We estimate the effects of *exogenously increased* opportunities to undisturbed one-on-one time with a parent, potentially improving both quality and quantity of parental investments.
- Children's cognitive development benefits especially from time spent in educational activities with their parents (mothers), early investments have larger effects than later (e.g. Hsin and Felfe, 2014).
 - We estimate the effects of investments during *infancy*, a period important for parent child attachment and for the child's socioemotional development (Moullin et al., 2018).
- Differential/lower parental time investments in younger siblings possibly explains why they fare worse than older siblings in many different dimensions (e.g. Black et al., 2005; Lehmann et al., 2018).
 - We estimate the effects of the *home environment of younger siblings becoming more similar to that of firstborns*, implying less sibling interactions, and a possible reallocation of parental time from the older sibling to the younger child, both key drivers of birth order effects.
- Parental stress is found to be higher for low educated mothers (Parkes et al., 2015). Boys are more sensitive to adverse childhood environment (Bertrand and Pan, 2013) and girls to cognitive stimulus (Fort et al., 2019).
 - We estimate heterogeneous effects with respect to gender and maternal education.

METHOD: We exploit a Swedish childcare access reform implemented in 2002.

- Older siblings guaranteed 15 hours childcare per week while their parent was on parental leave
 - Childcare is highly subsidized and of high quality
- Estimate intention-to-treat effects in a differences-in-differences setting
 - Comparing infants *with and without siblings* of childcare age
 - Comparing infants born *pre- and post-reform*
 - Restricted to municipalities that were most affected by the reform
 - Placebo analysis using municipalities that were least affected

$$Y_{imcd} = \alpha + \delta post_c * sibling_i + \gamma sibling_i + \theta_{mc} + \lambda_d + X_i \beta' + \epsilon_{imcd}$$

- Municipality-cohort fe (θ); birth month fe (λ); pre-det. char. (X): child sex, parity, low birth weight, parental age, education, income, migration background; ϵ clustered at muni-level
- We compare standardized core subject test scores at age 13 (standard deviation)
- Heterogeneous effects
 - Gender, socio economic status (maternal education)
- Mechanisms
 - Child health: mental and physical
 - Family environment: maternal mental health, separation, fertility, maternal labor supply, age at childcare enrollment, division of parental leave, sibling spillovers

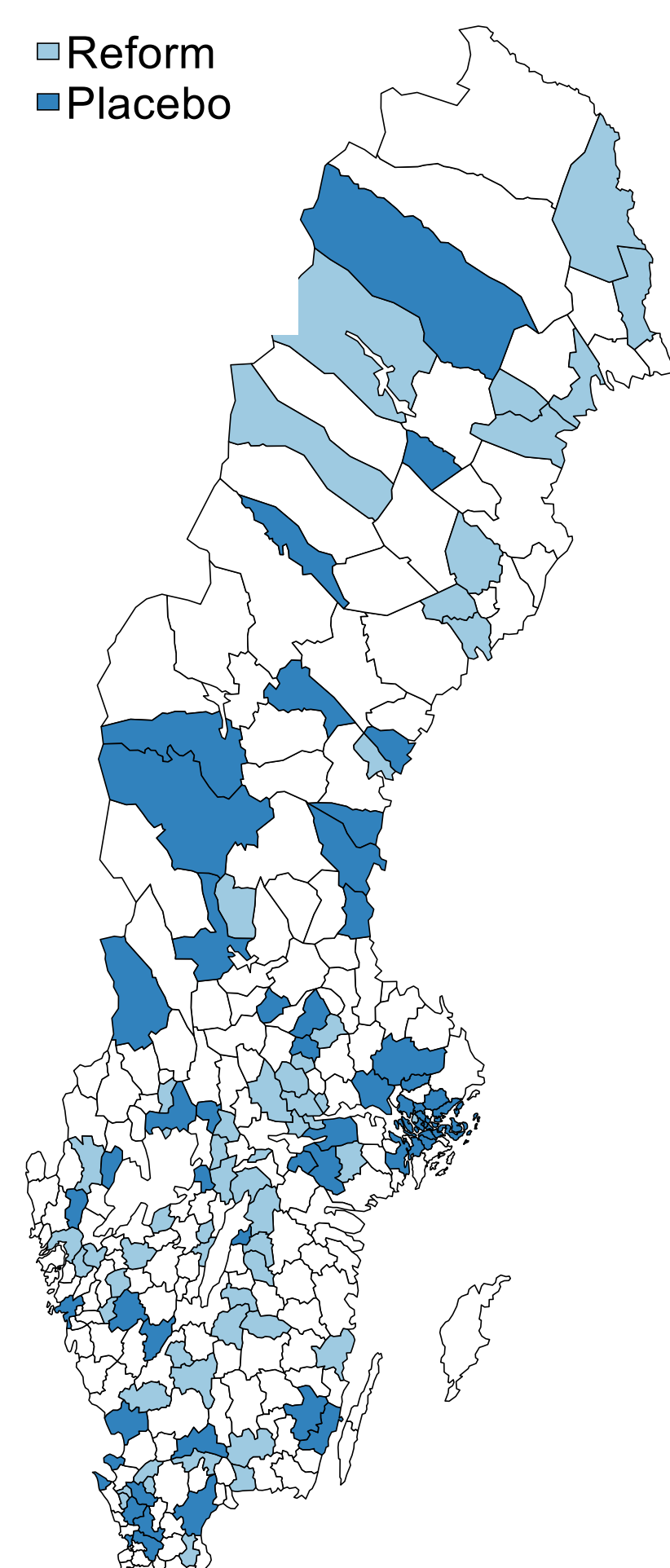
DATA: We include cohorts 1999-2003 and use linked administrative data from the Multi-generation register and from education, health, tax and social insurance registers covering the universe of Swedish children and their families.

- Family links and demographics
- Parental education and annual earnings
- Parental leave
- Health care: Inpatient, outpatient, drug prescription
- Children's 6th grade test scores
- Survey data on childcare enrollment
 - National Agency for Education

Table 1. The reform response in enrollment

Sample	Pre-reform 1999	Post-reform 2002	Enrollment increase 2002–1999
<i>Either parent on parental leave</i>			
Reform	0.10	0.58	0.48
Placebo	0.63	0.83	0.20
<i>Both parents working</i>			
Reform	0.92	0.95	0.03
Placebo	0.93	0.97	0.04

Figure 1. Map of municipalities by treatment status



RESULTS: Although families took advantage of the better opportunities for one-on-one time, this did not have a statistically significant effect on child test scores on average.

- The estimate of 0.029 sd (standard deviation) is imprecise but relatively large
 - About half of the difference between firstborns and higher parity children

Table 2. Main results: Effects of better opportunities for one-on-one time on average test scores

	(1) All	(2) Boys	(3) Girls
<i>All</i>			
One-on-one	0.029 (0.019)	0.043** (0.021)	0.017 (0.025)
Observations	43,566	22,145	21,421
Control mean	-0.0790	-0.199	0.0467
<i>Mother low education</i>			
One-on-one	0.034 (0.024)	0.063** (0.028)	0.007 (0.034)
Observations	32,173	16,400	15,773
Control mean	-0.215	-0.337	-0.0843
<i>Mother high education</i>			
One-on-one	0.041 (0.029)	0.003 (0.040)	0.086** (0.041)
Observations	10,874	5,498	5,376
Control mean	0.364	0.256	0.475

Figure 2. Effects over the test score distr. for boys of low educated mothers

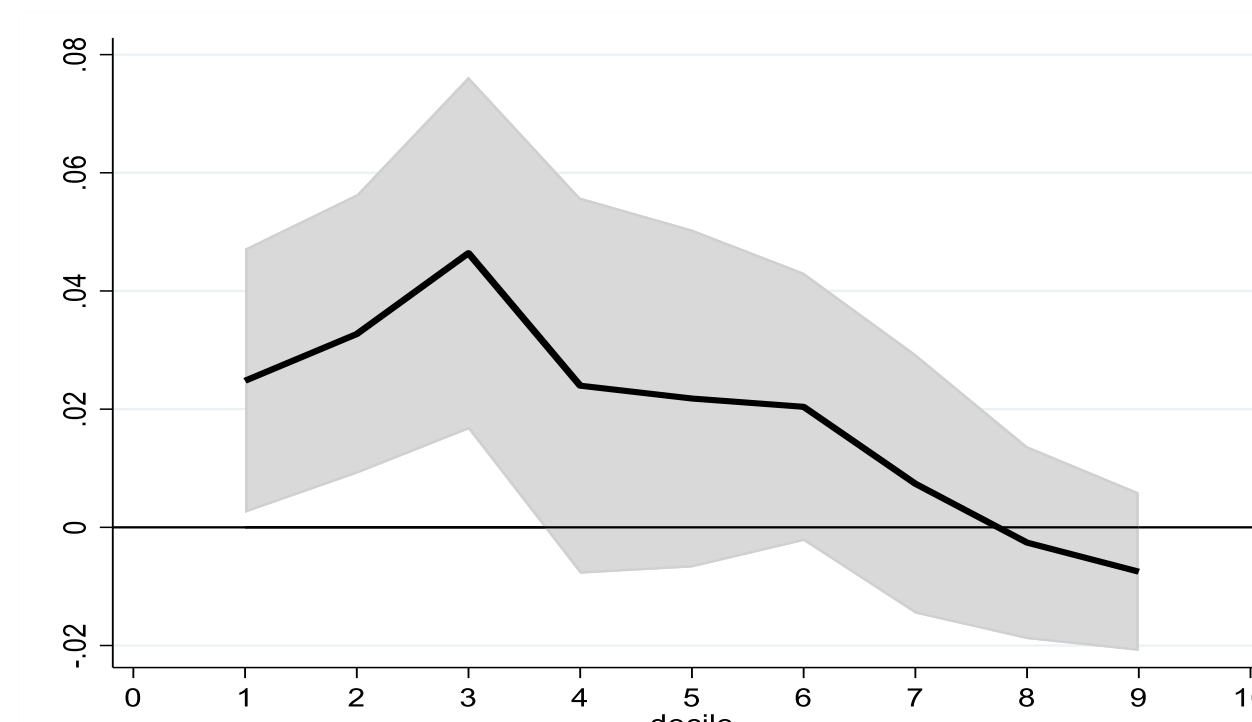
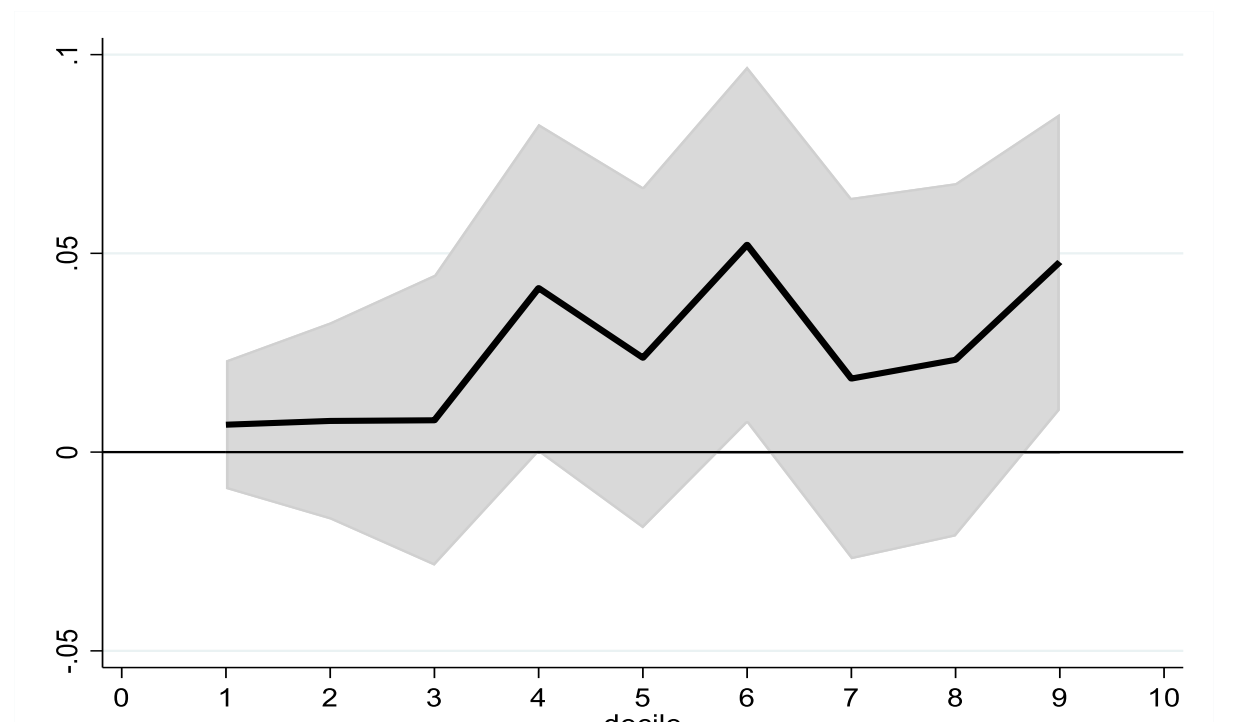


Figure 3. Effects over the test score distr. for girls of high educated mothers



- For **BOYS** test scores improved by 0.043 sd
 - Driven by sons of less than college educated mothers
 - Positive effect in the bottom of the test score distribution
- For **GIRLS** no average effect on test scores
 - Test scores improved for daughters of university educated mothers
 - Positive effect in the middle of the test score distribution

MECHANISMS: There are several pathways through which the increased access to childcare of older siblings may affect children's school performance.

- No strong effect on child health
 - Possibly improved mental health in school age for boys
 - Possibly worse health in preschool age for groups where test scores were affected
- No strong effects on quantity nor quality of the home environment
 - Possibly lower fertility/increased spacing for girls of high educated mothers
 - No evidence of sibling spillovers or effects on parental leave division between parents

CONCLUSION: In this project we find that increased opportunities for one-on-one time during infancy seem to improve the educational outcomes for some children, while not for all.

- Strong first stage for all, thus heterogeneity likely reflect differences in *gains*, rather than *utilization*
- Consistent with improvements in the quality of parent-infant interaction (more undivided attention)
- Suggest a potential for family policy to strengthen the home environment in disadvantaged families

REFERENCES:

- Bertrand, M. and J. Pan (2013), "The Trouble with Boys: Social Influences and the Gender Gap in Disruptive Behavior", *American Economic Journal*, 5(1), pp. 32–64.
- Black, S. E., P. J. Devereux and K. G. Salvanes (2005), "The More the Merrier: The Effect of Family Size and Birth Order On Children's Education", *Quarterly Journal of Economics*, 120(2), pp. 669–700.
- Francesconi, M. and J. Heckman (2016), "Child Development and Parental Investment: An Introduction", *The Economic Journal*, 126 (596), pp. F1–F27.
- Fort, M., A. Ichino and G. Zanella (2019), "Cognitive and Noncognitive Costs of Day Care at Age 0–2 for Children in Advantaged Families", *Journal of Political Economy*, 121(1), pp. 158–205.
- Hsin, A. and C. Felfe (2014), "When Does Time Matter? Maternal Employment, Children's Time with Parents, and Child Development", *Demography*, 51(4), pp. 1867–94.
- Lehmann, J.-Y., K. Nuevo-Chiquero and M. Vidal-Fernandez (2018), "The Early Origins of Birth Order Differences in Children's Outcomes and Parental Behavior", *Journal of Human Resources*, 53(1), pp. 123–156.
- Moullin, S., J. Waldfogel and E. Washbrook (2018), "Parent-child attachment as a mechanism of intergenerational (dis)advantage", *Families, Relationships and Societies*, 7(2), pp. 265–284.
- Parkes, A., H. Sweeting and D. Wight (2015), "Parenting stress and parent support among mothers with high and low education", *Journal of Family Psychology*, 29(6), pp. 907–918.