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Twice the trouble: Twinning and the cost of voting

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Abstract

Scholars have argued that becoming a parent impacts political behavior, including turnout. In this paper, we identify the effect on turnout of having an additional child conditional on the decision to become a parent. When parents have a child, nature sometimes assigns additional children through twinning. We argue that conditional on age of parents and birth cohort this as-if randomly assigns an extra child to some parents. With a large dataset of family composition and validated turnout for Danish voters, we find, consistent with additional children taking up parents' time and indirectly increasing the cost of voting, that having an additional child at the same time as another depresses turnout for both parents. Mothers' who had twins in their first parity are 1.6 to 3.0 percentage points less likely to vote across three elections. For fathers, turnout is only depressed by 0.7 to 1.4 percentage points.

KEYWORDS: Voter turnout, Political behavior, Causal inference, Political socialization.

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Replication files are available in the JOP Data Archive on Dataverse (<http://thedata.harvard.edu/dvn/dv/jop>).

How does parenting affect political behavior and attitudes? Researchers have found that parents' attitudes and behaviors are shaped by the sex of their children and that parents become more likely to vote when their adolescent child comes of voting age (Oswald and Powdthavee 2010, Washington 2008, Glynn and Sen 2015, Dahlgaard 2018). But what is the effect of having children in itself? Using twin-births as a quasi-experiment, we take a focused look at how having an additional child at the same as another child affects voter turnout in elections. Conditional on age of the parents and the age of the parents' firstborn, we argue that it is as-if random if a first parity results in a twin-birth.

With rich administrative data from Denmark, we are able to determine the number of children parents have and their birth order. We find that twinning in the first parity leads to lower overall turnout rates over three elections from 2009 to 2014. The effects are substantive with point estimates for mothers who twinned in their first parity being between -1.6 and -3.0 percentage points across the three elections. Fathers are less affected and have point estimates from -0.7 to -1.4 percentage points with confidence intervals that mostly include zero. Instrumenting number of children with twinning in the first parity, we find that the effect of an additional child ranges from -3.3 to -6.0 percentage points for mothers and -1.5 to -2.7 percentage points for fathers. Our results are robust to a placebo test and to conditioning on pretreatment covariates, including previous turnout.

Parenting and voter turnout

The classic calculus of voting states that an increased cost of voting should reduce voter turnout (Downs 1957). Having children may not, in itself, increase the cost of voting, but it puts a significant strain on people's time (Bonke 2009). Since time is a limited resource, which voting consumes, any restraints on time should implicitly increase the cost of voting and, in turn, depress turnout. An additional child from twinning imposes such a constraint and we may, following this line of reasoning, expect turnout to be depressed as a result of twinning.

Alternatively, one could argue that parenting increases parents' dependency on and

self-interest in public service provisions such as childcare and schools. Elections serve the purpose of selecting politicians to decide on policies concerning such areas. As the reliance on public service provision is higher when voters have more children, we might, following this argument, expect an additional child from twinning to increase turnout due to a higher perceived benefit from seeing one's preferred candidate win.¹

Previous studies have assessed the effect of parenting on turnout. [Jennings \(1979\)](#) found mixed correlations between having school-aged children in the home and political participation, while other studies have found some or no direct relationship between parenthood and voting in regression models ([Burns et al. 2001](#), [Plutzer 2002](#), [Wolfinger and Wolfinger 2008](#)). We can learn a lot from these studies, but their mixed results could partly be due to the fact that they rely on controlling for factors that predicts both who becomes a parent and who votes. Aside from one, all the listed studies use cross-sectional data with its well-rehearsed limits for causal inference. The exception uses a panel dataset to look at the impact of parenting on growth in turnout for young adults ([Plutzer 2002](#)). We contribute with a causally identified effect of an additional child from twinning.

Data

Our turnout data are from the Danish 2009 and 2013 municipal elections and the Danish 2014 European Parliament election. Both types of elections are proportional and fairly salient, with turnout ranging from 56.3% to 71.9%. In the elections in question, validated turnout from the voter lists was linked to the civil registration numbers given to all permanent residents in Denmark. The collection of turnout relied on an opt-in from the municipalities. Therefore, the number of participating municipalities and voters for whom we have validated turnout varies between the elections. Forty-four out of 98 municipalities with almost 2.4 million voters participated in 2009. In 2013, all municipalities with a total of almost 4.4 million voters participated while 61 municipalities with more than 2.3

¹In the preanalysis plan, we intended to explore the effect of twinning on turnout across elections with different degrees of self-interest. As we only study three elections, we depart from the plan on this point due to limited space and statistical power.

million voters participated in 2014.

Using civil registration numbers, we can also link turnout to administrative data on all Danes from Statistics Denmark. The data contain, among a variety of other information, date of birth and sex. The data also contains civil registration numbers of parents, which we use to link parents and their children. Since the date of birth is known for all children, the birth order is easily determined, and we can flag the firstborns, including firstborn twins. We define twins as two persons born within a week by the same mother. For children who have an identifier for their father but not their mother, we define twins as children who are born within seven days to the same father. We exclude parents whose firstborns turned 16 in the election year, as we expect the increased cost or any heightened self-interest of an additional child to pertain to parents with young children. For each election, we have validated turnout for 425,000 to 757,000 parents.

Research design

In general, neither the decision to have a child nor the number of children is random, which makes causal inference challenging. Besides the fact that older voters have had time to have more children, different kinds of people have a varying preference for whether or not they want children and how many children they want, which could correlate with turnout. Our identification strategy is to use twinning as a quasi-experiment. We argue that we can use this as-if random variation to identify the effect on parents' turnout of twinning in the first parity.² Twinning in the first parity has previously been used as an instrument to demonstrate an effect on labor market supply for women, while twinning in a subsequent parity has been used to estimate the effect on older siblings' education (Rosenzweig and Wolpin 1980, Black et al. 2005).³ Our design will inform us about the effect of having an additional child at the same time as another, but we will not

²For simplicity, we refer to twinning as parities with more than one live-born child. Consequently, twin-births are pooled with the rare triplet, or even quadruplet, births.

³We also intended to use sex of the first two children as an instrument. This turned out to be underpowered, but we report the results in the supporting information.

learn about the effect of having additional children in general or of going from having no children to one child.

In general, comparing parents who have ever twinned to parents who have never twinned would be biased, as parents with a preference for or ability to have many children will experience more parities and consequently have more chances to twin (Rosenzweig and Wolpin 1980). If this correlate with predictors of turnout, comparing parents who have ever and never twinned is biased. Instead, we compare parents who twin in their first parity to parents who only have a single child in the first parity. Since all parents, regardless of preference for number of children, experience a first parity, we avoid the selection issue of parents having experienced multiple parities.

A second issue is that, in recent years, twinning has spiked in many countries, including Denmark (Pison et al. 2015). One factor driving the increase in twinning is that mothers' age at birth is increasing and older mothers are more likely to twin. A second factor is the steep rise in parents who undergo medically assisted reproduction, which has significantly higher rates of twinning. To account for both the age of parents at birth and the birth cohort of the firstborn, we include fixed effects for age of the parents interacted with age of the firstborn child.

We estimate the effect on turnout of twinning for mothers and fathers separately. In both sets of models, we include fixed effects for the age of the parents (Pison et al. 2015). The age of fathers and mothers is correlated and if we do not use fixed effects to account for the mothers' age, fathers' age will be correlated with the propensity to twin. To create the fixed effects we partition the parents into 25 groups of four percentiles of their age-distribution measured in days. Second, within each parent age group, parents are divided into quartiles according to the age-distribution of their firstborns.⁴ The procedure provides 100 groups of equal size but with a varying frequency of twin-births.

⁴In the preanalysis plan, we stated that we would create fixed-effects based on age in years of both parents and their children and collapse small groups. We changed to the approach described here as it creates equally sized group and avoids researcher discretion in deciding which groups to collapse.

We can make two assumptions for how twinning affects turnout: 1) *Only having an additional child in the first parity affects turnout.* 2) *All children equally affects turnout.* If assumption one is true, all children from the second or later parities should have no additional effect on turnout. Under that assumption, we just compare parents who twin in their first parity to parents who do not. It certainly seems plausible that the firstborns have a stronger effect on parents, but one might question if they alone affect turnout and put more faith in assumption two. Under the second assumption, twinning in the first parity is an ideal instrument for the number of children and we can use two-stage least-squares to get an estimate of the effect on turnout of additional children from twinning.

Results

In Table 1, we compare mothers/fathers who twinned in their first parity to mothers/fathers who did not, conditional on age of the mother/father and child. Mothers who twinned in their first parity were 2.9 percentage points and 3.0 percentage points less likely to vote with 95% confidence intervals (CIs) of [-4.2; -1.6] and [-4.3; -1.7] in 2009 and 2014. In 2013, turnout for mothers who twinned in their first parity is depressed by 1.6 percentage points [-2.5, -0.8]. The effects are quite substantial and comparable to the gender gap between mothers' and fathers' baseline participation rates in Table 1. In the three elections, the point estimates of the effect of an additional child show that it depresses turnout by 5.5, 3.3, and 6.0 percentage points, respectively. The F -statistics for weak instruments is above 3,000 in all models.

For fathers, the effects are smaller. In 2009, fathers with twins as firstborns are 0.9 percentage points less likely to vote with a 95% CI of [-2.2, 0.5]. In 2013 the effect is just -0.7 percentage points [-1.6, 0.2] while it is slightly more negative in 2014, at -1.4 percentage points [-2.7, 0.0]. While all confidence intervals exclude zero for mothers, only the 2014 estimate for fathers marginally excludes zero.⁵ Across all three elections, the best estimate is that, for fathers, twinning slightly depresses turnout, although the uncertainties around the estimates mostly are larger than the effects. The point estimates

⁵The upper bound of the confidence interval is negative to the fourth decimal point.

Table 1: Effect on turnout of twinning in first parity for mothers and fathers.

Mothers			
<i>Election:</i>	2009 Local	2013 Local	2014 European
Twinning in first parity	-0.029 (0.007)	-0.016 (0.004)	-0.030 (0.007)
No. of children (2sls)	-0.055 (0.012)	-0.033 (0.009)	-0.060 (0.013)
Turnout _{One child in first parity}	0.659	0.760	0.536
N	221,742	392,793	227,604
Share with twins	0.023	0.024	0.024
F _{weak instrument}	3,687	5,822	3,525

Fathers			
<i>Election:</i>	2009 Local	2013 Local	2014 European
Twinning in first parity	-0.009 (0.007)	-0.007 (0.005)	-0.014 (0.007)
No. of children (2sls)	-0.017 (0.013)	-0.015 (0.009)	-0.027 (0.013)
Turnout _{One child in first parity}	0.644	0.734	0.545
N	203,466	364,540	209,651
Share with twins	0.024	0.025	0.025
F _{weak instrument}	3,008	5,313	3,153

Std. errors in (). All models include fixed effects for $parent\ age \times firstborn\ age$.

of the effect for fathers of an additional child caused by twinning suggests that it depresses turnout in the three elections by around 1.7, 1.5, and 2.7 percentage points, respectively.⁶

In the supporting information, we look at heterogeneous effects over the age of the firstborn child(ren). For parents with children below the age of 16, we find no clear variations in the effect on turnout conditional on the children's age. However, for parents with adult children aged 20 to 35, we find that there is no effect, suggesting that the effect disappears as parents no longer carry the daily burden of caring for a child or that the effect was different in earlier generations of parents.

⁶If we assume independence between fathers and mothers, the 95% CIs of the difference in the three elections are [0.001; 0.039], [-0.004; 0.022], and [-0.003; 0.035]. The assumption of independence is a conservative assumption, since the turnout of parents is likely to be correlated. Consequently, these CIs are probably too wide.

Placebo and robustness tests

A simple placebo test is to see if twinning predicts turning out in 2009 for parents who had their first child *after* that election. The models in Table 2 are similar to the reduced form model in Table 1, but they predict turnout in 2009 for parents who had their first child approximately 30 weeks after that election or later.⁷ The last available data are from January 1, 2015. Consequently, only parents who were old enough to vote in 2009 and had their first children between mid-2010 and that day are included. To avoid overfitting with the fixed effects, children’s age is partitioned into only two groups within each of the parents’ age groups and not to four as in the main models. The parents’ age is partitioned into 20 groups instead of 25. From Table 2, we see that mothers and fathers were respectively 0.7 percentage points and 2.6 percentage points more likely to vote if they twinned later. If anything twinning predicts higher past voting, which indicates that if the main conclusions are biased, they underestimate the true effect on turnout.

Table 2: Predicting turnout in 2009 by twinning after 2009.

	Mothers	Fathers
Twinning in first parity	0.007 (0.012)	0.026 (0.014)
Turnout _{One child in first parity}	0.564	0.550
N	65,401	57,617
Share with twins	0.024	0.022

Std. errors in (). All models include fixed effects for *parent age* \times *firstborn age*.

Another concern may be that twinning is correlated with parental outcomes above and beyond what we are able to pick up with our fixed effects (Farbmacher et al. 2018). In the supporting information, we show that although the fixed effects picks up most of the imbalance between parents who twin in their first parity and parents who do not, some imbalance persists in personal income, time spent in the hospital, and education. However, we also show that for the subset of our parents for whom we can control for pretreatment outcomes, including voting, the effect become more negative when we do so.⁸ In line with the placebo test, the robustness test suggests that if anything the

⁷From circa 12 weeks into the pregnancy, most parents know if they are having twins.

⁸As Statistics Denmark has only given us access to data starting in 2007, we cannot

negative effect of twinning we estimate is actually biased towards zero.

Discussion

The paper contributes to the literature on how parenting shapes political behavior and attitudes (Jennings 1979, Burns et al. 2001, Plutzer 2002, Wolfinger and Wolfinger 2008). We have found that both mothers and fathers become less likely to vote by having an additional child at the same time as another due to twinning. We argue that the mechanism is that additional children place constraints on parents' time arguably increasing the cost they suffer from using part of their day to vote. In the supporting information, we explore education, full time employment, personal income, and one health outcome as alternative mechanisms, but we find no support for any of them.

In the preanalysis plan, we did not specify any expectation that the effect would vary for mothers and fathers. However, previous studies have speculated that mothers would experience a stronger negative effect of children than fathers because mothers take on a larger responsibility as parents (Jennings 1979, Burns et al. 2001). Furthermore, mothers spend 50% more time than fathers on primary care for their children (Bonke 2009). The additional time an extra child requires place higher burdens on the mother, which should lead to twinning having a greater impact on the turnout of mothers than fathers.

We are left to speculate what the effect of transitioning to parenthood itself is. On the one hand, studies show that the marginal time Danish parents spend on a child is twice as high for a first child than for a second child (Bonke 2009). If time constraints depresses turnout, a negative effect of having an additional child at the same time as becoming a parent could come on top of a negative effect of becoming a parent. On the other hand, when people become parents they might start caring about the quality of child care and public schools, but they probably do not care twice as much if they become parents of two children at the same time. If twin parents care as much about public service provision as other parents, then we cannot rule out that for becoming a parent, any positive effect on turnout of increased self-interest induced by parenthood balances or is even larger than

control for pretreatment covariates for parents who had their first child earlier than that.

any negative effect of having less time to vote. If so, becoming a parent in itself may not depress turnout; we might only see an effect when a second child arrive at the same time.

Finally, as for any instrument variable design, our strategy captures only the effect for those who are affected by it (Angrist et al. 2010). In our case, already four to seven years after twinning, parents of twins only have about half an additional child as we show in the supporting information. Furthermore, we only learn about the effect of an additional child through twinning, which may be different from having additional children in general making it relevant to consider the external validity (Moffitt 2005).

We would argue that our effect estimates are lower bounds of the effect of an additional child in general. First, parents make future fertility decisions based on twinning. The parents with an initial preference for two or more children who chose to have additional children could be the parents who find it easiest to have children. If so, their turnout could be least depressed by children. Second, parents may choose to increase the span between the first and any future parity. Child spacing should correlate negatively with the time constraints from children, and in turn have a positive effect on turnout since young children are more time consuming (Bonke 2009). Both mechanisms suggests that the effect of additional children after twinning should be less negative than the effect of having an additional child in general. We cannot test this with our design, but leave it for future studies.

References

- Angrist, J., V. Lavy, and A. Schlosser (2010). Multiple experiments for the causal link between the quantity and quality of children. *Journal of Labor Economics* 28(4), 773–824.
- 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. *The Quarterly Journal of Economics* 120(2), 669–700.
- Bonke, J. (2009). *Forældres brug af tid og penge på deres børn*. Odense: Syddansk

Universitetsforlag.

- Burns, N., K. L. Schlozman, and S. Verba (2001). *The private roots of public action*. Cambridge: Harvard University Press.
- Dahlgaard, J. O. (2018). Trickle-up political socialization: The causal effect on turnout of parenting a newly enfranchised voter. *American Political Science Review* 112(3), 698–705.
- Downs, A. (1957). An economic theory of democracy.
- Farbmacher, H., R. Guber, and J. Vikström (2018). Increasing the credibility of the twin birth instrument. *Journal of Applied Econometrics* 33(3), 457–472.
- Glynn, A. N. and M. Sen (2015). Identifying judicial empathy: Does having daughters cause judges to rule for women’s issues? *American Journal of Political Science* 59(1), 37–54.
- Jennings, M. K. (1979). Another look at the life cycle and political participation. *American Journal of Political Science* 23(4), 755–771.
- Moffitt, R. (2005). Remarks on the analysis of causal relationships in population research. *Demography* 42(1), 91–108.
- Oswald, A. J. and N. Powdthavee (2010). Daughters and left-wing voting. *The Review of Economics and Statistics* 92(2), 213–227.
- Pison, G., C. Monden, and J. Smits (2015). Twinning rates in developed countries: Trends and explanations. *Population and Development Review* 41(4), 629–649.
- Plutzer, E. (2002). Becoming a habitual voter: Inertia, resources, and growth in young adulthood. *American political science review* 96(1), 41–56.
- Rosenzweig, M. R. and K. I. Wolpin (1980). Life-cycle labor supply and fertility: Causal inferences from household models. *The Journal of Political Economy* 88(2), 328–348.
- Washington, E. L. (2008). Female socialization: How daughters affect their legislator fathers. *American Economic Review* 98(1), 311–32.
- Wolfinger, N. H. and R. E. Wolfinger (2008). Family structure and voter turnout. *Social forces* 86(4), 1513–1528.