Can Public Policies Break the Gender Mold? Evidence from Paternity Leave Reforms

Sébastien Fontenay[†] & Libertad González[‡]

Abstract

We investigate the impact of paternity leave policies on gender role attitudes in the next generation. We measure gender-stereotypical attitudes using an Implicit Association Test with 3,000 online respondents in five countries. Using an RD design, we observe a significant reduction in gender-stereotypical attitudes among men born post-paternity leave implementation. This shift is reflected in career choices, as men whose fathers were affected by the reform are more inclined to pursue counter-stereotypical jobs, particularly in high-skilled occupations like healthcare and education. Our findings highlight how paternity leave fosters egalitarian gender norms and affects the occupational choices of the next generation.

JEL Classification: J08, J13, J16, J18
Keywords : gender norms, paternity leave, female-dominated occupation, regression discontinuity design

---

This project has received funding from the European Union's Horizon Europe program (HORIZON-MSCA-2022-PF-01-01) under the Marie Skłodowska-Curie grant agreement N° 101104848 (#Leave4NextGen). González acknowledges financial support from the Spanish Agencia Estatal de Investigación (AEI), through the Severo Ochoa Programme for Centres of Excellence in R&D (Barcelona School of Economics CEX2019-000915-S), funded by MCIN/AEI/10.13039/501100011033. We are grateful to Almudena Sevilla, Elaine Liu, Olga Cantó and Ylva Moberg for helpful comments and suggestions. We thank participants to the Pompeu Fabra reading group, the Workshop on The Economics of Social Norms at Paris Dauphine University, the DG-ECFIN Workshop on Gender Economics, American University's reading group in gender economics (Kelly M. Jones), ROA seminar at Maastricht University, the 2024 Society of Economics of the Household annual meeting in Singapore, the IEB Workshop on Public Policies at Universitat de Barcelona, the 2024 European Society for Population Economics conference in Rotterdam, the 2024 European Association of Labour Economics in Bergen, IRES lunch seminar at UCLouvain, AXA Research Lab on Gender Equality at Bocconi University.

[†] Sébastien Fontenay, MSCA fellow at Universitat Pompeu Fabra, visiting professor at Universidad de Alcalá and IZA research affiliate. Dep. of Economics and Business, Universitat Pompeu Fabra, Ramon Trias Fargas, 25-27, 08005 Barcelona (sebastien.fontenay@upf.edu).

[‡] Libertad González, Universitat Pompeu Fabra, Barcelona GSE and IZA. Dep. of Economics and Business, Universitat Pompeu Fabra, Ramon Trias Fargas, 25-27, 08005 Barcelona (libertad.gonzalez@upf.edu).

A growing body of evidence demonstrates that the persistence of gender inequalities in labor market outcomes can be attributed to the strong specialization of men in market work and women in home production following the arrival of children (Kleven, Landais, & Leite-Mariante, 2023). Normative gender roles, which endorse men as breadwinners and women as homemakers, appear to play a significant role in this specialization (Moriconi & Rodríguez-Planas, 2021).

In response, public policies have been designed to favor the convergence of men's and women's roles, with the aim of lifting barriers to gender equality. In recent decades, many policy makers have focused on paternity leave as a way to rebalance the traditional roles of parents in the household.[1] Recent evaluations show that paternity leave reforms have successfully increased the presence of fathers in the home after childbirth (Cools, Fiva, & Kirkebøen, 2015; Persson & Rossin-Slater, 2024), as well as their long-term involvement in childcare and household chores (Arnalds, Eydal, & Gíslason, 2013; Farré & González, 2019; Fontenay & Tojerow, 2024; Kotsadam & Finseraas, 2011; Pailhé, Solaz, & Tô, 2024; Patnaik, 2019; Tamm, 2019).

One important question that remains is the extent to which the greater involvement of fathers in child-rearing can promote more egalitarian attitudes (and behaviors) in the next generation. In this paper, we evaluate the extent to which public policies, such as paternity leave, can promote counter-stereotypical attitudes that are transmitted from parents to children. By addressing this crucial question, we formally test the assertion of Bertrand (2020) that "direct exposure to the proscribed, counter-stereotypical behavior is key to changing gender stereotypes across generations."

[1] "Paternity leave" is defined as a policy that allows men to take time off from their job after the birth of a child, while subsidizing their earnings and allowing them to return to said job. We focus on parental leave policies that reserve time off for the father (non-transferable), thus not including leave entitlements that can be shared by both parents.

We use data on young adults exposed (or not) to a father who was eligible for paternity leave following reforms in five European countries with different cultural, social, and economic backgrounds: Belgium, Denmark, France, Norway, and Sweden. We measure attitudes about gender roles using data from "Project Implicit,"[2] which provides publicly available Implicit Association Tests (IAT). In particular, we use data from the "Gender-Career" association test, which aims at measuring subconscious associations between women and family and between men and career. The main advantage of using IATs is avoiding the "social desirability bias" that arises when respondents answer survey questions in a manner that would be perceived more favorably by others (Carlana, Ferrara, & Pinotti, 2022). For this reason, previous research reveals that IATs are better at capturing individual attitudes than survey questionnaires (Egloff & Schmukle, 2002).

Using a Regression Discontinuity Design (RDD), we compare young adults born right before and right after the reforms that first introduced paternity leave in five countries during the 1990's and early 2000's. We find that men exposed to eligible fathers display less gender-stereotypical attitudes, that is, they are less likely to associate women with home-making and men with career. Only men appear to be affected by the counter-stereotypical example that a father on paternity leave provides, while we do not observe any change in women's attitudes in any of the countries considered. The magnitude of the change among male IAT respondents is meaningful, as we measure a 19-percentage-point increase in young men, who display non-stereotypical attitudes towards gender roles.

[2] Project implicit is a multi-university initiative founded by Dr. Tony Greenwald (University of Washington), Dr. Mahzarin Banaji (Harvard University) and Dr. Brian Nosek (University of Virginia). It is a non-profit organization providing a "virtual laboratory" for collecting data on implicit social cognition on the internet. Currently, 18 implicit association tests are hosted on the Project Implicit's website and have received IRB approval from the University of Virginia. For more information: https://www.projectimplicit.net/resources/about-the-iat/

We posit that the increased long-term involvement of fathers in the home triggered by paternity leave helped to shape the next generation's gender role attitudes, and contributed to their performance in the IAT. We test this mechanism with survey data and find that treated fathers report spending substantially more time in childcare activities, far after the paternity leave period itself. It is therefore plausible that counter-stereotypical fathers could have acted as a role model for their sons. This echoes previous finding by Fernández, Fogli, and Olivetti (2004), who showed that World War II produced a dramatic change in gender norms in the United States, as it exposed more young boys to a working mother. Following paternity leave reforms, the generations examined in this study were instead exposed to fathers who were more involved in the home.

Building on this result, we examine how the change in gender role attitudes may translate into counter-stereotypical behaviors in the labor market. Specifically, we examine the likelihood of men entering female-dominated occupations, as prior research indicates that conservative attitudes have historically discouraged men from pursuing careers such as nurses or teachers (Davis & Greenstein, 2009; Irmert, 2024). Using data from the European Union survey on Statistics on Income and Living Conditions (SILC), we find that treated male respondents (born right after the paternity leave reforms) living in Denmark, Norway, and Sweden, are 12.5 percentage points more likely to work in a (high-skilled) female-dominated occupation. We argue that, by changing gender norms, paternity leave reforms can contribute to reducing gender segregation in the labor market. This seems particularly important since "occupational ghettos" have been found to be very persistent over time (Charles & Grusky, 2005), even in countries where women's participation in the labor market has reached levels comparable to that of men.

We believe that this study fills an important gap since preference formation and social norms have been found to be an important contributor to the persistence of gender inequality across generations (Nollenberger, Rodríguez-Planas, & Sevilla, 2016). To the best of our knowledge, only the study by Farré, Felfe, González, and Schneider (2023) considers the potential spillover effects of paternity leave on gender norms across generations. Farré et al. (2023) find that at age 12, children whose fathers were eligible for paternity leave in Spain exhibit more egalitarian attitudes towards gender roles and engage more in counter-stereotypical behaviors at home. We extend this study along three crucial dimensions. First, we provide cross-country evidence of an intergenerational effect of paternity leave on gender norms. We believe that our diverse pool of countries, from Scandinavia to Western Europe, provides critical external validity. Second, we are the first to consider effects on adults, while the study by Farré et al. (2023) surveyed children. We think this is a significant contribution since children still live with their parents, while most young adults live on their own and socialize with peers (co-workers or classmates at university). Our study reveals that changes in gender norms induced by paternity leave reforms are persistent all the way through adulthood, even after leaving the family nest. Third, our use of an Implicit Association Test allows us to rule out that the effect measured on gender norms could suffer from social desirability bias, which might be strong when looking at individuals born in close proximity and belonging to the same school cohort. We believe that this research combining a natural experiment and publicly available Implicit Association Tests could be extended to the evaluation of other public policies and their impact on a wide range of attitudes towards racial, sexual or religious differences.

Our work primarily contributes to the burgeoning literature on the intergenerational effects of paternity leave. Compared to the consolidated literature that evaluates the effects of paternity leave reforms on parents (Albanesi, Olivetti, & Petrongolo, 2023), little is known about the spillover effects on the next generation. Mikkelsen and Peter (2022) reveal that the Swedish "daddy month" reform of 1995, which provided 30 days of earmarked parental leave for fathers, increased the fraction of girls choosing math-intensive programs in secondary education. Cools et al. (2015) and Kotsadam and Finseraas (2013) evaluate the effects of the Norwegian 1993 reform introducing four weeks of earmarked paternity leave, and find that it may have affected children's school performance, as well as their participation in household chores. By looking at young adults, our paper extends previous research and considers for the first time the impact on labor market decisions. While accumulating evidence reveals that paternity leave reforms have no strong effects on the labor supply decisions of the generation directly affected by the reforms (Andresen & Nix, forthcoming; Ekberg, Eriksson, & Friebel, 2013; Kleven, Landais, Posch, Steinhauer, & Zweimüller, forthcoming), our study demonstrates that the young men exposed to a father who was eligible for paternity leave adopt counter-stereotypical behaviors in the labor market and are more likely to work in female-dominated occupations.

More generally, we contribute to the literature exploring how gender norms and behaviors are transmitted across generations (Alesina, Giuliano, & Nunn, 2013; Bertrand, 2019; Fernández et al., 2004), and we reveal that paternity leave policies could contribute to breaking the gender mold, which traditionally confines men and women to rigid roles.

I. Paternity Leave Reforms in Five Countries

We evaluate the intergenerational spillover effects of paternity leave using reforms in five countries that were early adopters: Belgium (Jul. 2002), Denmark (Jan. 1995), France (Jan. 2002), Norway (Apr. 1993), and Sweden (Jan. 1995). The Scandinavian countries introduced so-called "daddy months," earmarking one month of parental leave for fathers only. As a result, take-up increased to 60 percent in Denmark (Haataja, 2009), 60 percent in Norway (Cools et al., 2015; Rege & Solli, 2013), and 80 percent in Sweden (Ekberg et al., 2013). Meanwhile, Belgium and France introduced a two-week long paternity leave exclusively for fathers, with a similarly high take-up rate from the start, up to 50 percent of fathers in Belgium (Fontenay & Tojerow, 2024), and 70 percent in France (Gosselin & Lepine, 2018).

Because the paternity leave introduction in our five countries dates back to the 1990's and early 2000's, the children born around the reform date have since entered adulthood. Indeed, our data shows that when taking the Implicit Association Test, our sample of respondents was on average 23 years old (Appendix Table A1). Our sample is therefore composed of young adults who, depending on their birthdate, were exposed or not to counter-stereotypical gender roles in their household during childhood and adolescence.

II. Measuring Gender Norms using the Implicit Association Test

Previous research has mostly relied on survey questions to measure gender role attitudes, asking for instance whether women with young children should work or stay at home (Doepke & Kindermann, 2019). While survey questions might be able to measure long term changes across cohorts, they may fail to capture differences between individuals born in close proximity because of "social desirability biases," which may push respondents to answer questions in a manner that make them look good to their peers, concealing their true opinions (Carlana et al., 2022).

The Implicit Association Test (IAT) is designed to neutralize social desirability bias by relying on subconscious mental associations. The IAT dates back to the seminal work of Greenwald, McGhee, and Schwartz (1998), and relies on test-takers' speed of response to capture the strength of their subconscious mental associations. Egloff and Schmukle (2002) show that IAT scores are, in fact, difficult to manipulate, and a growing number of studies reveal how the score strongly correlates with real-world psychological responses and economic decision-making

(Bertrand, Chugh, & Mullainathan, 2005; Bursztyn, Chaney, Hassan, & Rao, 2024; Carlana, 2019; Glover, Pallais, & Pariente, 2017; Greenwald, Poehlman, Uhlmann, & Banaji, 2009).[3]

In our case, the participants who take part in the "Gender-Career" IAT on the Project Implicit website are asked to quickly sort words into categories: associating (i) "male" and "female" names with (ii) words related to "career" or "family." Because words and pairings are changed several times, the speed at which participants perform the task conveys information about implicit association.[4] Our main outcome measures the strength of association between men and career and between women and family. Appendix Figure A1 reveals that younger cohorts who take the "Gender-Career" IAT display less stereotypical associations across all the countries considered.

The dataset that we use is publicly available from the Project Implicit website. We keep all respondents who live in the five countries that adopted paternity leave in the 1990's or early 2000's and who answered the online survey between 2016 and 2023.[5] In addition to the test scores, IAT respondents are asked to provide information about gender, race, and religion.[6] This provides us with important information to verify that respondents born right before and right after the reforms are similar in observables.

Most importantly, the rich dataset allows us to evaluate the effect of paternity leave across generations for men and women separately. We hypothesize that same-gender role models may

[3] Oswald, Mitchell, Blanton, Jaccard, and Tetlock (2013) criticize the predictive power of the IAT for real-world outcomes. To address this concern, we will also consider the effect of the paternity leave reforms on revealed behavior by looking into the probability to join a female-dominated occupation.

[4] We always refrain from using the term prejudice because implicit associations do not necessarily reflect explicit attitudes. In fact, a high score might also reflect "shared cultural stereotypes rather than personal animus" (Arkes & Tetlock, 2004).

[5] We do not include Iceland, which introduced paternity leave in January 2001, due to the small sample size (only 28 male respondents). In additional analyses (available upon request), we find that our results are robust to including the Icelandic sample.

[6] The survey is provided in Dutch, English and French.

have a stronger effect, so that young men might be more influenced by their fathers' counter-stereotypical behaviors. Our hypothesis relies on previous research showing strong influence of fathers on their sons' attitudes and behaviors, including smoking (Loureiro, Sanz-de-Galdeano, & Vuri, 2010), health and nutrition (Thomas, 1994), occupational choices (Lo Bello & Morchio, 2022), educational choices (Azam & Bhatt, 2015), and the decision to have children at a young age (Sipsma, Biello, Cole-Lewis, & Kershaw, 2010).

Regarding the construction of our main outcome, we compute the so-called Greenwald's D score, which measures the difference in response latencies when taking the IAT. Greenwald, Nosek, and Banaji (2003) provide bounds for the power of the IAT: a score between -0.15 and 0.15 is considered "neutral", a score between 0.15 and 0.35 corresponds to a slight association between the two concepts, between 0.35 and 0.60 a moderate association, while an IAT-score over 0.60 reveals a strong stereotypical association. In the empirical analysis, we will use the continuous IAT score, as well as a discrete version where an IAT score above 0.15 is coded as one (i.e. stereotypical association), and otherwise as zero. From a policy perspective, it seems relevant to estimate the effect on the share of people who exhibit gender stereotypes.

Figure 1 reveals that the vast majority of respondents display a positive IAT score, which implies that many do associate women with family and men with career. Panel A shows that the distribution of the IAT score of male respondents born (within 12 months) after the paternity leave implementation is shifted to the left. In other words, we observe a larger share of male respondents who display non-stereotypical attitudes towards gender roles among those exposed to a father eligible for paternity leave. In the next section, we seek to provide causal evidence for the effect of the paternity leave on gender norms by using a regression discontinuity design around the reform cutoff.

III. Empirical strategy

To measure the causal effects of paternity leave reforms across generations, we exploit the natural experiments provided by the policy changes in five countries. Using a Regression Discontinuity Design (RDD), we compare young adults born before and after the reform cutoffs:

$$(1) \qquad y_{it} = \alpha + 1[t_i \geq c]\beta + 1[t_i \geq c] \cdot f_r(t - c, \gamma_r) + 1[t_i < c] \cdot f_l(c - t, \gamma_l) + \epsilon_{it},$$

where y is the IAT score of respondent i, born in month t around the reform cutoff c. f_r and f_l are unknown functions with parameter vectors γ_r and γ_l, capturing trends in the outcome of interest. We can interpret β as the discontinuity for a respondent born just before versus just after the paternity leave reform. We do not observe paternity leave take-up in our data, so that our estimates should be interpreted as intent-to-treat (ITT) effects. We do know from previous studies in the five countries that the reforms led to high take-up, so that our ITT estimates should be driven by a meaningful share of the population.

Our estimates are produced using local polynomial regressions (Calonico, Cattaneo, & Titiunik, 2014a) and a uniform kernel (i.e. no weighting). We report heteroskedasticity-robust standard errors clustered at the month of birth level (our running variable), following Lee and Card (2008). For each outcome and each specification, we estimate the bandwidth using the data-driven procedure of Calonico, Cattaneo, and Titiunik (2014b), "CCT bandwidth" from now on. As a robustness check, we also provide results for the bandwidth suggested by Kolesár and Rothe (2018) when dealing with a running variable that only takes a moderate number of distinct values ("Honest bandwidth").

In our main specification, we pool the observations for all five countries, and thus the threshold is normalized to zero for the month immediately after the introduction of paternity leave in each country. All of our specifications include country (and survey year) fixed-effects.

Assuming no sorting in births around the reform date, we can interpret the estimated discontinuity at the cutoff as the causal effect of paternity leave on the gender role attitudes of the next generation. This assumption is supported by the many papers that have previously studied the effects of the paternity leave reforms on parents in the five countries considered (see e.g. Avdic & Karimi, 2018; Cools et al., 2015; Ekberg et al., 2013; Olafsson & Steingrimsdottir, 2020; Rege & Solli, 2013).[7]

We formally check for the absence of bunching in the number of observations around the reform cutoff in our dataset using a McCrary density test (2008). Our results in Table 1 suggest that parents did not manipulate the date of childbirth (e.g., through c-section or induced birth) to become eligible for paternity leave, and/or that exposure to paternity leave is unrelated to the likelihood of taking the gender-career IAT test. This is also confirmed by Appendix Figure A2, showing the density of the assignment variable (i.e. month of birth) and estimating the discontinuity at the reform cutoff using local-polynomial density estimators (Cattaneo, Jansson, & Ma, 2020). Furthermore, Table 1 reveals that predetermined characteristics of the IAT respondents are well balanced across the reform cutoff, whether it is the proportion of women, nonwhite individuals, Christians, or their household income. As suggested by previous evidence from the literature, the parents of respondents born before/after the reform were also

[7] Dahl, Løken, and Mogstad (2014) find evidence of a small manipulation of planned cesarean sections around the reform date in the Norwegian case. Our results (available upon request) are robust to excluding individuals born within one month of the cutoff in Norway (i.e. donut-hole test).

equally likely to be working (see e.g. Andresen & Nix, forthcoming; Ekberg et al., 2013; Kleven et al., forthcoming).

Regarding the composition of our sample, respondents took the IAT test online voluntarily on the Project Implicit website. The last panel of Table 1 reveals that most respondents took the IAT because of university or work assignment (62 percent). Others found out about the IAT on the news (18 percent) or through friends (20 percent) and decided to take the test as a result. Most importantly, the reasons to take the test are perfectly balanced around the reform cutoff, so that we can rule out that IAT participants born after the reform were keener to participate in a survey on gender norms.

IV. Effects of Paternity Leave on the Next Generation

A. Gender Role Attitudes

We now report the results on the effect of paternity leave on the gender role attitudes of the next generation. We start by pooling together IATs for all the respondents in the five countries. Figure 2 shows the discontinuity in test scores at the reform cutoff (vertical bar) for men in Panel A and women in Panel B. We clearly observe that men born right after the reform, and potentially exposed to a father on paternity leave, display less gender-stereotypical attitudes. In other words, male respondents affected by the paternity leave reform are less likely to associate women with home-making and men with career. We do not detect any change in attitudes for female respondents.

In Table 2, we estimate the discontinuity at the reform cutoff using our "Main specification," a polynomial of order 1 (i.e. linear) and a bandwidth suggested by the data-driven procedure of Calonico, Cattaneo, and Titiunik (2014b): 19 months for male IAT respondents and 29 months for female IAT respondents. We find that young men born right after the paternity leave reform are less likely to associate men with career and women with family. Confirming our visual inspection, we find no effect on young women. The magnitude of the effect for men is a reduction of 0.15 in the IAT score in our main specification. The effect is very similar when we consider alternative specifications, including the "Honest" algorithm suggested by Kolesár and Rothe (2018) to estimate the bandwidth size (-0.14), or different polynomial orders (-0.14 when using a quadratic function, and -0.11 when using a simple average).

Since the average IAT score for respondents born before the introduction of paternity leave is 0.3 (indicating a slight to moderate stereotypical association), the reform moved the average score closer to a neutral position, reaching 0.15. Appendix Figure A1 is useful to provide a sense of the profound changes that the paternity leave reforms produced in the next generation. The estimated difference between adults born only one month apart, but exposed or not to a father on paternity leave, is similar to six decades of reduction in gender-stereotypical attitudes measured by the IAT in countries like Canada (-0.13) or the United States (-0.14).

Another way to comprehend the effect that the paternity leave reform had on the next generation is to consider the fraction of IAT respondents who obtained a score above 0.15, that is, those who displayed some degree of stereotypical association. In Appendix Table A2, we report the results for a dummy variable that takes on a value of 1 if the IAT score is above 0.15, and 0 otherwise. We find that IAT respondents born after the reform are 19 percentage points less likely to display a stereotypical association. This is a large reduction compared to the 72 percent of IAT respondents born before the reform who obtained a non-neutral score.

Appendix Table A3 reports the effects for each country separately. Three countries stand out with particularly large effects on men: Belgium (-0.26), Sweden (-0.21), and Denmark (-0.11). In the remaining countries, France and Norway, we find no effects statistically significant at conventional levels. We also find consistently no effect on women in each of the five countries considered.

As mentioned in section III, most respondents participate in the IAT because of a university or work assignment. One may expect that the types of workers who are asked by their employer to take the test might differ from the general population. In fact, Appendix Table A1 reveals that 70 percent of the participants attended tertiary education, while only 6 percent have low educational attainment (primary or lower secondary school). Our sample of respondents therefore sensibly differs from the typical educational attainment of the population in the five countries considered. We reweight our sample so as to better reflect the educational attainment of the general population, the goal being to make our sample closer to being representative of the overall population.[8] Results reported at the bottom of Table 2 ("reweighted sample") suggest that the effect on male IAT respondents is, if anything, larger when reweighing the sample (-0.22).

Another concern related to the availability of the IAT online is that some people decide to take the test on their own and, therefore, self-select into the project. As mentioned in section III, we do not detect bunching in the number of participants born after the reforms. In addition, pre-determined characteristics are balanced across the reform threshold. However, one might be concerned with unobserved characteristics changing the composition of respondents on either side of the reform cutoff. For instance, individuals more concerned with gender equality might hear about the test in the news and decide to take the test. To alleviate this concern, we remove from the sample all the participants who declare that they took the test after reading about it in the news or on the Internet. The analysis of the "not self-selected sample" in Table 2 reveals

[8] According to OECD data for the five countries considered in our study, 17 percent of the general population has primary or lower secondary education, 39 percent are high school graduates, and 44 percent reached tertiary education.

that the effects are highly similar to our main specification with the complete sample of IAT respondents (-0.13).

To further dissipate concerns about self-selection, we investigate other IATs related to race or physical characteristics, also publicly available on the Project Implicit website. The intuition is that the paternity leave reforms, by providing a counter-stereotypical example of a father as homemaker, should not impact the score of respondents in other IATs that are not related to gender norms. If they did, then one could suspect that other confounders might be driving the effects. Appendix Figure A3 suggests that there are no differences on the race IAT taken by young adults born right after and right before the paternity leave reforms. This is confirmed in our analysis of other IATs (related to weight and age) in Appendix Table A4.

Finally, we want to rule out that our results may suffer from seasonality issues, since the previous literature has highlighted how the season of birth might be related to later life outcomes because of school starting age or parental selection (Buckles & Hungerman, 2013). In our specific context, we do not anticipate seasonal effects to interfere strongly with our estimates since the cutoff is different in two of the countries where we measure the largest effects, namely Belgium (July) and Sweden (January). However, we remain cautious and change our main specification to account for season of birth effects. We add calendar-month-of-birth fixed effects to equation (1) for the IAT sample. Appendix Table A5 reveals that the effect on the IAT score is very similar to our baseline estimates (-0.15).

B. Occupational Choice

In the previous subsection, we demonstrate that paternity leave reforms had a long-lasting impact on the next generation's gender role attitudes, most crucially among men. We now turn to examining whether this change in attitudes affected real-life decisions. In particular, we investigate whether the young men exposed to a father on paternity leave adopted less gender-stereotypical behaviors when entering the labor market. We argue after Charles and Grusky (2005) that studying policies that could reduce "occupational ghettos" is important since gender occupational segregation has been found to be very persistent over time, even in countries where other types of gender inequality have lessened (e.g. labor force participation or wage gaps). Most crucially, while women have increasingly entered male-dominated occupations over the past decades (Busch, 2020; Mandel, 2012), the presence of men in typically female-dominated occupations is still very scarce (Torre, 2014). Conservative attitudes and values seem to be a crucial barrier (Davis & Greenstein, 2009; Irmert, 2024), and therefore, the change in gender norms brought about by paternity leave reforms may be a new driving force pushing men into counter-stereotypical roles. In fact, previous research in sociology suggests that young men with more egalitarian attitudes are more likely to aspire to more female-dominated occupations (Baird, 2012; Correll, 2001).

We use data from the survey on Statistics on Income and Living Conditions (SILC), which is probably the best effort within the European Union to collect data related to education, labor market and income. The questionnaire is harmonized across countries and highly stable over time. We aggregate cross-sectional survey waves from 2006 to 2020 and keep those respondents born around the paternity leave reform cutoff (once again, the exact bandwidth is estimated using the data-driven procedure of Calonico et al. (2014b)). Since we are primarily interested in occupational segregation, we restrict the sample to adult respondents (i.e. aged at least 18 years old). Because of this last restriction, our sample only includes three of the five countries, those that adopted paternity leave in the 1990s: Denmark, Norway and Sweden.[9]

[9] The last survey wave of SILC that contains the date of birth is 2020 for Belgium and France. Because the paternity leave reforms took place in 2002 in those countries, respondents are not yet over 18 when taking the survey.

Appendix Table A6 provides descriptive statistics on the sample of 45,950 SILC respondents born within a five-year bandwidth around the reform cutoff, aged over 18 at the time of the survey, and residing in Denmark, Norway or Sweden. The average respondent is 21.5 years old, and very few are married or have children. One out of five respondents have completed post-secondary education, while four out of five are working.[10] The SILC questionnaire includes a question on occupation following the ISCO-08 classification, with a total of 43 different occupations. We compute the share of women in each occupation. Appendix Table A7 reveals that women are disproportionately represented among personal care workers (87%), keyboard clerks (86%), cleaners/helpers (81%) and health professionals (80%). Our main outcome variable is a dummy that takes on a value of 1 if a SILC respondent is working in one of the 9 occupations in which more than two-third of workers are women, and 0 otherwise. Research on gender segregation uses the 66 percent threshold to identify occupations which are not "gender neutral" (Hamjediers & Peters, 2024; Torre, 2014).[11] We further distinguish between low-skilled and high-skilled occupations by mapping the ISCO-08 major groups to skill levels using the correspondence table of the International Labour Office (2012). We split our sample between SILC respondents working in low-skilled occupations (levels 1 and 2) and high-skilled occupations (levels 3 and 4).

Our empirical strategy follows again Equation (1), except that the running variable is now the quarter of birth (due to the SILC anonymization strategy). In a similar exercise than before, Figure 3 shows the fraction working in a female-dominated occupation for cohorts born around the reform cutoff. Panels A and B of Figure 3 reveal that the share of men working in female-dominated occupation evolves around 20 during the quarters before the paternity leave reforms,

[10] The employment indicator takes value 1 if the respondent reports wage earnings higher than 0.
[11] Our results are robust to using a 50 percent threshold instead (available upon request).

with a slightly decreasing trend. We document a sharp discontinuity at the reform cutoff on Panel B for high-skilled occupations (e.g. health or teaching professionals), with an estimated increase of 12.5 percentage points in the fraction of men working in a female-dominated occupation (Table 3). We do not observe an effect for men in low-skilled occupations. In accordance with our previous results on gender norms, we also find no effect on women. We check (in Appendix Table A8) that these results are not driven by labor force participation or human capital decisions, and we find that there is no change at the reform cutoff in employment rates or of years of education.

We also test the sensitivity of our results to alternative model specifications, and we provide evidence in Appendix Table A9 that our results are robust to using the "honest" bandwidth selector of Kolesár and Rothe (2018). We also find a similar effect size when using a quadratic polynomial for the estimation of the trends on each side of the cutoff (8.6 percentage points for high-skilled occupations), although the results lose statistical significance at conventional levels.

C. Robustness Checks

In this sub-section, we provide additional robustness checks, as well as an alternative estimation strategy, to further demonstrate the strength of our findings.

First, to verify that our RDD strategy is truly capturing exceptional circumstances at the reform cutoff, we compare our estimates to placebo estimates during pre-reform years. To do so, we artificially move the cutoff by one month (or quarter) in each of the 10 years before the actual paternity leave reforms, and show the distribution of the estimates in Appendix Figure A4 for the IAT sample (Appendix Figure A5 for the SILC sample). Panel A of Appendix Figure A4 shows that, for male respondents, the placebo estimates are centered around 0, while our estimate for the actual reform year (represented by the red dashed line) is completely off on its own and far away from the rest of the distribution. As such, we are truly capturing a special event during the reform year that does not overlap with typical deviations measured in non-reform years. A similar conclusion can be drawn from Appendix Figure A5 when looking at the effect on men in high-skilled female-dominated occupations.

Second, we seek to corroborate our findings by using an alternative estimation strategy, which relies on a local difference-in-differences (DiD) design around the reform cutoff. The intuition is to measure changes only among individuals born in really close proximity, while netting out any potential seasonality in the outcome variable by using non-reform years (similar to Farré et al. (2023)). In Appendix Table A5, we report results for a local DiD strategy using a tight bandwidth of 6 months around the reform cutoff and 5 pre-reform years. In the Belgian case, for instance, we compare the IAT score of treated individuals (born between July and December 2002) to the score of control individuals (born between January and June 2002), while accounting for seasonal effects measured during pre-reform years from 1997 to 2001. Our coefficient of interest is reported as "Cutoff * Reform year" in Appendix Table A5. Using this new estimation strategy, we find again a reduction in gender stereotypical association among IAT respondents born after the reform (-0.081), although of a slightly smaller magnitude compared to our RDD estimate. The last panel of Appendix Table A9 uses a similar local DiD strategy for the SILC sample and confirms the higher share of men joining high-skilled female-dominated occupations among those born right after the paternity leave reforms.

V. Mechanism: Effect of Paternity Leave on Fathers' Behavior

In this last section, we explore the mechanisms at play and discuss how young adults born only a few months apart could display very different gender role attitudes and choose to pursue different careers. We hypothesize that the fathers eligible for paternity leave acted as a role model for their sons, who, later in life, consider both parents as homemakers and display less stereotypical attitudes when taking the IAT. This assumes, of course, that the reforms had an effect beyond the paternity leave period that takes place immediately after birth, and that the children of eligible fathers had the chance to be exposed to a different role model. Appendix Table A10 surveys the previous literature and reveals that the reforms in the five countries considered indeed had a long lasting impact on the division of tasks in the households. For instance, Fontenay and Tojerow (2024) find that, up to 10 years after childbirth, post-reform fathers in Belgium dedicated twice as much time to their children, compared to the control ones. We reviewed the literature and found evidence of long-term changes in the household division of labor in nine different countries where paternity leave was introduced.

We seek to confirm these previous findings and establish cross-country evidence that paternity leave reforms affect households' division of labor in the long run. To do so, we use the European Working Conditions Survey (EWCS), which, despite not being conducted to collect information on household activities, has several advantages. First, it is a nationally representative survey conducted in the five countries considered in this study: Belgium, Denmark, France, Norway and Sweden. Second, the questionnaire is harmonized and asks questions about how often interviewees perform various nonmarket activities, including childcare. The exact question is "How many hours per day are you involved in: Caring for and educating your children?". Finally, the 2005 EWCS collected data on fathers who had children before and after the reforms in the countries of our sample. Using a regression discontinuity design, we compare fathers who had a first child (and only child by the time they answered the survey) around the reform cutoff in each country. Unfortunately, we only have the birth year of the child, so that our estimates rely on breaks in long run trends.

Panel A of Figure 4 shows the distribution of fathers' daily childcare hours. We can clearly see a shift of the distributions to the right for those who had a child after the paternity leave reforms across the five countries considered. Panel B provides more causal evidence in an RDD setting and shows a sharp discontinuity at the reform cutoff. Our estimates (reported on top of the graph) reveal that the fathers eligible for paternity leave dedicate 1.2 hours more to childcare per day. Compared to the pre-reform mean (1.5 hours), this is almost double the time.

This analysis supports the idea that the impact of the paternity leave reforms extends far beyond the leave period. In particular, the evidence suggests that the fathers eligible for paternity leave devoted more time to their children persistently. We believe that, by offering a counter-stereotypical example to their sons throughout their childhood, fathers eligible for paternity leave contributed to the change in gender norms that we observe in the next generation.

VI. Conclusions

We study the effect of paternity leave policies on attitudes about gender roles in the next generation. We follow a Regression Discontinuity Design where the running variable is the month of birth, and study the results in an Implicit Association Test about gender, for young adults born shortly before and after the introduction of paternity leave in five different European countries. We find that men exposed to fathers who were eligible for paternity leave display significantly less gender-stereotypical attitudes as adults, while we find no effect for women. We also provide suggestive evidence that paternity leave reforms persistently increased fathers' involvement in household chores, and conjecture that the main mechanism behind our results is a role-model effect, such that boys who grow up with a father who is more involved in the home throughout their childhood develop less gender-stereotypical attitudes.

Building on the observed change in gender role attitudes, we use survey data to examine how this translates into counter-stereotypical behaviors in the labor market. We find that male respondents born just after the paternity leave reforms in Denmark, Norway, and Sweden are more likely to work in a (high-skilled) female-dominated occupation, underscoring the potential of paternity leave reforms to mitigate gender segregation in the labor market.

Our results highlight the potentially far-reaching effects of policies that affect gender roles in households with children, if attitudes are shaped by parental behaviors during childhood. It remains to be seen the extent to which the changes in gender role attitudes, as well as the counter-stereotypical behaviors that we observe in the labor market, will translate into smaller child penalties (and thus gender gaps) in earnings in the next generation.

References

Albanesi, S., Olivetti, C., & Petrongolo, B. (2023). Families, labor markets, and policy. In *Handbook of the Economics of the Family* (Vol. 1, pp. 255-326): Elsevier.

Alesina, A., Giuliano, P., & Nunn, N. (2013). On the Origins of Gender Roles: Women and the Plough *. *The Quarterly Journal of Economics, 128*(2), 469-530. doi:10.1093/qje/qjt005

Andresen, M. E., & Nix, E. (forthcoming). You Can't Force Me into Caregiving: Paternity Leave and the Child Penalty. *Economic Journal*.

Arnalds, Á. A., Eydal, G. B., & Gíslason, I. V. (2013). Equal rights to paid parental leave and caring fathers-the case of Iceland. *Icelandic Review on Politics & Administration, 9*(2).

Avdic, D., & Karimi, A. (2018). Modern Family? Paternity Leave and Marital Stability. *American Economic Journal: Applied Economics, 10*(4), 283-307. doi:doi: 10.1257/app.20160426

Azam, M., & Bhatt, V. (2015). Like Father, Like Son? Intergenerational Educational Mobility in India. *Demography, 52*(6), 1929-1959. doi:10.1007/s13524-015-0428-8

Baird, C. L. (2012). *Going Against the Flow: A Longitudinal Study of the Effects of Cognitive Skills and Gender Beliefs on Occupational Aspirations and Outcomes 1.* Paper presented at the Sociological Forum.

Bertrand, M. (2019). The Gender Socialization of Children Growing Up in Nontraditional Families. *AEA Papers and Proceedings, 109*, 115–121.

Bertrand, M. (2020). Gender in the Twenty-First Century. *AEA Papers and Proceedings, 110*, 1–24. doi:10.1257/pandp.20201126

Bertrand, M., Chugh, D., & Mullainathan, S. (2005). Implicit discrimination. *American Economic Review, 95*(2), 94-98.

Buckles, K. S., & Hungerman, D. M. (2013). Season of Birth and Later Outcomes: Old Questions, New Answers. *The Review of Economics and Statistics, 95*(3), 711-724. doi:10.1162/REST_a_00314

Bursztyn, L., Chaney, T., Hassan, T. A., & Rao, A. (2024). The Immigrant Next Door. *American Economic Review, 114*(2), 348–384. doi:10.1257/aer.20220376

Busch, F. (2020). Gender segregation, occupational sorting, and growth of wage disparities between women. *Demography, 57*(3), 1063-1088.

Calonico, S., Cattaneo, M. D., & Titiunik, R. (2014a). Robust data-driven inference in the regression-discontinuity design. *The Stata Journal, 14*(4), 909-946. Retrieved from http://www.stata-journal.com/article.html?article=st0366

Calonico, S., Cattaneo, M. D., & Titiunik, R. (2014b). Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs. *Econometrica, 82*(6), 2295-2326. Retrieved from www.jstor.org/stable/43616914

Carlana, M. (2019). Implicit stereotypes: Evidence from teachers' gender bias. *The Quarterly Journal of Economics, 134*(3), 1163-1224.

Carlana, M., Ferrara, E. L., & Pinotti, P. (2022). *Implicit Stereotypes in Teachers' Track Recommendations.* Paper presented at the AEA Papers and Proceedings.

Cattaneo, M. D., Jansson, M., & Ma, X. (2020). Simple Local Polynomial Density Estimators. *Journal of the American Statistical Association, 115*(531), 1449-1455. doi:10.1080/01621459.2019.1635480

Charles, M., & Grusky, D. B. (2005). *Occupational ghettos: The worldwide segregation of women and men* (Vol. 200): Stanford University Press Stanford, CA.

Cools, S., Fiva, J. H., & Kirkebøen, L. J. (2015). Causal Effects of Paternity Leave on Children and Parents. *The Scandinavian Journal of Economics, 117*(3), 801-828. doi:doi:10.1111/sjoe.12113

Correll, S. J. (2001). Gender and the career choice process: The role of biased self-assessments. *American Journal of Sociology, 106*(6), 1691-1730.

Dahl, G. B., Løken, K. V., & Mogstad, M. (2014). Peer Effects in Program Participation. *American Economic Review, 104*(7), 2049-2074. doi:doi: 10.1257/aer.104.7.2049

Davis, S. N., & Greenstein, T. N. (2009). Gender ideology: Components, predictors, and consequences. *Annual review of Sociology, 35*, 87-105.

Doepke, M., & Kindermann, F. (2019). Bargaining over Babies: Theory, Evidence, and Policy Implications. *American Economic Review, 109*(9), 3264-3306. doi:10.1257/aer.20160328

Egloff, B., & Schmukle, S. C. (2002). Predictive validity of an Implicit Association Test for assessing anxiety. *Journal of personality and social psychology, 83*(6), 1441.

Ekberg, J., Eriksson, R., & Friebel, G. (2013). Parental leave — A policy evaluation of the Swedish "Daddy-Month" reform. *Journal of Public Economics, 97*(C), 131-143. Retrieved from https://EconPapers.repec.org/RePEc:eee:pubeco:v:97:y:2013:i:c:p:131-143

Farré, L., Felfe, C., González, L., & Schneider, P. (2023). Changing gender norms across generations: Evidence from a paternity leave reform. *IZA Discussion Paper*(16341).

Farré, L., & González, L. (2019). Does paternity leave reduce fertility? *Journal of Public Economics, 172*, 52-66. doi:https://doi.org/10.1016/j.jpubeco.2018.12.002

Fernández, R., Fogli, A., & Olivetti, C. (2004). Mothers and sons: Preference formation and female labor force dynamics. *The Quarterly Journal of Economics, 119*(4), 1249-1299.

Fontenay, S., & Tojerow, I. (2024). *Work Disability after Motherhood and how Paternity Leave can help*.

Glover, D., Pallais, A., & Pariente, W. (2017). Discrimination as a self-fulfilling prophecy: Evidence from French grocery stores. *The Quarterly Journal of Economics, 132*(3), 1219-1260.

Gosselin, H., & Lepine, C. (2018). Evaluation du congé de paternité. *Rapport. Membres de l'Inspection générale des affaires sociales*.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: the implicit association test. *Journal of personality and social psychology, 74*(6), 1464.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: I. An improved scoring algorithm. *Journal of personality and social psychology, 85*(2), 197.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of personality and social psychology, 97*(1), 17.

Haas, L., & Hwang, C. P. (2008). The impact of taking parental leave on fathers' participation in childcare and relationships with children: Lessons from Sweden. *Community, Work and Family, 11*(1), 85-104.

Haataja, A. (2009). Fathers' use of paternity and parental leave in the Nordic countries.

Hamjediers, M., & Peters, E. (2024). Gender compositions of occupations and firms jointly shape switches from gender-atypical towards more gender-typical positions. *European Societies, 26*(4), 1170-1194.

Huerta, M. d. C., Adema, W., Baxter, J., Han, W.-J., Lausten, M., Lee, R., & Waldfogel, J. (2013). Fathers' leave, fathers' involvement and child development: Are they related? Evidence from four OECD countries.

International Labour Office. (2012). *International Standard Classification of Occupations 2008 (ISCO-08): Structure, group definitions and correspondence tables*: International Labour Office.

Irmert, N. (2024). *Cultural Gender Norms and Occupational Choice*.

Kleven, H., Landais, C., & Leite-Mariante, G. (2023). The Child Penalty Atlas. *National Bureau of Economic Research Working Paper Series, No. 31649*. Retrieved from http://www.nber.org/papers/w31649

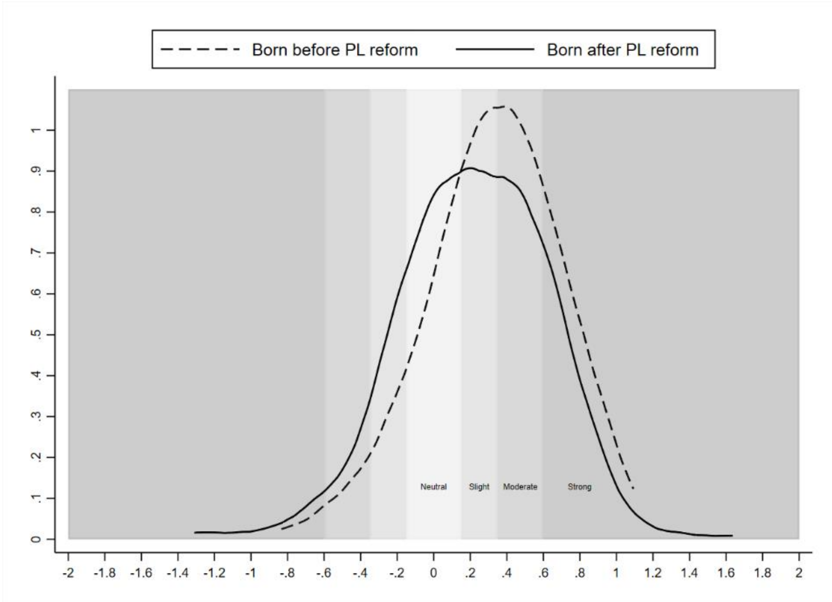
Kleven, H., Landais, C., Posch, J., Steinhauer, A., & Zweimüller, J. (forthcoming). Do family policies reduce gender inequality? Evidence from 60 years of policy experimentation. *American Economic Journal: Economic Policy*.

Kolesár, M., & Rothe, C. (2018). Inference in Regression Discontinuity Designs with a Discrete Running Variable. *American Economic Review, 108*(8), 2277-2304. doi:10.1257/aer.20160945

Kotsadam, A., & Finseraas, H. (2011). The state intervenes in the battle of the sexes: Causal effects of paternity leave. *Social Science Research, 40*(6), 1611-1622. doi:https://doi.org/10.1016/j.ssresearch.2011.06.011

Kotsadam, A., & Finseraas, H. (2013). Causal effects of parental leave on adolescents' household work. *Social Forces, 92*(1), 329-351.
Lee, D. S., & Card, D. (2008). Regression discontinuity inference with specification error. *Journal of Econometrics, 142*(2), 655-674.
Lo Bello, S., & Morchio, I. (2022). Like father, like son: Occupational choice, intergenerational persistence and misallocation. *Quantitative Economics, 13*(2), 629-679. doi:https://doi.org/10.3982/QE1375
Loureiro, M. L., Sanz-de-Galdeano, A., & Vuri, D. (2010). Smoking Habits: Like Father, Like Son, Like Mother, Like Daughter? *Oxford Bulletin of Economics and Statistics, 72*(6), 717-743. doi:https://doi.org/10.1111/j.1468-0084.2010.00603.x
Mandel, H. (2012). Occupational mobility of American women: Compositional and structural changes, 1980–2007. *Research in Social Stratification and Mobility, 30*(1), 5-16.
McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics, 142*(2), 698-714. doi:https://doi.org/10.1016/j.jeconom.2007.05.005
Mikkelsen, S., & Peter, N. (2022). More Dads at Home, More Girls in Math-Intensive Studies? Evidence from a Parental Leave Reform. *Evidence from a Parental Leave Reform (September 2022)*.
Moriconi, S., & Rodríguez-Planas, N. (2021). Gender norms and the motherhood employment gap.
Nollenberger, N., Rodríguez-Planas, N., & Sevilla, A. (2016). The math gender gap: The role of culture. *American Economic Review, 106*(5), 257-261.
Olafsson, A., & Steingrimsdottir, H. (2020). How Does Daddy at Home Affect Marital Stability? *The Economic Journal*. doi:10.1093/ej/ueaa009
Oswald, F. L., Mitchell, G., Blanton, H., Jaccard, J., & Tetlock, P. E. (2013). Predicting ethnic and racial discrimination: a meta-analysis of IAT criterion studies. *Journal of personality and social psychology, 105*(2), 171.
Pailhé, A., Solaz, A., & Tô, M. (2024). Can Daddies Learn to Care for Babies? The Effect of A Short Paternity Leave on the Division of Childcare and Housework. *Population Research and Policy Review, 43*(3), 1-48.
Patnaik, A. (2019). Reserving Time for Daddy: The Consequences of Fathers' Quotas. *Journal of Labor Economics, 37*(4), 1009-1059. doi:10.1086/703115
Persson, P., & Rossin-Slater, M. (2024). When Dad Can Stay Home: Fathers' Workplace Flexibility and Maternal Health. *American Economic Journal: Applied Economics, 16*(4), 186–219. doi:10.1257/app.20220400
Rege, M., & Solli, I. F. (2013). The Impact of Paternity Leave on Fathers' Future Earnings. *Demography, 50*(6), 2255-2277. doi:10.1007/s13524-013-0233-1
Sipsma, H., Biello, K. B., Cole-Lewis, H., & Kershaw, T. (2010). Like Father, Like Son: The Intergenerational Cycle of Adolescent Fatherhood. *American Journal of Public Health, 100*(3), 517-524. doi:10.2105/ajph.2009.177600
Tamm, M. (2019). Fathers' parental leave-taking, childcare involvement and labor market participation. *Labour Economics*. doi:https://doi.org/10.1016/j.labeco.2019.04.007
Thomas, D. (1994). Like Father, like Son; Like Mother, like Daughter: Parental Resources and Child Height. *The Journal of Human Resources, 29*(4), 950-988. doi:10.2307/146131
Torre, M. (2014). The scarring effect of "women's work": the determinants of women's attrition from male-dominated occupations. *Social Forces, 93*(1), 1-29.

Panel A: Sample of Male IAT Respondents



Panel B: Sample of Female IAT Respondents

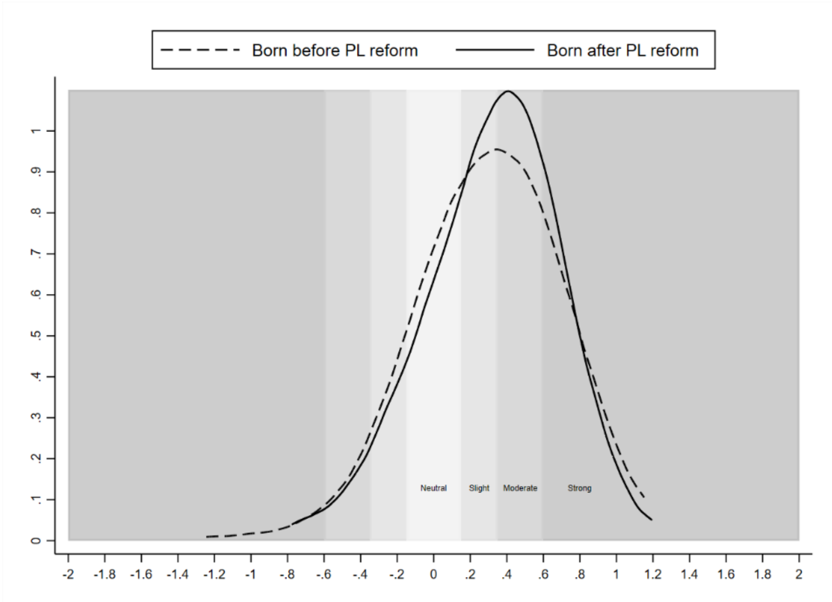
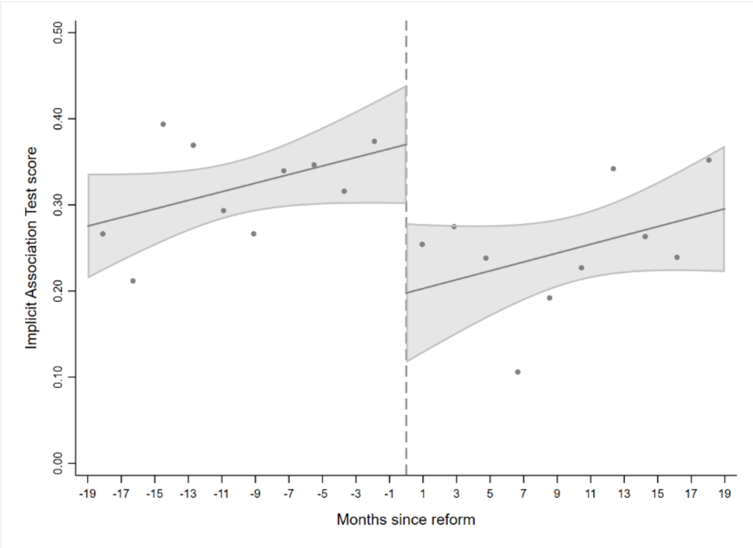


Figure 1: Distribution of IAT Scores of Respondents born Before/After the Paternity Leave Reform.

Notes: The graph plots the distribution of the IAT scores using kernel density for respondents born within 12 months of the paternity leave reform in their country. The shaded areas represent neutral (around 0), slight (above ± 0.15), moderate (above ± 0.35) or strong (above ± 0.6) associations between women and family and between men and career.

Panel A: Sample of Male IAT Respondents



Panel B: Sample of Female IAT Respondents

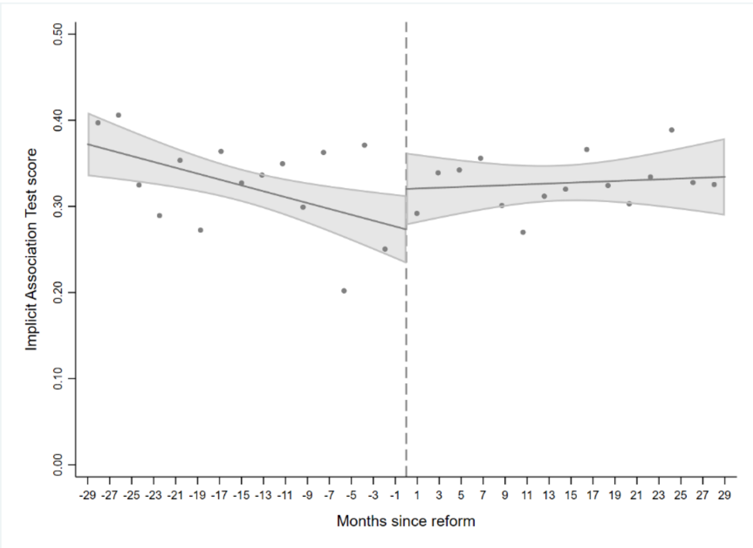
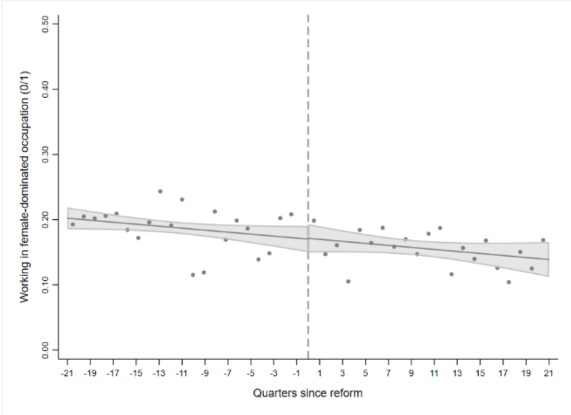


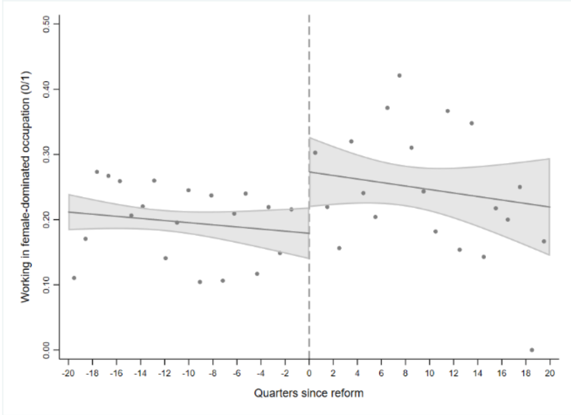
Figure 2: Change in Implicit Association Test Score at the Reform Cutoff.

Notes: Average IAT score in two-month bins. The vertical bar corresponds to the reform cutoff, normalized to 0 in each of the five countries. The trends on each side of the cutoff are from polynomial regressions of order 1 (i.e. linear). Sample of respondents to the "Gender-Career" IAT on the Project Implicit website who live in Belgium, Denmark, France, Norway and Sweden. The shaded area indicates the 95% confidence interval.

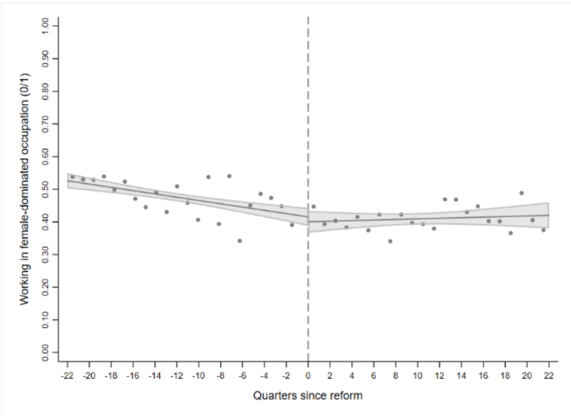
Panel A: Male Respondents, Low-skilled Occupations



Panel B: Male Respondents, High-skilled occupations



Panel A: Female Respondents, Low-skilled Occupations



Panel B: Female Respondents, High-skilled occupations

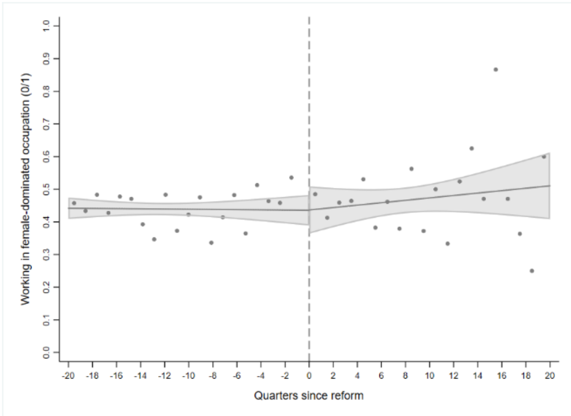
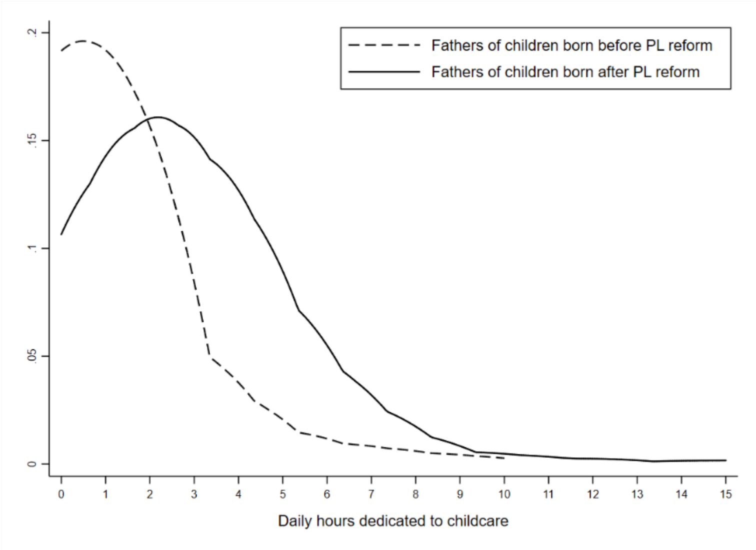


Figure 3: Change in the Probability to Work in a Female-Dominated Occupation at the Reform Cutoff.

Notes: Share of SILC respondents aged over 18, who work in a female-dominated occupation. The vertical bar corresponds to the reform cutoff, normalized to 0 in each of the three countries (Denmark, Norway and Sweden). The trends on each side of the cutoff are from polynomial regressions of order 1 (i.e. linear). The shaded area indicates the 95% confidence interval.

Panel A: Distribution of Fathers' Daily Childcare Hours



Panel B: Change in Fathers' Daily Childcare Hours at the Reform Cutoff

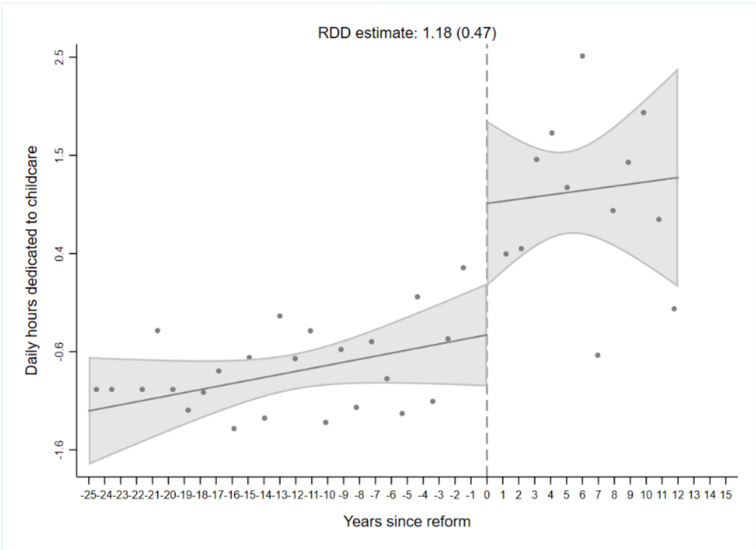


Figure 4: Effect of Paternity Leave Reforms on Fathers' Childcare Involvement.

Notes: The outcome variable is the number of hours that fathers dedicate each day to educating and caring for their children. Panel A reports the distribution of childcare time for fathers whose child was born before/after the reform. Panel B reports the residuals of the outcome variable after controlling for country fixed effects. The vertical bar corresponds to the reform cutoff, normalized to 0 in each of the five countries. The trends on each side of the cutoff are from local polynomial regression of order 1 (i.e. linear). The running variable is the birth year of their first child. Data are from the 2005 European Working Conditions Survey. Sample of male respondents who live in Belgium, Denmark, France, Norway and Sweden, and had a first (and only) child by the time they answered the survey. The shaded area indicates the 95% confidence interval.

Table 1: Balance in Covariates – IAT Sample

	Coef. (SE)	Mean	Nb. observations
McCrary density test			
Discontinuity at reform cutoff (log diff.)	-0.027 (0.051)		
Pre-determined characteristics			
Female (0/1)	0.028 (0.035)	0.603	3008
Nonwhite (0/1)	0.010 (0.027)	0.133	2765
Christian (0/1)	-0.001 (0.028)	0.337	3862
Household annual income (dollars)	3816 (4715)	93,386	1789
Family structure during youth			
Primary caregiver = Mother (0/1)	-0.030 (0.030)	0.763	3900
Primary caregiver = Mother + Working (0/1)	-0.017 (0.034)	0.566	3122
Secondary caregiver = Father (0/1)	-0.047 (0.032)	0.664	3900
Secondary caregiver = Father + Working (0/1)	-0.021 (0.030)	0.649	4024
Reasons to take test			
Assignment from school/work (0/1)	-0.045 (0.046)	0.615	1514
Recommendation of friend or co-worker (0/1)	-0.030 (0.035)	0.205	1415
News, internet, other (0/1)	0.047 (0.029)	0.180	1714

Notes: The first panel titled "McCrary density test" checks for the absence of bunching in the number of births after the reform cutoff using a McCrary density test (2008). The rest of the table reports in the first column RDD estimates from local polynomial regressions of order 1 (i.e. linear) and corresponding to coefficient β in equation (1). Standard errors (reported in parentheses) are clustered at the month of birth level (i.e. running variable). The second and third column report the mean and number of observations, respectively. The number of observations differs for each variable because the estimation is performed on a data-driven bandwidth suggested by the procedure of Calonico et al. (2014b). Sample of respondents to the "Gender-Career" IAT on the Project Implicit website who live in Belgium, Denmark, France, Norway and Sweden.

Table 2: Effect of Paternity Leave Reforms on IAT Score

	Implicit Association Test	
	Men	Women
Main specification		
(BW = CCT; Poly. = 1)		
RDD coef.	-0.154 ***	0.045
(SE)	(0.055)	(0.030)
CCT bandwidth	19	29
Nb. observations	842	2519
Alternative specifications		
BW = CCT; Poly. = 0		
RDD coef.	-0.111 ***	0.012
(SE)	(0.031)	(0.018)
CCT bandwidth	12	19
Nb. observations	569	1707
BW = CCT; Poly. = 2		
RDD coef.	-0.138 **	0.075 *
(SE)	(0.061)	(0.041)
CCT bandwidth	33	32
Nb. observations	1551	2783
BW = Honest; Poly. = 1		
RDD coef.	-0.137 **	0.034
(SE)	(0.062)	(0.028)
Honest bandwidth	16	32
Nb. observations	750	2783
Not self-selected sample		
RDD coef.	-0.132 **	0.038
(SE)	(0.058)	(0.030)
CCT bandwidth	21	31
Nb. observations	887	2525
Reweighted sample		
RDD coef.	-0.219 ***	0.040
(SE)	(0.069)	(0.039)
CCT bandwidth	19	29
Nb. observations	825	2089
Country FE	Yes	Yes
IAT year FE	Yes	Yes

Notes: The table reports RDD estimates from local polynomial regressions of varying order (Poly. = 0, 1 or 2) and corresponding to coefficient β in equation (1). Standard errors (reported in parentheses) are clustered at the month of birth level (i.e. running variable). CCT corresponds to the data-driven bandwidth suggested by the procedure of Calonico et al. (2014b), while "Honest" corresponds to the data-driven procedure of Kolesár and Rothe (2018). The main specification uses linear trends (Poly. = 1) and a data-driven bandwidth from the CCT algorithm. All specifications include country and year of IAT fixed effects. The "not self-selected sample" excludes respondents who decided to take the test after reading about it on the news or on the Internet. The "reweighted sample" reports estimates for a reweighted sample reflecting educational attainment of the general population. Sample of respondents to the "Gender-Career" IAT on the Project Implicit website who live in Belgium, Denmark, France, Norway and Sweden.

Table 3: Effect of Paternity Leave Reforms on Occupational Choice

	Female-dominated occupation (0/1)	
	Men	Women
High-skilled occupations		
RDD coef.	0.125 ***	-0.003
(SE)	(0.039)	(0.036)
CCT bandwidth	20	20
Nb. observations	2877	3290
Low-skilled occupations		
RDD coef.	-0.002	-0.026
(SE)	(0.019)	(0.025)
CCT bandwidth	20	21
Nb. observations	10481	8759
Country FE	Yes	Yes
Quarter of birth FE	Yes	Yes
Survey year FE	Yes	Yes

Notes: The table reports RDD estimates from local polynomial regressions of order 1 (i.e. linear) and corresponding to coefficient β in equation (1). Standard errors (reported in parentheses) are clustered at the quarter of birth level (i.e. running variable). CCT corresponds to the data-driven bandwidth suggested by the procedure of Calonico et al. (2014b). All estimations include country, quarter of birth, and year of interview fixed effects. Sample of respondents to the SILC survey, aged 18 or above from Denmark, Norway and Sweden.

Appendix

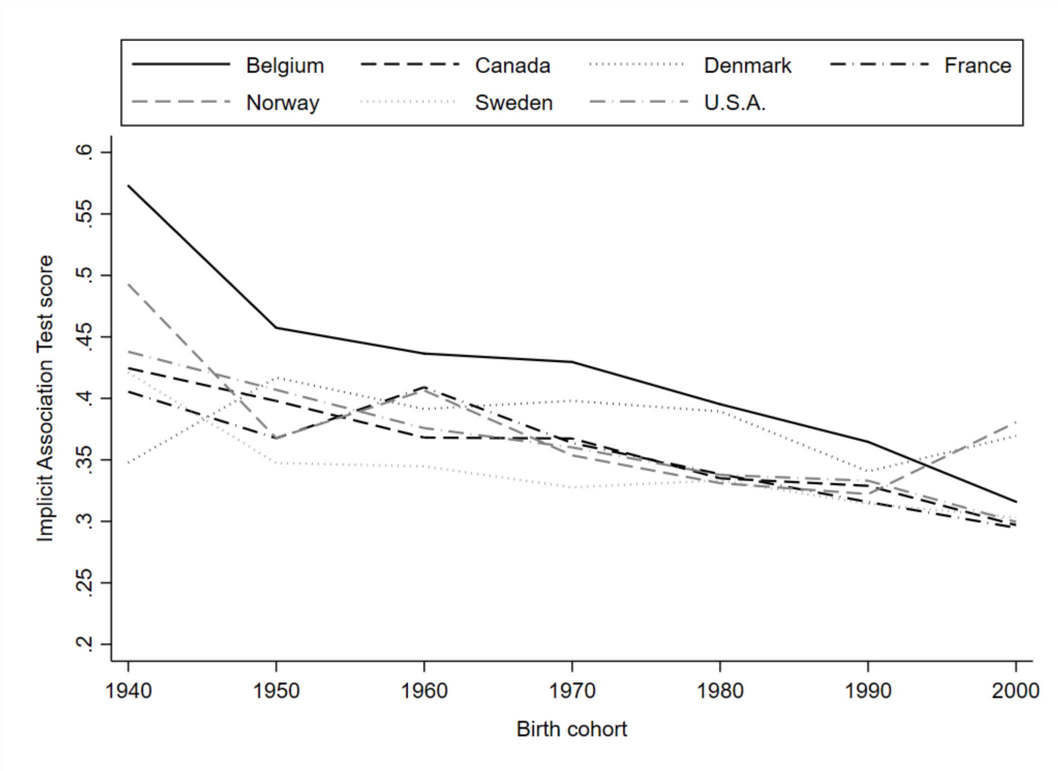


Figure A1: Implicit Association Test Score across Birth Cohorts

Notes: Lower score on the IAT indicates a lower stereotypical association between women and family and between men and career. Sample of respondents to the "Gender-Career" IAT on the Project Implicit website who live in Belgium, Canada, Denmark, France, Norway, Sweden and the United States.

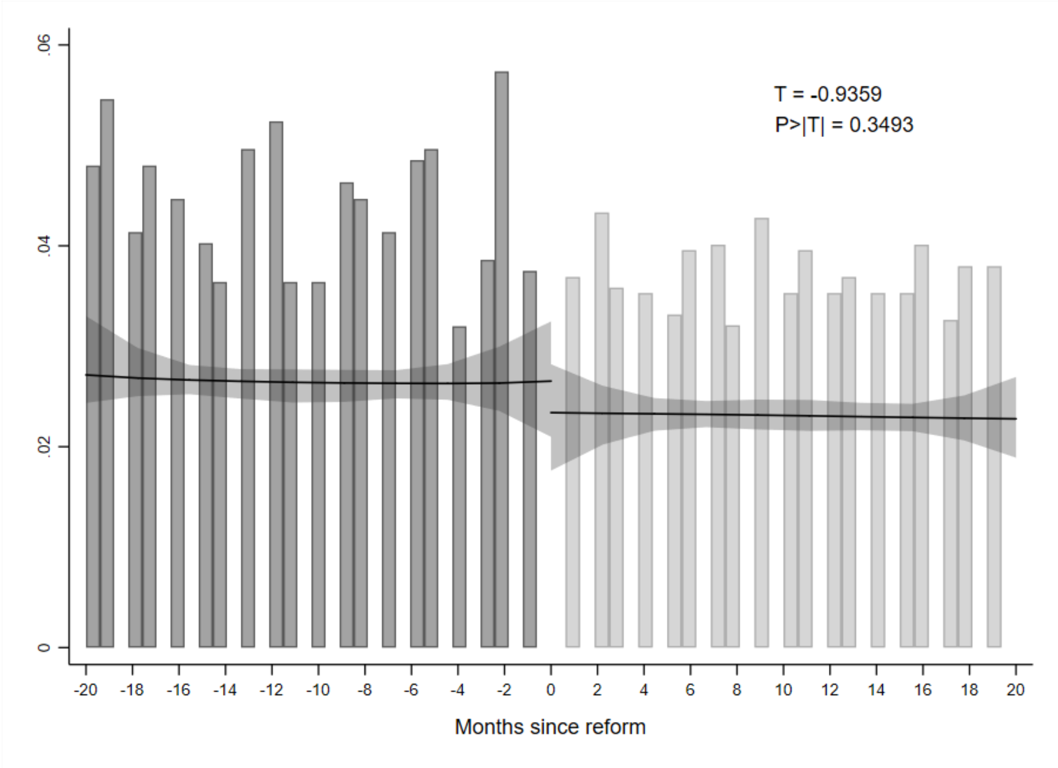
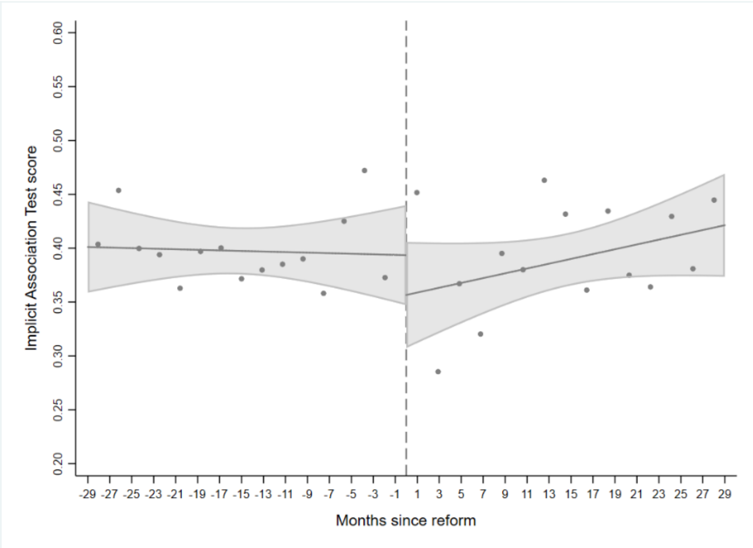


Figure A2: Manipulation Testing using Local-polynomial Density Estimation – IAT sample

Notes: The figure displays the density of the assignment variable (i.e. month of birth) around the cutoff, estimated using local-polynomials, as proposed by Cattaneo et al. (2020). This procedure uses kernels functions and does not require prebinning of the data. The authors also suggest a novel manipulation test, which is reported on the graph with the corresponding p-value.

Panel A: Sample of Male Respondents



Panel B: Sample of Female Respondents

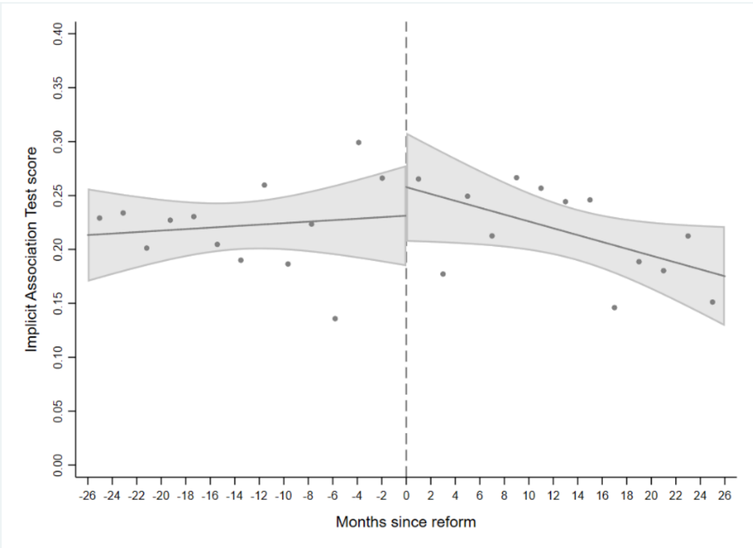
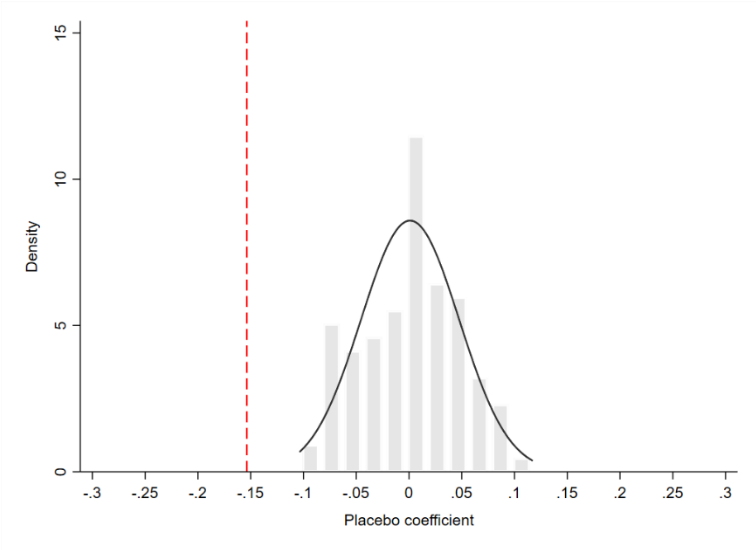


Figure A3: Change in Race IAT at the Reform Cutoff.

Notes: Average IAT score in two-month bins. The vertical bar corresponds to the reform cutoff, normalized to 0 in each of the five countries. The trends on each side of the cutoff are from polynomial regressions of order 1 (i.e. linear). Data collected via an IAT measuring the subconscious association between race (black - white), and pleasant or unpleasant words. Sample of respondents who live in Belgium, Denmark, France, Norway and Sweden. The shaded area indicates the 95% confidence interval.

Panel A: Sample of Male Respondents



Panel B: Sample of Female Respondents

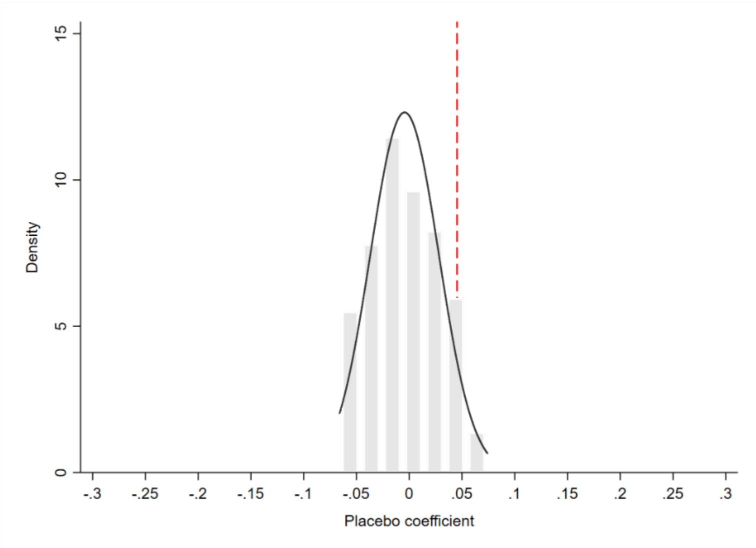
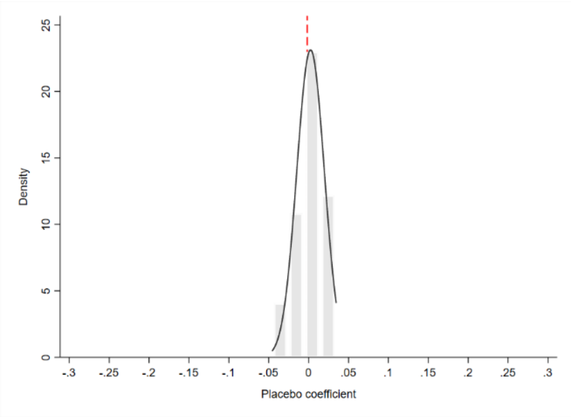


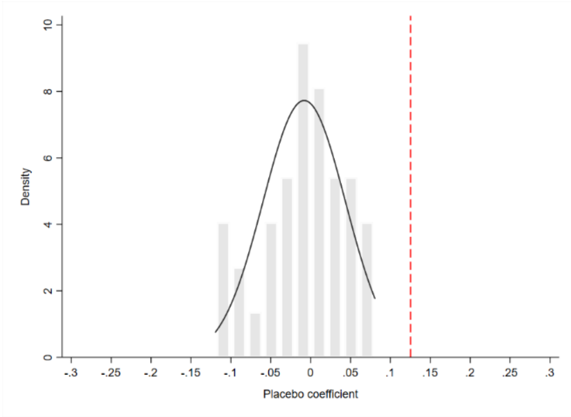
Figure A4: Change in IAT Score at Placebo Cutoffs.

Notes: Distribution of RDD estimates at placebo cutoffs during the 10 years before the paternity leave reform in each country. The red dashed line corresponds to the RDD estimate at the true reform cutoff. Sample of respondents who live in Belgium, Denmark, France, Norway and Sweden.

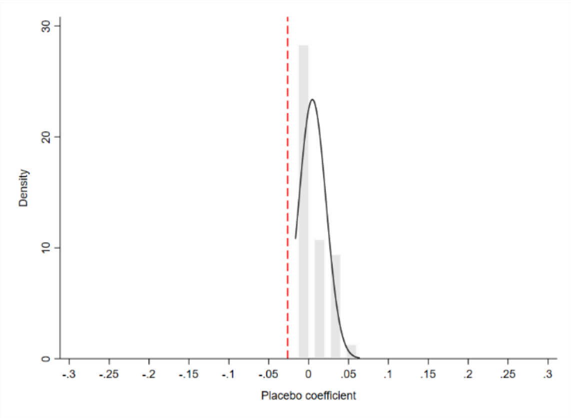
Panel A: Male Respondents, Low-skilled Occupations



Panel B: Male Respondents, High-skilled occupations



Panel A: Female Respondents, Low-skilled Occupations



Panel B: Female Respondents, High-skilled occupations

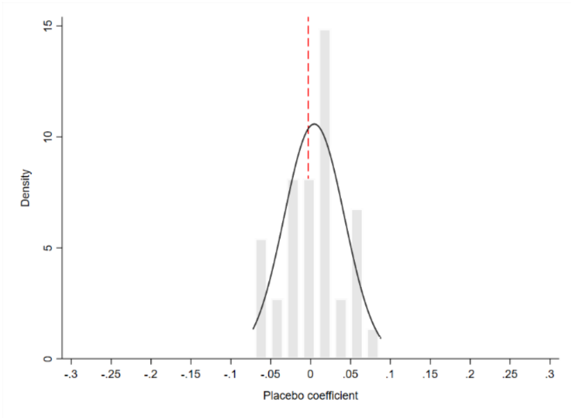


Figure A5: Change in the Probability to Work in a Female-dominated Occupation at Placebo Cutoffs.

Notes: Distribution of RDD estimates at placebo cutoffs during the 10 years before the paternity leave reform in each country. The red dashed line corresponds to the RDD estimate at the true reform cutoff. Sample of respondents to the SILC survey from Denmark, Norway and Sweden, aged at least 18 years old.

Table A1: Descriptive Statistics on the Sample of IAT Respondents

	IAT sample 5 countries	OECD data	Belgium	Denmark	France	Norway	Sweden
Age	22.99		19.22	25.82	20.05	26.34	25.17
	(3.50)		(1.43)	(2.09)	(1.59)	(2.20)	(2.15)
Primary / lower secondary edu. (0/1)	0.06	0.17	0.22	0.01	0.07	0.01	0.01
	(0.23)		(0.42)	(0.07)	(0.26)	(0.10)	(0.11)
High school graduate (0/1)	0.23	0.39	0.60	0.11	0.27	0.06	0.17
	(0.42)		(0.49)	(0.31)	(0.44)	(0.25)	(0.38)
Tertiary education (0/1)	0.71	0.44	0.18	0.89	0.66	0.93	0.82
	(0.45)		(0.38)	(0.32)	(0.47)	(0.26)	(0.39)
Children (0/1)	0.03		0.02	0.04	0.02	0.05	0.02
	(0.16)		(0.14)	(0.20)	(0.13)	(0.21)	(0.15)

Notes: The table reports the mean and standard deviation (in parentheses) for different outcomes. IAT Sample correspond to the sample of respondents to the "Gender-Career" IAT on the Project Implicit website who live in Belgium, Denmark, France, Norway and Sweden. OECD data are population averages from the OECD.

Table A2: Effect of Paternity Leave Reforms on the Probability to obtain an IAT Score above 0.15 (i.e. stereotypical association)

	Dummy for IAT score above 0.15	
	Men	Women
BW = CCT; Poly. = 1		
RDD coef.	-0.194 ***	0.077
(SE)	(0.062)	(0.050)
CCT bandwidth	17	25
Nb. observations	750	2210
Country FE	Yes	Yes
IAT year FE	Yes	Yes

Notes: An IAT score above 0.15 suggests a positive association between women and family and between men and career. The table reports RDD estimates from local polynomial regressions of order 1 (i.e. linear) and corresponding to coefficient β in equation (1). Standard errors (reported in parentheses) are clustered at the month of birth level (i.e. running variable). CCT corresponds to the data-driven bandwidth suggested by the procedure of Calonico et al. (2014b). All estimations include country, and year of IAT fixed effects. Sample of respondents to the "Gender-Career" IAT on the Project Implicit website who live in Belgium, Denmark, France, Norway and Sweden.

Table A3: Effect of Paternity Leave Reforms on IAT Score by Country

	Implicit Association Test	
	Men	Women
Belgium		
RDD coef.	-0.264 **	0.100
(SE)	(0.108)	(0.071)
CCT bandwidth	49	33
Nb. observations	234	379
Denmark		
RDD coef.	-0.111 **	0.038
(SE)	(0.055)	(0.045)
CCT bandwidth	39	35
Nb. observations	476	701
France		
RDD coef.	-0.046	0.001
(SE)	(0.062)	(0.034)
CCT bandwidth	58	49
Nb. observations	692	1277
Norway		
RDD coef.	0.081	0.053
(SE)	(0.100)	(0.068)
CCT bandwidth	44	39
Nb. observations	196	333
Sweden		
RDD coef.	-0.208 ***	0.018
(SE)	(0.068)	(0.061)
CCT bandwidth	37	43
Nb. observations	404	772

Notes: The table reports RDD estimates from local polynomial regressions of order 1 (i.e. linear) and corresponding to coefficient β in equation (1). Standard errors (reported in parentheses) are clustered at the month of birth level (i.e. running variable). CCT corresponds to the data-driven bandwidth suggested by the procedure of Calonico et al. (2014b). All estimations include country, and year of IAT fixed effects. Sample of respondents to the "Gender-Career" IAT on the Project Implicit website who live in Belgium, Denmark, France, Norway and Sweden.

Table A4 Effect of Reforms on Other Implicit Association Tests

	Implicit Association Test	
	Men	Women
Race (black - white)		
RDD coef.	-0.043	0.018
(SE)	(0.038)	(0.037)
CCT bandwidth	29	26
Nb. observations	2504	2454
Age (young - old)		
RDD coef.	-0.078	-0.031
(SE)	(0.070)	(0.036)
CCT bandwidth	21	34
Nb. observations	496	1455
Weight (fat - thin)		
RDD coef.	-0.057	-0.037
(SE)	(0.063)	(0.038)
CCT bandwidth	28	29
Nb. observations	740	1519

Notes: The table reports RDD estimates from local polynomial regressions of order 1 (i.e. linear) and corresponding to coefficient β in equation (1). Standard errors (reported in parentheses) are clustered at the month of birth level (i.e. running variable). CCT corresponds to the data-driven bandwidth suggested by the procedure of Calonico et al. (2014b). All estimations include country, and year of IAT fixed effects. Data collected via three IATs measuring the subconscious association between race (black - white), age (young - old), weight (fat - thin) and pleasant or unpleasant words. Sample of respondents who live in Belgium, Denmark, France, Norway and Sweden.

Table A5: Robustness Checks related to Seasonality – IAT Sample

	Implicit Association Test	
	Men	Women
	(1)	(2)
Calendar month-of-birth FE		
RDD coef.	-0.149 ***	0.025
	(0.050)	(0.030)
CCT bandwidth	19	25
Nb. observations	842	2210
Local DiD		
Cutoff pre-reform	-0.004	0.004
	(0.017)	(0.013)
Cutoff * Reform year	-0.081 **	0.004
	(0.037)	(0.022)
Nb. observations	1900	3502

*Notes: The first row "Calendar month-of-birth FE" reports RDD estimates from local polynomial regression of order 1 (i.e. linear) and controlling for calendar month-of-birth fixed effects. CCT corresponds to the data-driven bandwidth suggested by the procedure of Calonico et al. (2014b). The second row "Local DiD" reports results from a local difference-in-differences approach using a tight bandwidth of 6 months around the reform cutoff, as well as 5 pre-reform years to account for seasonal effects. The coefficient of interest is "Cutoff * Reform year" and it measures the difference between the IAT score of respondents born right after and right before the reform cutoff, after accounting for the seasonality in the outcome variable reported under "Cutoff pre-reform." Standard errors (reported in parentheses) are clustered at the month of birth level (i.e. running variable). Sample of respondents who live in Belgium, Denmark, France, Norway and Sweden.*

Table A6: Descriptive Statistics on the Sample of SILC Respondents

	All	Men	Women
Female (0/1)	0.47	0.00	1.00
	(0.50)	(0.00)	(0.00)
Age (years)	21.48	21.41	21.56
	(3.15)	(3.11)	(3.20)
Married (0/1)	0.04	0.02	0.05
	(0.19)	(0.15)	(0.22)
Work (0/1)	0.83	0.81	0.85
	(0.38)	(0.39)	(0.36)
Post-secondary education (0/1)	0.19	0.15	0.24
	(0.39)	(0.36)	(0.42)
Children (0/1)	0.03	0.02	0.03
	(0.16)	(0.15)	(0.17)
Denmark (0/1)	0.26	0.25	0.26
	(0.44)	(0.43)	(0.44)
Norway (0/1)	0.41	0.41	0.41
	(0.49)	(0.49)	(0.49)
Sweden (0/1)	0.34	0.34	0.33
	(0.47)	(0.47)	(0.47)
Number of observations	45950	24275	21675

Notes: The table reports the mean and standard deviation (in parentheses) for different outcomes. Sample of respondents to the SILC survey from Denmark, Norway and Sweden, aged at least 18 years old.

Table A7: Share of Women in ISCO-08 Occupations

Occupation	Share of women	Skill level
Personal care workers	0.875	2
General and keyboard clerks	0.859	2
Cleaners and helpers	0.808	1
Health professionals	0.798	4
Food preparation assistants	0.780	1
Health associate professionals	0.778	3
Customer services clerks	0.753	2
Teaching professionals	0.694	4
Subsistence farmers, fishers, hunters and gatherers	0.667	2
Sales workers	0.631	2
Legal, social, cultural and related associate professionals	0.602	3
Legal, social and cultural professionals	0.579	4
Numerical and material recording clerks	0.560	2
Other clerical support workers	0.548	2
Business and administration associate professionals	0.547	3
Personal service workers	0.515	2
Business and administration professionals	0.502	4
Hospitality, retail and other services managers	0.440	3
Agricultural, forestry and fishery labourers	0.423	1
Administrative and commercial managers	0.376	4
Food processing, wood working, garment and other craft	0.373	2
Street and related sales and service workers	0.364	1
Assemblers	0.362	2
Stationary plant and machine operators	0.344	2
Production and specialised services managers	0.337	4
Handicraft and printing workers	0.307	2
Science and engineering professionals	0.306	4
Market-oriented skilled agricultural workers	0.271	2
Refuse workers and other elementary workers	0.260	1
Labourers in mining, construction, manufacturing and transport	0.225	1
Information and communications technology professionals	0.223	4
Chief executives, senior officials and legislators	0.212	4
Protective services workers	0.208	2
Information and communications technicians	0.191	3
Science and engineering associate professionals	0.173	3
Non-commissioned armed forces officers.	0.170	4
Armed forces occupations, other ranks.	0.125	1
Commissioned armed forces officers.	0.119	4
Market-oriented skilled forestry, fishery and hunting workers	0.071	2
Drivers and mobile plant operators	0.070	2
Metal, machinery and related trades workers	0.044	2
Building and related trades workers, excluding electricians	0.033	2
Electrical and electronic trades workers	0.032	2

Notes: Share of women in Denmark, Norway and Sweden who work in each of the 43 ISCO-08 occupations. Data from the SILC survey.

Table A8: Effects of Paternity Leave Reforms on Labor Force Participation and Human Capital

	Work (0/1)		**Years of education**	
	Men	Women	Men	Women
RDD coef.	0.003	0.019	-0.002	-0.119
(SE)	(0.013)	(0.013)	(0.233)	(0.174)
CCT bandwidth	22	23	21	19
Nb. observations	3428	3730	3058	3058
Country FE	Yes	Yes	Yes	Yes
Quarter of birth FE	Yes	Yes	Yes	Yes
Survey year FE	Yes	Yes	Yes	Yes

Notes: The table reports RDD estimates from local polynomial regressions of order 1 (i.e. linear) and corresponding to coefficient β in equation (1). Standard errors (reported in parentheses) are clustered at the quarter of birth level (i.e. running variable). CCT corresponds to the data-driven bandwidth suggested by the procedure of Calonico et al. (2014b). All estimations include country, quarter of birth, and year of IAT fixed effects. Sample of respondents to the SILC survey, aged 18 or above from Denmark, Norway and Sweden.

Table A9: Robustness Checks – SILC Sample

	Female-dominated occupation (0/1)	
	Men	Women
BW = Honest; Poly. = 1		
High-skilled occupations		
RDD coef.	0.074 ***	0.052
(SE)	(0.028)	(0.036)
Honest bandwidth	29	30
Nb. observations	5012	5708
Low-skilled occupations		
RDD coef.	0.001	-0.012
(SE)	(0.015)	(0.021)
Honest bandwidth	21	25
Nb. observations	10922	10332
BW = CCT; Poly. = 2		
High-skilled occupations		
RDD coef.	0.086	-0.042
(SE)	(0.056)	(0.044)
CCT bandwidth	23	23
Nb. observations	3685	3974
Low-skilled occupations		
RDD coef.	-0.009	-0.040
(SE)	(0.026)	(0.030)
CCT bandwidth	24	27
Nb. observations	12448	10737
Local DiD		
High-skilled occupations		
Cutoff pre-reform	-0.041	0.026
	(0.036)	(0.023)
Cutoff * Reform year	0.107 ***	0.034
	(0.029)	(0.021)
Nb. observations	1654	1704
Low-skilled occupations		
Cutoff pre-reform	-0.012	0.007
	(0.020)	(0.024)
Cutoff * Reform year	0.037 **	-0.029
	(0.012)	(0.018)
Nb. observations	4355	3595

*Notes: The table reports RDD estimates from local polynomial regressions of varying order (Poly. = 1 or 2) and corresponding to coefficient β in equation (1). Standard errors (reported in parentheses) are clustered at the quarter of birth level (i.e. running variable). CCT corresponds to the data-driven bandwidth suggested by the procedure of Calonico et al. (2014b), while "Honest" corresponds to the data-driven procedure of Kolesár and Rothe (2018). The last row "Local DiD" reports results from a local difference-in-differences approach using a tight bandwidth of one quarter around the reform cutoff, as well as 5 pre-reform years to account for seasonal effects. The coefficient of interest is "Cutoff * Reform year" and it measures the difference in the probability to work in a female-dominated occupation for respondents born right after and right before the reform cutoff, after accounting for the seasonality in the outcome variable reported under "Cutoff pre-reform." All specifications include country, quarter of birth, and year of survey fixed effects. Sample of respondents to the SILC survey, aged 18 or above from Denmark, Norway and Sweden.*

Table A10: Survey of the Literature on the Effects of Paternity Leave Reforms on Fathers' Time Dedicated to Childcare / Housework

Belgium	**Fontenay and Tojerow (2024)*** reveal that 10 years after the birth of their first child, the fathers eligible for paternity leave after the 2002 reform in Belgium spent on average 45 more minutes per day taking care of their children, that is twice as much as the time spent by ineligible fathers.
Denmark	**Huerta et al. (2013)†** observe that the fathers who take leave in Denmark are more involved with their 6-month-old child (including feeding, changing diapers, getting child to bed), compared to fathers who do not take leave.
France	**Pailhé et al. (2024)*** find that the households where the father took a two-week paternity leave are dividing more equally all child-rearing tasks (bathing, changing, putting children to bed and night caring) two months after childbirth. The effect is stronger among first-time parents.
Norway	**Kotsadam and Finseraas (2011)*** find that the parents who had their last born child right after the 1993 daddy-quota reform in Norway are 50 percent more likely to equally divide domestic tasks (e.g. washing clothes). The authors also find a reduction in conflicts over household division of labor.
Sweden	**Haas and Hwang (2008)†** observe that fathers in large private companies in Sweden who take longer than average leave are more involved in childcare-related tasks.
Other countries	**Farré and González (2019)*** find that fathers in Spain who have been eligible for paternity leave in 2007 did almost an hour more childcare per day in 2009–10 compared with ineligible fathers.
	Patnaik (2019)* evaluates the effect of the Quebec Parental Insurance Plan in Canada and reveals that exposed fathers spent more time physically at home and dedicated more time to housework per day.
	Tamm (2019)* find that in Germany, the fathers who took a paternity leave in 2007 dedicate 1.2 more hours to their family per weekday and an additional 1.4 more hours to childcare on Saturdays and 1.6 hours on Sundays. They also increase the time they dedicate to housework (washing, cooking, cleaning) by 0.5 hours per weekday.
	Arnalds et al. (2013)* compare first-time parents in Iceland whose child was born in 1997 (pre-reform) and 2003/2009 (post-reform) and look at the division of child-rearing tasks within the household up to three years. Post-reform children were between 13 and 23 percentage points more likely to receive care from both parents.

* Causal identification strategy, † correlational evidence