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Lídia Farré
Universitat de Barcelona, IAE-CSIC and IZA

Christina Felfe
Universität Konstanz, CEPR, CESifo and IZA

Libertad González
Universitat Pompeu Fabra, Barcelona School of Economics and IZA

Patrick Schneider
Universität Würzburg

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Changing Gender Norms across Generations: Evidence from a Paternity Leave Reform*

Social norms are an important barrier to gender convergence. We show that public policy designed to promote gender equality at home can pave the way towards gender convergence by shaping gender norms in the next generation. We combine the introduction of paternity leave in Spain with a large-scale lab-in-the field experiment in secondary schools. Following a local difference-in-differences approach, we show that children born after the policy change exhibit more gender egalitarian attitudes and perceive less stereotypical social norms. They are also more likely to engage in counter-stereotypical day-to-day behaviors and to deviate from the male-breadwinner model in the future.

JEL Classification: J08, J13, J16, J18

Keywords: gender equality, gender norms, paternity leave permits

Corresponding author:
Lídia Farré
University of Barcelona
Gran Via de les Corts Catalanes, 585
08007 Barcelona
Spain
E-mail: lidia.farre@gmail.com

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1. Introduction

Despite significant progress in women's labor force participation, large gender gaps in labor market outcomes remain across many countries. In rich nations, most of the remaining gaps can be traced to parenthood, which has been shown to lead to significant and lasting setbacks in women's careers relative to men (Fernández-Kranz et al. 2014, Angelov et al. 2016, Lundborg et al. 2017, Kleven et al. 2019a, Bertrand 2020, Cortes and Pan 2020).

Recent work has highlighted the importance of gender norms in hindering progress towards gender convergence (Kleven et al. 2019b, Bertrand 2020, Ashraf et al. 2022, Bursztyn et al. 2023). Traditional norms attribute to women the role of main caregivers within the family and limit their labor market choices after having children (Bertrand et al. 2015, Fortin 2015, Goussé et al. 2017, Cortes and Pan 2020, Grewenig et al. 2020, Olivetti et al. 2020, Boelmann et al. 2021, Andresen and Nix 2022). Previous research has shown that gender norms are passed on from parents to children (Fernández et al. 2004, Alesina et al. 2013, Farré and Vella 2013). Such strong intergenerational transmission may perpetuate gender inequality at home and render public policies largely ineffective in eradicating the existing gender differentials in the labor market (Kleven et al. 2021, Albanesi et al. 2022).

We provide novel evidence that public policy can promote gender convergence in the long term by shaping the gender norms of the next generation. To that end, we focus on paternity leave, an increasingly popular family policy designed to incentivize less traditional specialization patterns within households. Paternity leave takes place at the onset of a child's life and may trigger persistent changes in the division of paid and unpaid work among parents. In particular, paternity leave has been shown to increase fathers' contribution to childcare and household work (and mothers' employment and earnings) persistently, with evidence from the US (Petts et al. 2020), Canada

(Patnaik 2019, Dunatchik and Özcan 2020), Germany (Tamm 2019), Norway (Kotsadam and Finseraas 2011, Rege and Soli 2013) and Spain (Farré and González 2019, González and Zoabi 2021). This shift towards a more gender-neutral home environment may affect the formation of gender norms at an early age and promote gender equality in the next generation (Bertrand 2020).[1]

To provide causal evidence, we take advantage of the introduction of paternity leave in Spain in 2007. The reform entitled new fathers to 13 days of fully compensated paternity leave (in addition to the two days that were available before). While this policy change seems small, previous research shows that the reform was well received and triggered important changes within couples, promoting gender equality in the home and in the labor market. Specifically, the introduction of paternity leave led mothers to return to work earlier after childbirth, and induced fathers to become more involved in childcare, an effect which was still detectable several years after childbirth (Farré and González 2019, González and Zoabi 2021).

We base our identification on the sharp cut-off date determining fathers' eligibility for paternity leave. The new law was passed shortly before implementation and fathers were entitled to the benefit only if their child was born on or after March 24, 2007. Thus, the reform represents an ideal natural experiment allowing us to isolate the effects of paternity leave on the gender norms and behavior of children whose parents were eligible for the permit.

To take advantage of this quasi-experimental setting, we conducted a large lab-in-the-field experiment with children born in 2006 and 2007, i.e., the reform year and the previous one. We collaborated with secondary schools in the region of Catalonia and surveyed more than 2,000 children between May 2019 and January 2020, when the target children were 11 to 13 years old.

[1] Fernández et al. (2004) show that the wives of men who were brought up in families where the mother worked are themselves significantly more likely to work. Bertrand (2019) also documents that children growing up in non-traditional families display more gender-egalitarian attitudes.

We rely on state-of-the-art survey and experimental methods to elicit comprehensive data on children's own attitudes and opinions regarding gender roles in the family and the workplace (using a standard battery of questions developed by the International Social Survey Programme), as well as on their perceptions of the gender norms prevailing among their peers (using an adapted version of the incentivized coordination game developed by Krupka and Weber 2013). Both types of measures are relevant, since behaviors may be driven by children's (possibly inaccurate) beliefs about other people's opinions, on top of their own attitudes and views (Bursztyn et al. 2020, Bursztyn et al 2023). Moreover, we asked children about their day-to-day contributions to household chores, and about their expectations regarding their own future work and family life.

Combining our unique lab-in-the-field experiment with the natural experiment, we follow a local difference-in-differences strategy to estimate the causal effect of paternity leave on children's gender norms, behaviors, and expectations. A compelling feature of the paternity leave reform is that it became effective on March 24, which lies in the middle of the school year (the school year cut-off date is December 31). As a result, children born shortly before and after the cut-off date attend the same school grade, while only children born after the cut-off are directly affected by the paternity leave expansion. Our baseline specification relies on comparing children born in a 12-week window before and after the paternity leave introduction, i.e., children born between January 1 and June 12 of 2007. To isolate any relative age or season of birth effects, we use children born in the same time window in the pre-reform year (2006) as a control group. We also control for a set of individual background characteristics, as well as school fixed effects.

Our results show that the introduction of paternity leave led to children displaying significantly more gender-egalitarian attitudes (by 0.26 standard deviations). It also affected children's perception of the prevailing social norm: there is an 18 percentage-point (a 28%) increase

in the share of children stating that it is "socially appropriate" for a woman with young children to work, and a 16 percentage-point (a 36%) increase in the share stating that it is "socially appropriate" for a father to work less than full time. Thus, the introduction of paternity leave affected children's norms regarding both mothers and fathers to a similar extent. The results on children's gender role attitudes and norms are remarkably stable in size and across a battery of robustness checks, including alternative sample specifications and estimation approaches (e.g., a specification with class fixed effects, a regression discontinuity design, and a series of placebo estimations).

Turning to revealed behaviors, we find that the introduction of paternity leave promoted less specialized gender patterns in children's day-to-day contributions to home production. Specifically, children born after the reform are 14 percentage points (24%) more likely to engage in counter-stereotypical household tasks: girls get more involved in male chores, such as small repairs and grocery shopping, while boys increase their contribution to female household chores, such as cleaning. Finally, children born after the reform are 16 percentage points more likely to report counter-stereotypical expectations regarding their own future work and family life: boys are less likely to expect working full-time when they have children, while girls do more so.

All in all, our findings provide compelling evidence that the introduction of paternity leave in Spain induced the next generation to step away from traditional gender norms and stereotypical behaviors. It is still too early to learn about the effects of this policy on children's labor supply choices. Nevertheless, taking children's expectations regarding their own future work and family life at face value, our results suggest that paternity leave has the power to narrow the gender gap in labor market outcomes in the next generation.

Our study provides novel evidence on the extent to which public policy can shape gender norms across generations. There is only limited previous evidence showing that public policy can

causally influence gender norms, and much less intergenerationally. Focusing on the Earned Income Tax Credit implemented in the U.S. in 1975, Bastian (2020) documents how the subsequent rise of working mothers changed the U.S. economy and the role of women in society, in particular the approval of working women in the same generation.[2] Our study focuses instead on a policy targeting parents and its potential to change gender norms and labor market decisions in the next generation. As such, we also contribute to a scarce, but growing literature on spillover effects of public policies (Dahl et al. 2014, Brollo et al. 2020, Dahl and Gielen 2021).

More broadly, our paper contributes to the growing literature on the determinants of gender norms. We provide causal evidence on the role of parents in shaping children's gender norms, or in other words, on vertical socialization mechanisms. As such, our research relates to recent work on horizontal socialization mechanisms, such as school and peers. Dhar et al. (2021) evaluate the impact of a school-based randomized intervention in India that engaged adolescents in classroom discussions about gender equality. The intervention not only fostered more progressive gender attitudes, but also induced more gender-egalitarian behaviors. The effect sizes of their intervention, a two-and-a-half-year-long pedagogical program in school, are comparable to ours, those of a policy inducing a permanent shift in children's home environment and thus the everyday impressions children gather over their entire childhood.

Studying the gender composition in Vietnamese schools, Garcia-Brazales (2021) finds that exposure to more female peers erodes traditionalism both for boys and girls, which translates into actual behavior (e.g., girls are more likely to attend college, boys to engage in home production).[3]

[2] There is also cross-country evidence on the impact of childcare provision (Neimanns 2021) and of same-sex relationship recognition policies on attitudes in Europe (Aksoy et al. 2020).
[3] Relatedly, Olivetti et al. (2020) show that labor force participation of high school peers' mothers affects adult women's labor force participation, above and beyond the effect of their own mothers.

For Japan, Hara and Rodríguez-Planas (2021) show that the elimination of gender-segregated topics classes (e.g., housekeeping, shop classes) in secondary schools led to less gendered behaviors at home and in the labor market. Dahl et al. (2021) study the effect of young men's exposure to women in a traditionally male-dominated environment. Their context is the military in Norway, where they randomly assigned female recruits to some squads but not to others during boot camp. While living and working with female colleagues for eight weeks induced more egalitarian gender attitudes, the effects did not persist. In sum, while the number of studies on the role of peers in shaping (adolescents') gender norms is growing, we provide novel evidence on the role of parents.[4]

The remainder of the paper is organized as follows. The following section describes the paternity leave reform and summarizes previous findings regarding its effects on the parent generation. Section 3 provides detailed information on our data, section 4 explains the empirical approach, section 5 shows the results, and section 6 concludes.

2. The Paternity Leave Reform

2.1. Institutional background

The focus of this study lies on the introduction of paid paternity leave in Spain in 2007. Prior to the reform, the Spanish labor market displayed a significant gender gap in employment patterns.[5] In 2006, the employment rate among 30–45-year-old men reached almost 90%, while only two thirds of all women in this age range were working. At that time, Spain granted 6 weeks of compulsory

[4] A recent study by Brouwer et al. (2022) shows that parents enforce and comply more with norms when their children are present compared to when they are not.
[5] All numbers in this section stem from https://www.oecd.org/els/family/database.html accessed on January 3, 2022.

maternity leave (at full pay), plus 2 days of paid job absence for fathers.[6,7] In addition, families were granted 10 weeks of parental leave, also at full pay, which could be taken by mothers or fathers, or shared between them. Yet, as shown in Figure 1, very few fathers took parental leave (see the black line). In contrast, roughly two thirds of all mothers in Spain, and three quarters of all mothers in Catalonia were taking maternity leave and subsequently parental leave (light and dark blue line, respectively).[8] Employment rates for women after childbirth were low: only 55% of all women with children aged 0-2 were working (60% of all women with children aged 3 years and older).

At the end of 2006, the national parliament approved a bill ("*proyecto de ley*") introducing a paid paternity leave permit. The law ("*ley orgánica 3/2007 de 22 de marzo, para la igualdad efectiva de mujeres y hombres*") was published on March 23, 2007 and enacted immediately thereafter (the next day). The new 13-day paternity leave period (on top of the two days of paid job absence) was fully compensated, and it could be taken by fathers either at the same time or immediately after the mother's leave period. New fathers were eligible starting from births taking place on March 24, 2007, if they were affiliated to Social Security and had worked for at least 180 days over the previous 7 years. As shown in Figure 1, effective take-up was high, with 47% (54%) of new fathers in Spain and 53% (61%) of new fathers in Catalonia using it in 2007 (2008) (light and dark red line, respectively).[9] The paternity leave permit was extended several times, thereafter, reaching 16 weeks in January 2021.

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[6] Parental leave was initially regulated by the Law 8/1980, March 10, (Estatuto de los Trabajadores 1980). Eligibility was tied to a formal work contract or to being officially registered as unemployed.
[7] The exception were public sector workers (roughly 15% of the total workforce), who enjoyed 10 days of paternity leave since 2005 ("Plan Concilia" implemented on December 27, 2005), and public employees of the Catalan government, who were entitled to 4 weeks of paternity leave since 2006 (Article 13 of the law 8/2006 implemented on July 5, 2006).
[8] This seemingly low share can be explained by the low share of women under a formal contract in Spain in 2006 (66% of all women aged 30-45 years old).
[9] The numbers reported for 2007 refer to new fathers whose child is born on or after March 24.

2.2. Paternity leave inducing a persistent shift in gender equality at home

Paternity leave is an increasingly popular policy across many countries, with the aim to trigger persistent changes within families that go beyond the mere take-up of paternity leave. A few studies have evaluated its direct effects along several dimensions. The existing literature suggests that paternity leave does not have a large impact on gender convergence in the short term (or to be more precise, in the parents' generation). Most studies find no effects on fathers' subsequent labor market outcomes (Patnaik 2019 for Canada, Tamm 2019 for Germany, Eckberg et al. 2013 for Sweden, Dahl et al. 2014 and Cools et al. 2015 for Norway). Farré and González (2019) similarly report no effect on fathers' employment and earnings of the introduction of paternity leave in Spain in 2007.

The evidence on mothers' labor supply is more mixed. Eckberg et al. (2013), Dahl et al. (2014), and Rege and Solli (2013) find zero effects of paternity leave policies in Sweden and Norway and thus in countries, with an a priori higher female labor force participation. Patnaik (2019), however, finds some positive effects for Canada, and Farré and González (2019) and González and Zoaby (2021) find small positive effects for Spain, demonstrating that the introduction of paternity leave in 2007 led to women going back to work earlier after childbirth.

Turning to gender equality at home, there is substantial alignment in previous studies finding that paternity leave triggered important and lasting changes. Specifically, there is evidence that paternity leave increases fathers' involvement in childcare and household chores persistently (beyond the duration of the leave). Such effects are found by Kotsadam and Finseraas (2011) and Rege and Solli (2013) for Norway, Patnaik (2019) for Canada, and Tamm (2019) for Germany. Farré and González (2019) and González and Zoaby (2021) provide similar evidence for Spain. Using time-use data for 2009 and 2010 and employing a regression discontinuity framework, they show that fathers exposed to the introduction of paternity leave spent on average about an hour more

per day in childcare and housework, and this even several years after the birth of the child. Strikingly, the reform in Spain also led to a delay in subsequent births and ultimately fewer births, especially among older couples, with mothers being 30 years and older (Farré and González 2019). Moreover, the simultaneous reduction in men's desired fertility and the subsequent reversal of the pre-reform pattern of men desiring more children than women point to an increase in men's awareness of the costs of child rearing.[10] Finally, a recent study by Tavits et al. (2023) shows that the extension of paternity leave in Estonia in 2020 (from 10 to 30 calendar days) exerted a sizeable increase in gender-egalitarian attitudes among both new mothers and fathers.

In sum, the literature suggests that paternity leave has the power to induce a shift towards more gender equality at home and, in particular, towards children experiencing less gender-stereotypical parental behaviors. This is thus the main mechanism that we propose as a channel driving our estimated effects on children's gender role attitudes, opinions, and norms.

3. Data

3.1. Setting and study implementation

Our central idea is to use comprehensive data on gender norms among children in a quasi-experimental framework. Our identification strategy relies on the introduction of paternity leave in Spain. A necessary condition for the implementation of our empirical approach is a large sample of children born in a narrow window around the reform's enactment date (March 24, 2007). To reach

[10] This interpretation is in line with a study by Ashraf et al. 2017) showing that in settings where men desire more children than women and enjoy higher bargaining power, providing information to fathers regarding the cost of having children can lower their desired fertility, and families' actual completed fertility.

this group of children, and to ensure a large enough number of observations for children from all family backgrounds, we opted to collect our own data and to run a survey in schools.

We collaborated with 16 selected secondary schools in the region of Catalonia (Spain) in 2019-20.[11] We targeted all children attending 5th to 7th grade (predominantly born in 2006 and 2007 and 11-13 years old) and thus children at the onset of adolescence, a critical time in the development of identity and social norms formation (Kohlberg 1976, Carter and Patterson, 1982, Markus and Nurius 1986, Waylen and Wolke, 2004). Our sampling design allowed us to reach all children within designated social networks (school cohorts and school classes).

Data collection occurred in two phases. The pilot phase took place between May 20 and May 24, 2019. During this phase, we collected data in 3 schools, all together 15 classes with 401 students. The second (main) phase happened between January 13 and February 7, 2020. We visited 13 additional schools, 80 classes with 1,926 participants altogether.[12]

The study was pre-registered (at OSF)[13] and approved by the ethics and data protection office at Universitat Pompeu Fabra. A week before data collection, schools informed parents about the study and its general purpose, but not the specific research question by email and gave them the option to withdraw their consent regarding their children's participation (see Appendix B.1 for the precise text of the information letter). [14] The survey took place during regular instruction time, which

[11] Our sample includes a diverse set of public and private schools in urban and rural areas, as well as higher- and lower-income neighborhoods. Note that our identification strategy relies on within-school variation only.

[12] A third phase was scheduled for March 16-April 3, 2020, but was canceled due to the outbreak of the Covid-19 pandemic (schools were closed in Spain on March 14, and in-person access of researchers to classrooms was not allowed afterwards).

[13] Created on 2020-02-10 under "Can public policy change gender norms? How paternity leave affects children".

[14] The ethics and data protection office agreed to the opt-out/informed dissent approach as the data collection took place in the premises of schools.

ensured that we could reach all students (except in case of illness or other excused absences from school). At the beginning of the survey, we informed students about the general purpose of the study without providing details about our specific research question.[15] We also gave them the option to not participate or to drop out at any point during the survey. Students were paid a show-up fee and could earn points in several incentivized parts of the survey, which were later exchanged for vouchers valid at a nearby stationary store. Participants received on average 5.73€, with a minimum of 3€ (show-up fee) and a maximum of 12€.

Data collection took place in a designated room inside the school (e.g., the cafeteria, the library), where we installed 35 laptops. Students came to the room together with their classmates, in groups of 14 to 32 students. To ensure privacy, we set up cardboard screens between the students (see Figure A.1 in the Appendix A). To avoid priming effects, the order of the questions was randomized. Students answered all questions individually and at their own pace. They needed on average 27 minutes to complete the questionnaire. Students who completed the questionnaire early were asked to stay in the room reading in silence (we provided reading materials).

Out of the 2,327 students present in the classroom on the day of the study, 9 did not consent to participate, 8 dropped out during the survey, 9 were not able to answer the questions without help, and information for 1 participant was not stored.

3.2. The questionnaire and the outcome variables

To yield a comprehensive set of measures for children's gender norms, we employed both classical survey and incentivized experimental methods. We further included questions asking students about their day-to-day behaviors and their expectations regarding their own future employment and

[15] The precise information given to the students is shown in Appendix B.2.

fertility.[16] Table A.1 in Appendix A provides an overview of our main outcome variables, including summary statistics at baseline for the pre-reform sample (children born in 2007 prior to the introduction of paternity leave, i.e., those born between January 1 and March 24, 2007).

Our first measure of interest are children's attitudes about gender roles. For this purpose, we employed a standard battery of questions, developed by the International Social Survey Programme (ISSP) and widely used in the economics literature on gender norms (see for instance Giuliano 2018 and Bertrand et al. 2021).[17] Specifically, we asked students to rate on a 5-point Likert scale whether they agreed or disagreed with a series of 7 statements regarding the role of men and women in the labor market and in the home (see Questions I.1.a-g in the Questionnaire in Appendix B.2). We use the standardized first component of a principal component analysis as our "*gender role attitudes index*".[18]

Second, we elicited children's individual opinions on whether a woman with a child below school age should work full-time, part-time, or not at all (see Question I.2 in the Questionnaire in

[16] The full questionnaire can be found in Appendix B.2. In addition to the questions described in the paper, we asked the students to state their desired future occupation. We lack precision when estimating the reform effect on occupational aspirations. We therefore deviate from our original plan (see also our preregistration, which was done assuming a third round of data collection between March 16 and April 3, 2020) and do not include these results in the paper.

[17] For explorative purposes we added two more questions related to the nature of the policy under study. We use these questions to construct the gender role attitudes index in robustness analyses.

[18] We first code the answers to each statement such that a value of 0 corresponds to the most traditional view and a value of 4 to the most non-traditional view. Accordingly, for questions (a) and (b) in Panel A of Table 1 we assign a value of 4 if the respondent "*strongly agrees*", 3 if "*agrees*", 2 if "*neither agrees nor disagrees*", 1 if "*disagrees*" and 0 if "*strongly disagrees*". For questions (c) to (g), a value of 0 if "*strongly agrees*", 1 if "*agrees*", 2 if "*neither agrees nor disagrees*", 3 if "*disagrees*" and 4 if "*strongly disagrees*". We then conduct a principal components analysis. The first principal component is positively loaded on all items and explains 26.1% of the overall variance. We standardized this first principal component to have mean 0 and standard deviation 1 and refer to it as gender role attitudes index.

Appendix B.2).[19] We again drew on a widely used question from the ISSP (see for instance, Doepke and Kindermann 2019, Kleven et al. 2019a). We also asked children about their opinion on whether a man with a child below school age should work full-time, part-time, or not at all. Doing so allows us to assess and compare children's answers for both parents and to acknowledge that children may be egocentric and ideally want their parents to work less and spend more time with them all together.[20] Summarizing the answers to counter-stereotypical labor market behavior, we create indicators for children's "*individual opinions about mothers*", taking the value 1 if reported that a mother with a child below school age should work part-time or full-time (and 0 if she should not work), and "*individual opinions about fathers*", taking the value 1 if reported that a father with a child below school age should work part-time or not at all (and 0 if he should work full-time).

Third, we introduced an incentivized elicitation method to get at children's perception of the prevailing social norm on mothers' and fathers' labor supply (see Part III of the Questionnaire in Appendix B.2). We adapted the incentivized coordination game developed by Krupka and Weber (2013) to be appropriate for children. We explained the game to the children as follows: "*You will now play a little game with one of your classmates without knowing who s/he is. In this game we will ask you both the same question. If you both give the same answer, you will both earn 4 points. If you do not give the same answer, no one will get any points.*"[21] After ensuring that the children

[19] In Spain children are granted public education from the year during which they turn 3 years old. As a result, 98% of all 3-year-olds are enrolled in school (Farré and Ortega 2018).
[20] Indeed, most pre-reform children want men and women with young children to work part-time (64% in the case of mothers, 73% in the case of fathers). There is even a sizable share that prefers parents not to work at all. Note, there is a divide in terms of gender as 25% want women with young children not to work, but only 14% want men with young children not to work.
[21] Payments were calculated based on random matching and made at the end of each session.

understood the coordination aspect of the game using several control questions[22], we asked the children to rate on a 4-point Likert scale how "*socially appropriate*" it is that "*a woman with a child below school age works full-time*", that "*a woman with a child below school age works part-time*", that "*a father with a child below school age works part-time*", and that "*a father with a child below school age does not work at all*". We were very careful in explaining the meaning of "*socially (in)appropriate*" as "*a behavior that most people believe to be correct or good (incorrect or bad)*". Importantly, presenting these questions as an incentivized coordination game encourages children to consider not only their own opinions, but also the opinions of others and how they align with each other. As such, these questions reveal their perception of the social norms prevailing among their classmates. We aggregate children's responses regarding the social appropriateness of mothers working full-time or part-time and fathers working part-time or not at all and create indicators for children's "*social norms about mothers*" and "*social norms about fathers*".[23]

Turning to gender-stereotypical behaviors, we collected information on children's participation in household chores. We asked them how often (on a 4-point Likert scale) they help at home with the following tasks: laundry, grocery shopping, small repairs, cleaning the house, and cooking (see also Question VI.2 in the Questionnaire in Appendix B.2). We then create the indicator "*Counter-stereotypical behavior*" which equals 1 if a boy engages "*at least occasionally*" in

[22] Specifically, we ask children about their perception of the prevailing social norm on cheating in an exam. We use this control question in robustness checks to rule out that the reform effects are driven by differences in children's comprehension skill or reactions to the provided incentives.
[23] Employing a median split, we consider both answers "*appropriate*" and "*fairly appropriate*" for the social norms about working mothers, but only the answer category "*appropriate*" for the social norms applying to fathers. This different aggregation scheme results from children judging more harshly on mothers than on fathers when deviating from stereotypical gender roles (which is indeed the case when looking at children's individual opinion about the optimal labor supply of women and men with children below school age, see Panel B).

primarily female chores (i.e., cleaning) and 0 otherwise, or if a girl engages "*at least occasionally*" in primarily male chores (i.e., grocery shopping and small repairs) and 0 otherwise.[24]

Finally, to get as close as possible to children's future labor supply choices, we collected information on children's expectations about their own future family and work life. We asked them "*How do you see yourself in 20 years from now?*" (see Question IV.1 in the Questionnaire in Appendix B.2). Answer categories were "*working full-time and having children*", "*working part-time and having children*", "*not working and having children*", "*working and not having children*" and "*not working and not having children*".[25] We summarize children's expectations regarding future work and family life in an indicator measure that we refer to as "*Counter-stereotypical expectations*". The variable equals 1 if a girl expects to work full-time and have children (and 0 otherwise), or if a boy expects to not work full-time and have children (and 0 otherwise).

3.3 Sample

We exclude from the sample all children not born in 2006 or 2007 (167 children) and those not born in Spain (146 children). The reason for the second restriction is that the parents of children born abroad were not subject to the paternity leave reform. Our final sample contains 1,987 children born in Spain in 2006 or 2007.

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[24] The share of boys and girls engaging in the different household chores is shown in Table A.1. Panel D. We define a chore as a primarily male (female) chore if the share of boys (girls) engaging in the respective chore significantly exceeds the share of girls (boys). This results in doing small repairs and grocery shopping being a primarily male chore and cleaning being a primarily female chore. The other tasks such as doing the laundry or cooking are largely gender neutral. Note that if a girl engages in either of the two primarily male chores, the variable equals 0.5 for girls.

[25] Interestingly, the most popular choice among pre-reform boys and girls is to have children and work part-time (35% and 47%, respectively). Yet, there is a substantial gender gap when it comes to having children and working full-time (25% among the boys and only 13% among the girls). A substantial share of pre-reform children, both boys and girls, see themselves as not having children (34% while working and 2% while not working).

Table A.2 shows the summary statistics for the full sample (see Column 1). Children in our sample are on average 13 years old and are almost equally split by gender (47% are boys). By construction, all children are born in Spain, but roughly one tenth has at least one parent born abroad (in 13% of the cases the mother and in 12% the father). Most children live with both parents, but a non-negligible share lives with their father only on some days (15%) or not at all (6%). Among the fathers, 67% work full-time and 24% work part-time, 5% do not work. Among the mothers, 50% work full-time, 37% work part-time, and 10% do not work. Half of the mothers went to college, and slightly fewer fathers did so (39%). Yet, a non-negligible share of the children does not know whether their mother or their father went to college (16% and 21%, respectively).

4. Empirical Strategy

Our identification strategy is based on the introduction of paternity leave in Spain applying to fathers of children born on March 24, 2007, or later. We employ a difference-in-differences model comparing children born shortly before and after the cut-off date in the reform (or treated) year, drawing upon children born in the same window of birthdates in a control year.[26] The treated cohort consists of children born in 2007, while the previous cohort (children born in 2006) serves as the control cohort. All children born on or after March 24, 2007, are possibly affected by the paternity leave reform. Using the same window of birthdates in 2006 allows us to net out potential age trends. Hence, we estimate the following equation:

[26] The natural experiment under study is obviously suited for a Regression Discontinuity Design (RDD). Given the limited sample size, only some of our outcomes are robust to an RDD specification, while we lack power when it comes to others (please refer to Section 5.2 and Table 2 for details). Similar identification strategies have been used by Lalive and Zweimüller (2009), Dustmann and Schönberg (2012), Danzer and Lavy (2018), and Schönberg and Ludsteck (2014) in the context of (other) parental leave reforms.

$$Y_i = \beta_0 + \beta_1 Cohort2007_i + \beta_2 PostMarch24_i + \beta_3 Cohort2007_i * PostMarch24_i + X_i + \varepsilon_i \quad (1)$$

where Y_i stands for the gender norms, behaviors or expectations exhibited by child i. $Cohort2007_i$ is a dummy variable indicating whether child i is born in 2007 (versus 2006), and $PostMarch24_i$ represents a dummy variable taking the value 1 if child i is born on or after March 24 (independently of the calendar year). The interaction term $Cohort2007_i * PostMarch24_i$ takes value 1 for any child born after the introduction of paternity leave. We can thus interpret the coefficient β_3 as the intent-to-treat effect of paternity leave on children's gender norms, expectations, and behaviors.[27]

We restrict the baseline sample to the 873 children born +/- 82 days around the cut-off date March 24 (i.e., between January 1 and June 12).[28] Hence, we compare children who belong to the same school cohort and are thus subject to the same school cohort specific factors (e.g., the school curriculum). In our preferred specification, we control for individual background characteristics (e.g., gender, date-of-birth fixed effects,[29] parental education and migration background) and for school fixed effects allowing us to abstract from selection into schools. We cluster standard errors at the class level to account for the sampling procedure as in Abadie et al. 2022.

The identifying assumption underlying our identification strategy is a common date-of-birth trend in our outcome variables across the two cohorts in the absence of the paternity leave reform. Figure 2 displays the date-of-birth trend (for all children born between January 1, 2006, and

[27] To infer the effect on the treated from the intent-to-treat effect, we must consider the actual take-up rate of paternity leave (53% among new fathers in Catalonia in 2007).
[28] Ideally, we would include June 13. Yet, for data protection issues we could ask children only whether their birthday fell into windows of 8-12 days (day 1-12 of the month, day 13-23 and 24-31) and not for their exact birthdate.
[29] We make use of the information about the range of days when a child was born (day 1-12, 13-23 and 24-31 of the respective month). The date-of-birth fixed effects thus indicate whether a child is born in a window of 8-12 days within a calendar year and apply to all children born in the respective window independently of the year of birth (2006 or 2007).

December 31, 2007) in our five main outcome variables described in Section 3.2. We observe the following patterns: first, younger children exhibit clearly more traditional gender role attitudes and norms than older children. Second, we observe a common trend for children born before and after the reform in gender role attitudes (Panel a) and social norms about mothers and fathers (Panel c and e). The same pattern also applies to children's counter-stereotypical behavior and expectations (Panel f and g). Yet, the pattern is less clear for children's individual opinions regarding mothers' and fathers' preferred labor supply, which are much noisier (Panel b and d).

We also assess whether the pre-and post-reform children are balanced in terms of observable covariates. Table A.2 shows the pre-and post-cut-off date means for a series of individual background characteristics in our baseline sample, columns 2-3 for the children of the treated cohort (i.e. between January 1 and June 12, 2007) and columns 4-5 for the control cohort (i.e. between January 1 and June 12, 2006). Column 6 reports the difference-in-differences estimates for all individual background characteristics. Reassuringly, none of the estimates is significant at the conventional levels.

5. Results

5.1 Effects on children's gender role attitudes, opinions, and norms

This section describes the estimated effects of the reform on our measures of gender role attitudes, opinions and norms using the empirical model in equation (1). Table 1 displays the point estimates for β_3, the coefficient on the interaction between the reform indicator (*PostMarch24*) and the dummy indicating the treated cohort (*Cohort2007*). Column 1 shows the coefficient when estimating equation (1) without controls, column 2 when adding individual background

characteristics (date-of-birth fixed effects, gender, parental education, and migrant status), and column 3 when further including school fixed effects.

Panel A reports the results for the reform effect on the gender role attitudes index, the individual opinions, and the perceived social norms regarding the labor supply of mothers. Starting with the first row in Panel A of Table 1 and the most parsimonious specification (column 1), we find a positive (and marginally significant) reform effect on children's gender role attitudes index of 0.21 standard deviations. The magnitude of the coefficient increases to 0.26 standard deviations when controlling for individual background characteristics (column 2) and after including school fixed effects (column 3), with an accompanying improvement in precision. In what follows, we will only refer to the most conservative specification in column (3).

Turning to children's individual opinions, we find that the introduction of paternity leave exerts a strong effect on children's individual views about mothers: the share of children stating that a mother with a child below school age should work (either part- or full-time) increases by 14.6 percentage points. Given the share of pre-reform children supporting deviations from the stereotypical maternal behavior (66.4%), the estimated reform effect corresponds to an increase by 22% or 0.31 standard deviations in the support towards working mothers.

Children's perceptions regarding the social norm about working mothers are also affected by the introduction of paternity leave: the share of children perceiving it as socially "appropriate" or at least "fairly appropriate" that a mother works (full-time or part-time) increases by 17.9 percentage points, corresponding to an increase by 28% (from a baseline share of 63.7%) or 0.37 standard deviations.[30]

[30] The incentivized coordination game was only introduced after the pilot phase, which is why the baseline specification only draws upon the data from the main data collection phase.

Panel B displays the reform effects on children's opinions and norms about the labor market behavior of men with children below school age. We find no significant effect of the introduction of paternity leave on children's individual opinions regarding fathers' labor supply. In the eyes of most pre-reform children, fathers should work either part-time (73%) or not at all (14%). If we consider this extremely high baseline of children endorsing father counter-stereotypical labor market behavior (87%), it is not surprising that the introduction of paternity leave did not exert any effect at this margin. Turning to children's perception of the social norm, we find a significant increase in the share perceiving it as "socially appropriate" that a father works part-time or not at all. This share rises by 16.3 percentage points, which corresponds to an increase by 36% (from a baseline of 45.1%) or 0.33 standard deviations. Thus, the policy has shifted norms applying to mothers and fathers to a similar extent (by 0.37 and 0.33 standard deviations, respectively).

Overall, the results in Panel A and B of Table 1 provide compelling and robust evidence of substantial spillover effects of paternity leave on to the next generation. No matter which measures we look at, we find that the policy promoted gender-egalitarian attitudes and norms among children of eligible parents.[31] Parents seem to exert a strong influence on the formation of children's gender norms, that may go beyond that of peers at this early stage of life. If children were perfectly informed about their peers' gender norms, we would not be able to detect any effect on children's perception of the norms prevailing among their classmates. Yet, instead, children seem to internalize what they observe at home and draw conclusions from their own experiences about the experiences of others (a phenomenon known as "false consensus effect", Ross et al. 1977).

[31] We also studied the effects of the policy separately for boys and girls. The resulting estimates are not significantly different from each other and are available upon request.

The effects reported so far are intention-to-treat effects. When rescaled by the estimated fraction of fathers who actually took paternity leave (53), our point estimates for the average effect on the treated amounts to around half of a standard deviation or more. These are large magnitudes, which should be interpreted with caution, since our 95% confidence interval includes effect sizes as low as 0.02 standard deviations (gender attitudes), 0.07 standard deviations (individual opinions), and 0.09 standard deviations and 0.01 standard deviations (social norms about working mothers and fathers).

To put our findings into perspective, we compare our results to the ones of two recent studies on horizontal socialization mechanisms. The school-based randomized intervention in India studied by Dhar et al. (2021), that engaged adolescents for two and a half years in classroom discussions about gender equality, increased counter-stereotypical gender attitudes of 17-year-olds by 0.18 standard deviations. Studying the impact of classroom composition on gender role attitudes of 15-year-olds in Vietnamese schools, Garcia-Brazales (2021) finds that a 10-percentage point increase in the proportion of female classmates decreases traditional views by about 0.15 standard deviations. Our study thus lines up with a recent literature showing that gender role attitudes among adolescents are amenable to change and contributes to this literature by shedding novel light on the power of public policies to shape social norms by affecting gender equality at home.

5.2 Robustness

Table 2, Panel A and B report the results from a battery of robustness tests regarding children's gender role attitudes, opinions, and norms. For comparison, Table 2 Column 1 repeats the estimates from our most preferred specification, which includes individual control variables and school fixed effects. It replicates the estimates in Table 1, column 3.

When analyzing the effects of a policy change, one major concern is anticipation or selective sorting. Our treated sample only comprises children born between January 1 and June 12, 2007, and thus conceived in September 2006 or earlier. The policy change was discussed in parliament and the media earliest by mid-December 2006. Thus, strategic planning of the pregnancy to enjoy paternity leave within our sample is unlikely to impossible. Postponement of the actual birth is difficult and given medical concerns not possible for more than a couple of weeks. Yet, to take this possibility into account, we estimate our baseline specification using a sample where we exclude the births right around the cut-off date (between March 13 and 31). Results are robust and shown in Table 2, Panel A and B, column 2.

Fathers were entitled to paternity leave for any child born on or after March 24, 2007. As such, children may have directly benefitted from their father taking paternity leave after their own birth as well as indirectly after the birth of a younger sibling. The latter also applies to children born prior to the reform. To ensure a "clean" control group, we estimate our baseline specification using a sample excluding all children born prior to the reform with younger siblings. Results on gender role attitudes and social norms are robust and indicate, if anything, stronger effects (Table 2, Panel A and B, column 3). The results on individual opinions, however, loose in size and precision.[32]

We probe robustness to two further alternative sample specifications, first excluding the data collected during the pilot phase (data from 3 schools, resulting in a sample of 754 observations) and second including all children born in 2006 and 2007 (resulting in a sample of 1987 observations for attitudes and individual norms, and 1708 for social norms). The resulting estimates are robust

[32] It would be interesting to analyze whether the effects vary depending on direct or indirect or even multiple experiences to paternity leave. Unfortunately, our sample is not big enough to conduct such heterogeneity analysis.

(except for the individual opinions regarding mothers' labor force participation), but slightly less precise (see Table 2, Panel A and B, column 4 and 5, respectively).

We also investigate the robustness of our estimates to alternative estimation strategies. First, we include a set of class fixed effects considering potential sorting into classes and spillover effects within classes (which if anything should bias our results downward). Results are extremely robust and shown in Table 2, Panel A and B, column 6. Second, we exploit the cut-off date and employ a regression discontinuity design (RDD). Specifically, we add the running variable (relative age within each cohort) to our difference-in-differences specification which results in a so-called RDD-DiD specification. Again, results are remarkably robust to this specification, both in terms of magnitude and precision (see Table 2, Panel A and B, Column 7). We then turn to a classical RDD design using the full sample (children born in 2006 and 2007) and controlling for the running variable as a first order polynomial (Table 2, Panel A and B, column 8).[33] We find robust estimates for the reform effect on individual opinions and social norms. The estimate for gender role attitudes, however, loses in magnitude (by up to 50%) and precision.[34]

[33] We use the rdrobust command in Stata and rely on all children born in 2006 and 2007 to determine the optimal bandwidth.

[34] We have further probed the robustness of our results when using alternative aggregation schemes to generate the gender role attitudes index such as a principal component analysis (Table A.3, Panel A), an unweighted average (Table A.3, Panel B) and a weighted average with weights constructed by normalizing the variables to have the same standard deviation and then recovering the weights from the inverse covariance matrix (Table A.3, Panel C, Anderson 2008). We have employed these different aggregation schemes to construct the gender role attitudes index relying on the 7 original items used in the ISSP questionnaire (see Table A.3, column 1) as well as considering further the 2 items used for explorative purposes and the 2 questions used to construct the individual opinions regarding both working mothers and fathers (see Table A.3, column 2). The results are remarkable robust across all specifications. We also assess the sensitivity of our estimates to acknowledge possible alternative correlation structures between potential outcomes not only within classes, but also within schools (see Table A.4, Column 2). Moreover, we consider the close topicality of our outcome variables and adjust for two multiple hypothesis testing (see Table A.4, Column 3 and 4). Results are robust across all specifications.

Finally, we conduct a series of placebo tests. First, we estimate our baseline specification using a placebo outcome, children's perception of the social norm on cheating in an exam. We introduced the question on the social appropriateness of cheating in an exam merely to check whether the children had understood the coordination game (see questions III.3 in the Questionnaire in Appendix B). The introduction of paternity leave and the subsequent counter-stereotypical behavior of parents should have left the perception of the social norm on cheating unaffected. Indeed, as shown in Figure 3a, the reform effect is indistinguishable from zero. This zero result removes any concerns that the strong and robust results on social norms may be driven by post-reform children reacting stronger to incentives or knowing how to play such an experimental paradigm. Second, we replicate our baseline specification using alternative placebo cut-off dates when no reform took place. Specifically, we use samples of +/- 82-days-windows around a series of hypothetical placebo cut-off dates in 2007, starting from June 12 (the first possible date not including any of the original pre-reform children) until October 12 (the last placebo cut-off date to include children exclusively belonging to the same academic cohort). Out of the 64 placebo estimations only one is significant at the 5% significance level and two at the 10% significance level (see Figure 3b, for gender role attitudes, individual opinions and social norms on mothers' labor supply and Figure A.2 for all other outcome variables). This battery of placebo tests probes the robustness of our findings against a multitude of concerns, including any differential early-life experiences children born over the specific 24-months window may have made.

5.3 Effects on children's behaviors and expectations

An open question is to which extent the paternity leave reform has the power to induce gender-egalitarian behaviors and choices contributing to a closure of the gender gap in the future. Children in our sample are obviously too young to explore the effects of the reform on their labor market

outcomes. Yet, the collected information on children's day-to-day contributions to several household chores can enhance our understanding of whether the paternity leave reform may shift gender specialization at home already at a young age. Information on children's expectations regarding their own future employment and family plans allows us to get a first glimpse on the potential effects of paternity leave on the future gender gap in labor market outcomes.

Table 1, Panel C reports the reform effect on children's engagement in counter-stereotypical household chores. To recall, counter-stereotypical behavior refers to boys engaging at least occasionally in primarily female chores (i.e., cleaning) and girls engaging in primarily male chores (i.e., small repairs and grocery shopping). According to our most preferred specification shown in column 3, if fathers are eligible for paternity leave, children are 14.2 percentage points more likely to engage at least occasionally in counter-stereotypical household chores. This reform effect corresponds to an increase by 24% or 0.35 standard deviations (from a pre-reform mean of 60.3%, with a standard deviation of 0.40).

Breaking the results down by gender (Table 3, Panel A and B) reveals that girls are more likely to contribute to male chores, such as going grocery shopping and doing small repairs. In our most preferred specification in column 3, the reform effect corresponds to an increase by 12.5 percentage points or 22%. Boys' contribution to male chores, in contrast, remains unchanged. Note, however, the gender-specific estimates regarding the contribution to male chores are not significantly different from each other (p-value when testing the null hypothesis that both estimates are equal equals 0.168). Boys, in turn, are more likely to contribute to female chores, such as cleaning. The reform effect corresponds to 15 percentage points or 23% and significantly differs from the reform effect on girls' contribution to female chores (which decreases by 6.4 percentage points, yet not significantly though).

Turning to children's family and labor market expectations, we find that children born after the reform are 15.5 percentage points more likely to expect deviating from the traditional male-breadwinner model (see Table 1, Panel D, column 3). To recall, this implies for girls to expect working full-time and having children and for boys not working full-time and having children. The reform effect corresponds to an increase by 42% from the pre-reform mean or 0.32 standard deviation.

Table 3, Panel C reports the results for family and labor market expectations separately for boys and girls. The results exhibit a gender-specific pattern. Boys whose father was eligible for paternity leave are 19.8 percentage points or 80% less likely to see themselves working full-time and having children. This effect is quite sizeable, mostly because of the relatively low share of pre-reform boys planning to work full-time and having children in the future (24.7%).[35] Girls, in contrast, are more likely to see themselves working full-time and having children. The estimated reform effect corresponds to an increase in 8.1 percentage points or 60%, again a sizeable effect driven by the relatively low share of pre-reform girls planning to work full-time and having children. Yet, the reform effect for girls is not statistically significant at the conventional levels. [36]

Overall, the results provide strong and robust evidence that paternity leave is a powerful tool to shift not only the gender role attitudes and norms of the next generation, but to induce gender convergence both at home and in the labor market. As such, this policy promises to sustainably combat the gender gap in the labor market and to close the child penalty in the long-run.

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[35] We do not find any effect on children's fertility intentions. The results are available upon request.
[36] The entire battery of robustness tests – alternative sample specifications (i.e., excluding the observations around the cut-off, excluding control children with younger siblings, excluding the pilot sample, using the full sample of children born in 2006 and 2007) and alternative estimation strategies (i.e., additional class fixed effects, the RDD-DD, a classical RDD) is shown in Table 2, Panel C and D.

6. Conclusions

Despite remarkable improvements, gender gaps in employment and earnings are still sizable and persistent in all countries. Much of the current debate on the mechanisms underlying the remaining differentials deals with the existence of social norms on the role of women in childcare and home production. Many scholars go as far as proclaiming gender norms to constitute an important barrier to gender equality that render family policies largely ineffective (Bertrand 2020, Cortes and Pan 2020, Kleven et al. 2021, Albanesi et al. 2022, Ashraf et al. 2022, Bursztyn et al. 2023). Yet, gender norms are very persistent and transmitted from one generation to the next.

We study the extent to which family policy can shape gender norms and induce gender equality in the next generation, by promoting counter-stereotypical behaviors among parents. We exploit the introduction of paternity leave in Spain as an exogenous shock that increased fathers' participation in childcare and housework persistently. We conduct a large, targeted lab-in-the-field experiment with 11-13-years old children to elicit their attitudes towards gender roles, their individual opinions and perceived social norms on working mothers and fathers. We also ask them about their engagement in day-to-day behaviors and expectations regarding their future labor market participation. We follow a local difference-in-differences approach that compares children (in the same school class) born around the date of the introduction of paternity leave on March 24, 2007, using the previous cohort (children born in 2006) as controls. We find that children whose fathers were eligible for paternity leave display significantly more gender egalitarian norms and behaviors at age 11-13. Children born after the reform also report less stereotypical expectations regarding their own labor market involvement after parenthood.

Our results speak to the presence of long-run effects of public policies operating through slow-moving changes in norms that existing quasi-experimental studies have missed (Kleven et al. 2021).

Paternity leave permit may have the power to foster gender convergence in the future by shaping the gender norms of the next generation and thus removing a key obstacle on the path to gender equality.

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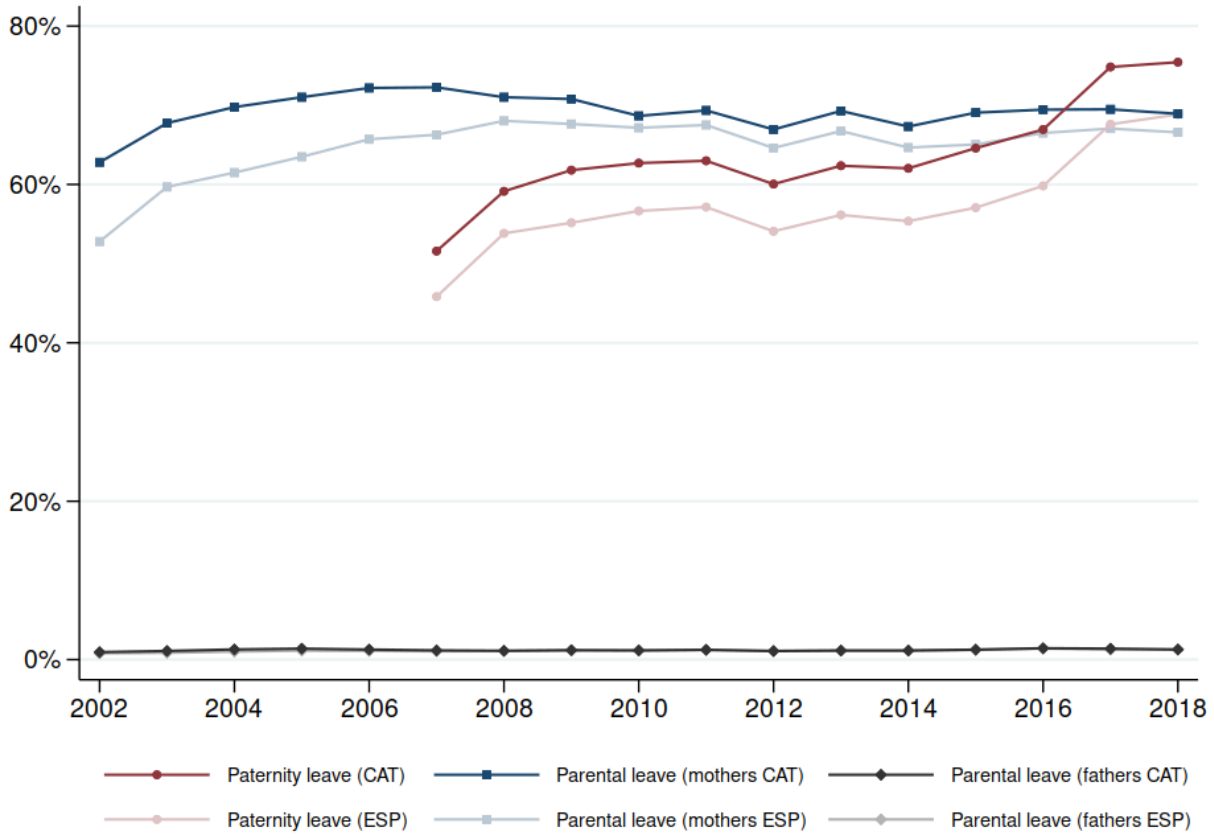
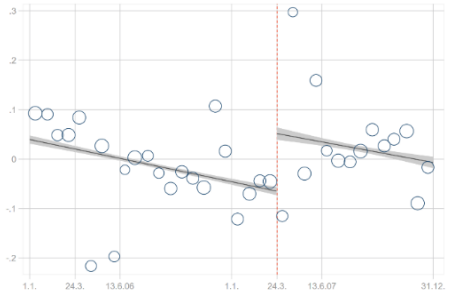
Figures and Tables

Figure 1: Take-up of parental leave and paternity leave in Catalonia and Spain

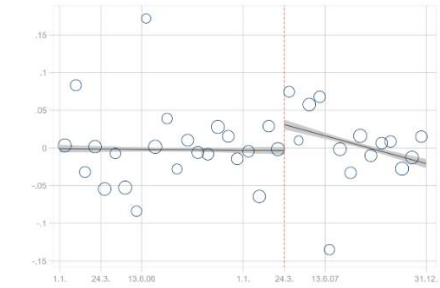


Note: The blue lines represent the percentage of mothers on paid parental leave, the black lines represent the percentage of fathers who used at least some weeks of the shared parental leave permit, and the red lines represents the percentage of fathers on paternity leave (in 2007, this share only refers to fathers whose children were born on or after March 24). The dark-colored lines refer to the take-up rates in Catalonia while the light-colored lines to that in Spain. Data are obtained from the administrative registers of the Spanish National Security System for several years.

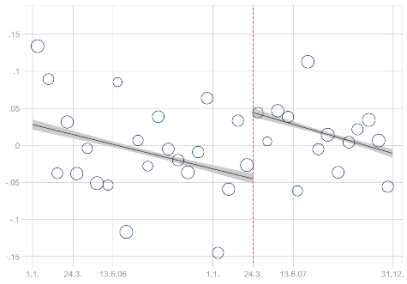
Figure 2: Date-of-birth trends in children's gender attitudes, norms, behavior, and expectations



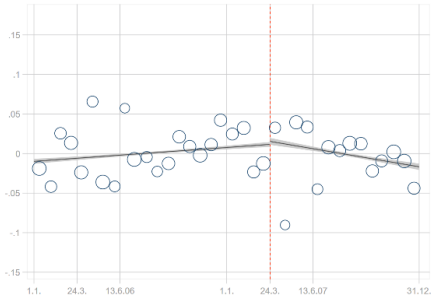
(a) Gender role attitudes index



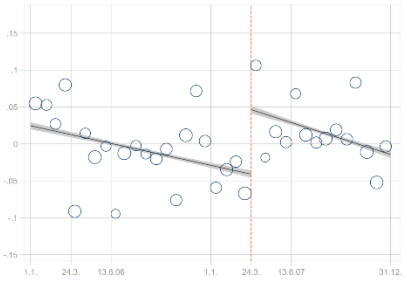
(b) Individual opinions about mothers



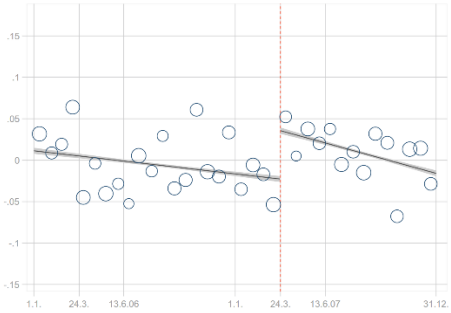
(c) Social norms about mothers



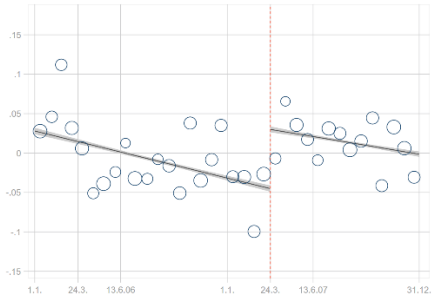
(d) Individual opinions about fathers



(e) Social norms about fathers



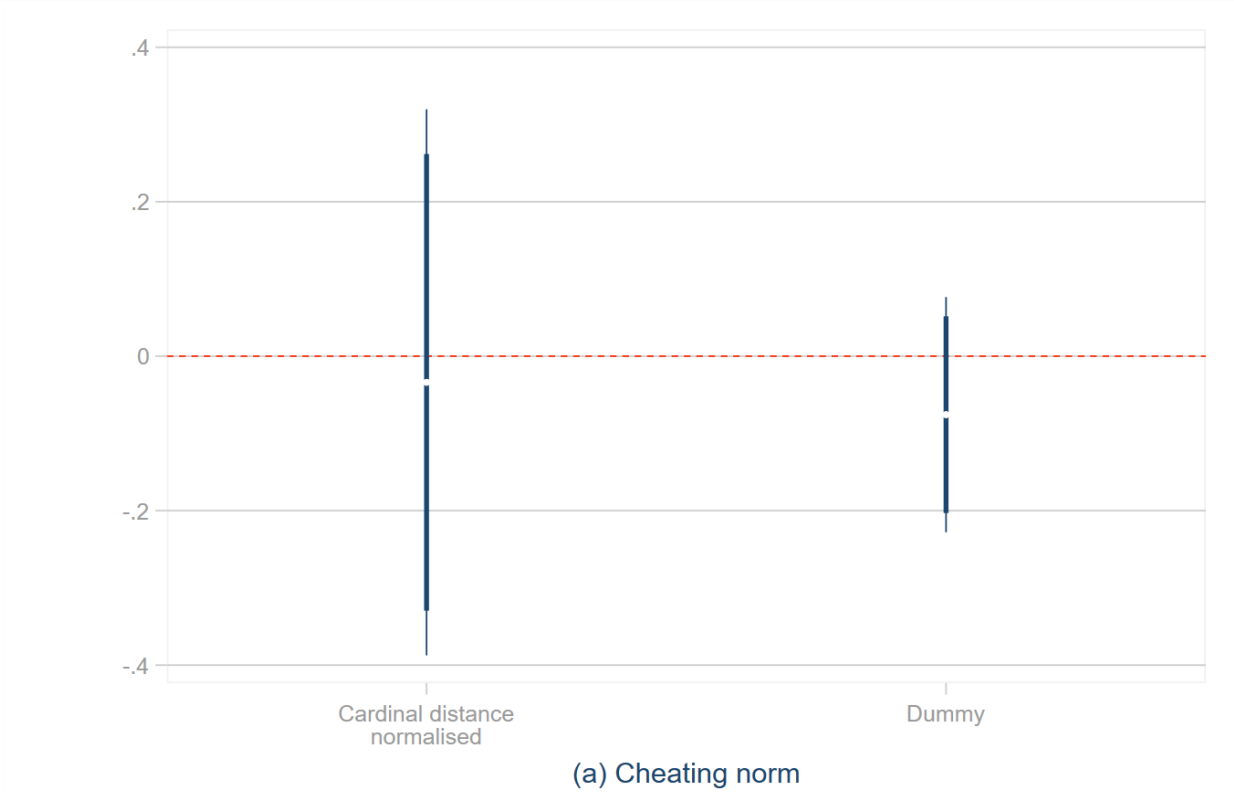
(f) Counter-stereotypical behavior



(g) Counter-stereotypical expectations

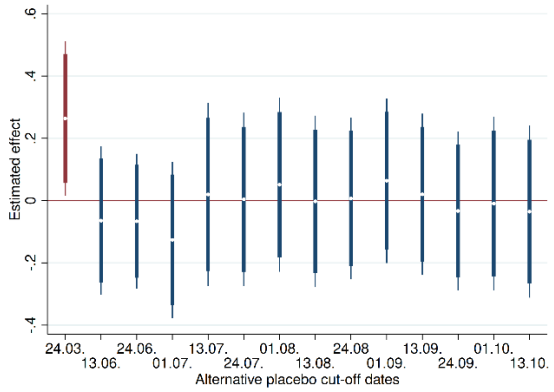
Note: Each figure plots the OLS residuals from our preferred specification in equation (1) excluding the interaction between the *Cohort2007* and the *Post March 24* indicators and using children born between 01.01.2006 to 31.12.2007. Each dot represents the average of the residuals over two consecutive birthdate bins. The size of the dot indicates the number of observations per bin. The red line indicates the date of the reform introduction (i.e. March 24, 2007). The Figures also display the linear prediction of the residuals to the left and the right of the cut-off date of the reform (March 24, 2007). The shaded area indicates the 95% confidence interval.

Figure 3a: Placebo tests with alternative measures

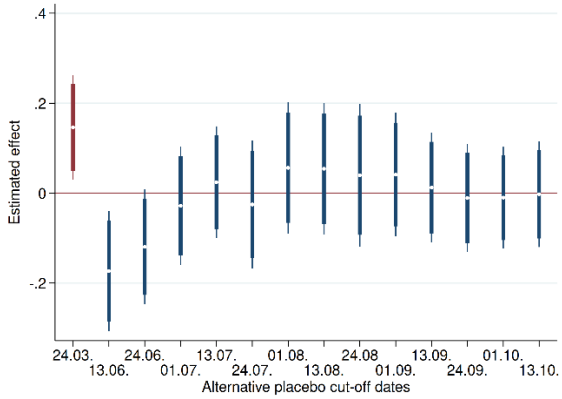


Note: The figure shows the reform effect on the perception of the social norm regarding "cheating during an exam" using our preferred specification (controlling for individual characteristics and school fixed effects) and sample (+/- 82 days around the cut-off date). Specifically, children are asked *"Copying in an exam is: appropriate, fairly appropriate, fairly inappropriate or inappropriate"*. Note that we show the reform effect using two alternative ways of aggregating children's answers. On the left, we show the result when using the four answer categories ("inappropriate" as 0, "fairly inappropriate" as 1, "fairly appropriate" as 2, and "appropriate" as 3) and standardizing the variable to have a mean 0 and a standard deviation 1 for pre-reform children. On the right, we show the results when creating a dummy being equal to 0 for the category "inappropriate", and 1 otherwise. The latter aggregation scheme corresponds to a median split and thus considers the fact that most children choose the answer category "inappropriate".

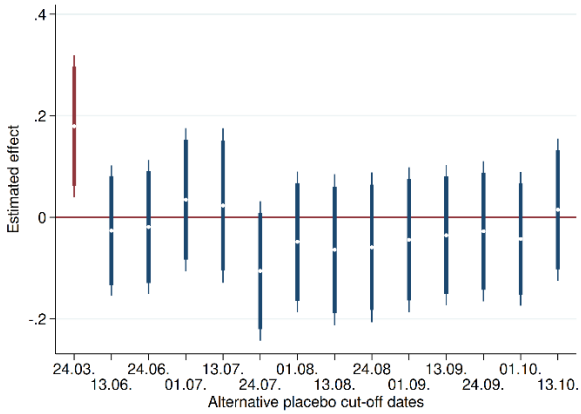
Figure 3b: Placebo tests for alternative cut-off dates



(a) Gender role attitudes index



(b) Individual opinions about mothers



(c) Social norms about mothers

Note: The figure shows a series of placebo reform effects for gender role attitudes (a), individual opinions (b) and social norms on mothers' labor supply (c) using our preferred specification (estimating equation (1) using a +/-82 days window around alternative cut-off dates and controlling for individual characteristics and school fixed effects). The red bar shows the estimated reform effect and the respective 95% confidence interval using the actual cut-off date (March 24, 2007), while the 13 blue bars show the estimated placebo effects when shifting the cut-off dates successively further (starting with the first possible cut-off date on June 12, 2007 until the last possible cut-off date – to only consider children belonging to the same school cohort – on October 12). The results for the other main outcomes variables: opinions and norms on fathers' labor supply and counter-stereotypical behavior and expectations are displayed in Figure A.2.

Table 1: Reform effects on children's gender role attitudes, norms, behavior, and expectations

	(1)	(2)	(3)
Panel A: Children's norms about mothers			
Gender role attitudes index	0.205*	0.263**	0.264**
Pre-reform mean [sd] = 0 [1]	(0.123)	(0.123)	(0.125)
N	873	873	873
Individual opinions about mothers	0.109*	0.151***	0.146**
Pre-reform mean [sd] = 0.664 [0.473]	(0.057)	(0.057)	(0.058)
N	873	873	873
Social norms about mothers	0.163**	0.180***	0.179**
Pre-reform mean [sd] = 0.637 [0.482]	(0.065)	(0.068)	(0.070)
N	754	754	754
Panel B: Children's norms about fathers			
Individual opinions about fathers	0.023	0.034	0.027
Pre-reform mean [sd] = 0.872 [0.334]	(0.047)	(0.047)	(0.048)
N	873	873	873
Social norms about fathers	0.163**	0.169**	0.163**
Pre-reform mean [sd] = 0.451 [0.499]	(0.077)	(0.078)	(0.080)
N	754	754	754
Panel C: Children's counter-stereotypical behavior			
Engagement in counter-stereotypical chores	0.145***	0.141***	0.142***
Pre-reform mean [sd] = 0.603 [0.401]	(0.050)	(0.051)	(0.052)
N	750	750	750
Panel D: Children's counter-stereotypical expectations			
Full-time work and children	0.176**	0.145**	0.155***
Pre-reform mean [sd] = 0.367 [0.483]	(0.082)	(0.061)	(0.057)
N	754	754	754
Individual controls		Yes	Yes
School FE			Yes

Note: Each coefficient stems from a separate regression and corresponds to the OLS estimate of the coefficient on the interaction term (Cohort 2007 * Post-March23) in equation (1). Column (1) shows the results without controls, column (2) when controlling for individual background characteristics (i.e. gender, date-of-birth fixed effects, parental education and migration background), and column (3) when adding school fixed effects. The *gender role attitudes index* is the first element resulting from a principal component analysis of the seven ISSP questions on gender roles. The index has been standardized to have mean 0 and standard deviation 1 for pre-reform children. *Individual opinions about mothers* is a dummy variable that equals 1 if the child believes that a mother with a child below school age should work full-time or part-time and 0 otherwise. *Social norms about mothers* is a dummy variable that equals 1 if the child answers that it is "socially appropriate" or "fairly socially appropriate" that a mother with a child below school age works full-time or part-time, and 0 otherwise. *Individual opinions about fathers* is a dummy variable that equals 1 if the child believes that a father with a child below school age should work part-time or not at all, and 0 otherwise. *Social norms about fathers* is a dummy variable that equals 1 if the child answers that it is "socially appropriate" that a father with a child below school age works part-time or not at all, and 0 otherwise. *Counter-stereotypical behavior* is the weighted average of whether children participate at least occasionally with a counter-stereotypical household chore. *Counter-stereotypical expectations* is a dummy that is 1 for girls (boys) when they (not) expect to work full-time and have children, and 0 otherwise. The lower number of observations in some questions is because they were not collected in the pilot sample. Standard errors are clustered at the session/class level and shown in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0$.

Table 2: Robustness checks for the reform effects on children's gender role attitudes, norms, behavior, and expectations

	Baseline	Alternative sample specifications				Alternative estimation strategies		
	(1) Pref spec.	(2) Donut	(3) Excl. sibl.	(4) Excl. pilot	(5) Full smpl.	(6) Class FE	(7) RDD DiD	(8) RDD P1
Panel A: children's gender role attitudes, opinions and norms about mothers								
Gender roles attitudes	0.264**	0.324**	0.348**	0.287**	0.187*	0.241*	0.266**	0.182
	(0.125)	(0.130)	(0.157)	(0.142)	(0.103)	(0.129)	(0.128)	(0.144)
N	873	760	553	754	1987	869	873	1987
Individual opinions	0.146**	0.128**	0.079	0.123*	0.033	0.163**	0.153**	0.106*
	(0.058)	(0.062)	(0.081)	(0.065)	(0.049)	(0.062)	(0.059)	(0.062)
N	873	760	553	754	1987	869	873	1987
Social norms	0.162**	0.180**	0.196*	0.162**	0.139***	0.170**	0.164**	0.145**
	(0.069)	(0.077)	(0.103)	(0.069)	(0.050)	(0.072)	(0.068)	(0.062)
N	754	657	485	754	1708	750	754	1708
Panel B: children's opinions and norms about fathers								
Individual Opinions	0.027	0.006	0.095	-0.017	-0.014	0.033	0.028	0.036
	(0.048)	(0.049)	(0.059)	(0.048)	(0.037)	(0.052)	(0.049)	(0.061)
N	873	760	553	754	1987	869	873	1987
Social norms	0.163**	0.152*	0.383**	0.163**	0.139**	0.183**	0.163**	0.206***
	(0.080)	(0.081)	(0.105)	(0.080)	(0.060)	(0.087)	(0.080)	(0.065)
N	754	657	485	754	1708	750	754	1708
Panel C: Children's counter-stereotypical behavior								
Household Chores	0.142***	0.123**	0.093	0.142***	0.084**	0.171***	0.142***	0.152***
	(0.052)	(0.057)	(0.068)	(0.052)	(0.041)	(0.056)	(0.052)	(0.054)
N	750	653	483	750	1698	747	750	1698
Panel D: Children's counter-stereotypical expectations								
Full-time work and children	0.155***	0.151**	0.154**	0.155**	0.128***	0.158**	0.155***	0.161***
	(0.057)	(0.061)	(0.072)	(0.057)	(0.045)	(0.062)	(0.057)	(0.056)
N	754	657	485	754	1708	750	754	1708

Note: Each coefficient comes from separate regressions. Column (1) shows our preferred specification using equation (1) and including individual controls (i.e. gender, date-of-birth fixed effects, parental education and migration background) and school fixed effects. Column (2) drops all children born closely around the cut-off date, i.e., children born between 13.3- 31.3.2007 and 13.3. - 31.3.2006. Column (3) excludes all children born before the reform who have younger siblings. Column (4) excludes all data collected in the pilot phase. Column (5) draws upon all children born in 2006 and 2007. Column (6) estimates the baseline equation (1) but replaces the school fixed effects by class fixed effects. Column (7) displays the estimates from a RD-DiD design which corresponds to equation (1) but adds a first order polynomial of the running variable (the day of birth which corresponds to the relative age in class). Columns (8) correspond to the classical RDD specification controlling a first order polynomial of the running variable date of birth and drawing upon all children born in 2006 and 2007. We estimate the RDD specification using the *rdrobust* command in Stata and employing a triangular kernel function for the local-polynomial estimator. Standard errors are clustered at the class level and in parentheses: $* p < 0.1$, $** p < 0.05$, $*** p < 0.01$.

Table 3: Reform effects by gender on behavior and expectations

	(1)	(2)	(3)
Panel A: Contribution to male chores			
Effect for Boys	0.031	0.025	-0.021
	(0.066)	(0.067)	(0.075)
Effect for Girls	0.120*	0.125*	0.125*
	(0.065)	(0.069)	(0.071)
p-value	0.331	0.314	0.168
Panel B: Contribution to female chores			
Effect for Boys	0.169**	0.143*	0.150*
	(0.083)	(0.079)	(0.087)
Effect for Girls	-0.042	-0.056	-0.064
	(0.070)	(0.072)	(0.076)
p-value	0.066	0.080	0.075
Panel C: Expectation to work full-time and have children			
Effect for Boys	-0.208**	-0.211**	-0.198**
	(0.087)	(0.089)	(0.086)
Effect for Girls	0.054	0.075	0.081
	(0.087)	(0.088)	(0.085)
p-value	0.035	0.024	0.017
Individual controls		Yes	Yes
School FE			Yes

Notes: Each column in each panel stems from a separate regression estimating equation (1) separate by gender. Column (1) shows the results without controls, column (2) when controlling for individual background characteristics and column (3) when adding school fixed effects. *Male household chores* equals 1 if a child helps at least sometimes with making small repairs or grocery shopping, 0.5 if in either of the two, and 0 otherwise. *Female household chores* corresponds to a dummy which equals 1 if a child helps at least sometimes with cleaning. *Full-time work and children* is a dummy that is 1 when a participant expects to work full-time and have children, and 0 otherwise. P-value gives the p-value of a Wald test testing the equality of coefficients estimated separately for boys and girls. Standard errors are clustered at the session/class level and shown in parentheses: $*$ $p < 0.1$, $**$ $p < 0.05$, $***$

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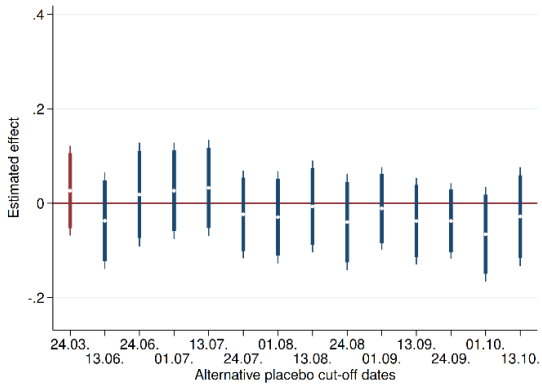
Appendix A: Additional Figures and Tables

Figure A.1: The data collection process

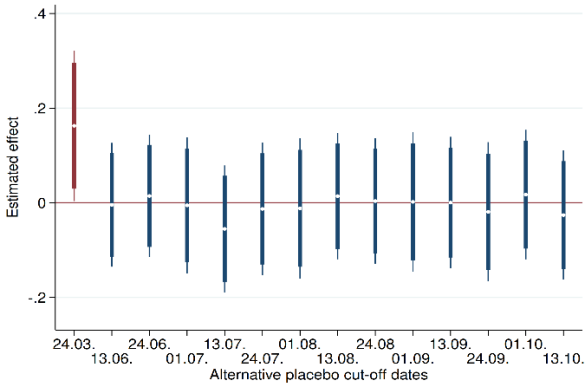
Note: Mobile laboratory installed in one of the schools.

Note: Students at one of the schools answering the questionnaire.

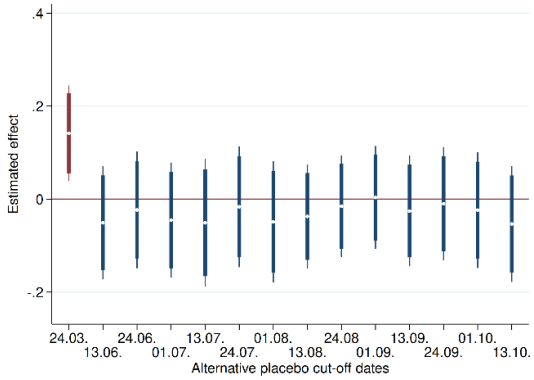
Figure A.2: Placebo tests for alternative cut-off dates (opinions and norms about fathers' labor supply, counter-stereotypical behavior and expectations)



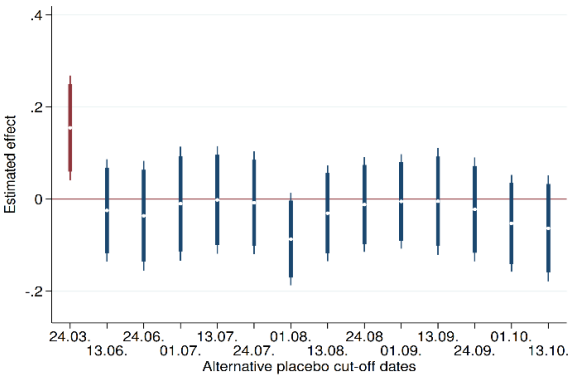
(a) Individual opinions about fathers



(b) Social norms about fathers



(c) Counter-stereotypical behavior



d) Counter-stereotypical expectations

Note: The figure shows a series of placebo reform effects for individual opinions (a) and social norms (b) on fathers' labor supply and counter-stereotypical behaviors (c) and expectations (d) using our preferred specification (estimating equation (1) using a +/-82 days window around alternative cut-off dates and controlling for individual characteristics and school fixed effects). The red bar shows the estimated reform effect and the respective 95% confidence interval using the actual cut-off date (March 24, 2007), while the 13 blue bars show the estimated placebo effects when shifting the cut-off dates successively further (starting with the first possible cut-off date on June 12, 2007 until the last possible cut-off date – to only consider children belonging to the same school cohort – on October 12).

Table A.1: Summary statistics on the outcome variables among pre-reform children

	(1) Pooled	(2) Girls	(3) Boys	(4) Diff
Panel A: Gender role attitudes				
"Agree" or "strongly agree" with:				
(a) A working mother can establish just as warm and secure relationship with her	0.668	0.647	0.706	-0.059
children as a mother who does not work.	[0.472]	[0.480]	[0.458]	(0.064)
(b) Both men and women should contribute to the household income.	0.906	0.893	0.929	-0.036
	[0.292]	[0.310]	[0.258]	(0.040)
"Disagree" or "strongly disagree" with:				
(c) A pre-school child is likely to suffer if his or her mother works.	0.587	0.627	0.518	0.109
	[0.493]	[0.485]	[0.503]	(0.067)
(d) All in all, family life suffers when the woman has a full-time job.	0.634	0.653	0.600	0.053
	[0.483]	[0.478]	[0.493]	(0.066)
(e) A job is all right, but what most women really want is a home and children.	0.698	0.733	0.635	0.098
	[0.460]	[0.444]	[0.484]	(0.062)
(f) Being a housewife is just as fulfilling as working for pay.	0.617	0.640	0.576	0.064
	[0.487]	[0.482]	[0.497]	(0.066)
(g) A man's job is to earn money and a woman's job is to look after the home and	0.983	0.987	0.976	0.010
family.	[0.130]	[0.115]	[0.152]	(0.018)
Gender role attitudes index	**-0.000**	**0.116**	**-0.205**	**0.322****
(1st principal component of the 7 items)	**[1.000]**	**[0.993]**	**[0.984]**	**(0.134)**
Panel B: Individual opinions				
A mother with a child below school age				
should not work.	0.247	0.220	0.294	-0.074
	[0.432]	[0.416]	[0.458]	(0.059)
should work part-time.	0.643	0.660	0.612	0.048
	[0.480]	[0.475]	[0.490]	(0.065)
should work full-time.	0.021	0.027	0.012	0.015
	[0.145]	[0.162]	[0.108]	(0.020)
A father with a child below school age				
should not work.	0.140	0.133	0.153	-0.020
	[0.348]	[0.341]	[0.362]	(0.047)
should work part-time.	0.732	0.733	0.729	0.004
	[0.444]	[0.444]	[0.447]	(0.060)
should work full-time.	0.034	0.033	0.035	-0.002
	[0.182]	[0.180]	[0.186]	(0.025)
Individual opinions about mothers	**0.664**	**0.687**	**0.624**	**0.063**
(=1 if either part-time or full-time work, 0 otherwise)	**[0.473]**	**[0.465]**	**[0.487]**	**(0.064)**
Individual opinions about fathers	**0.872**	**0.867**	**0.882**	**-0.016**
(=1 if either part-time or not work, 0 otherwise)	**[0.334]**	**[0.341]**	**[0.324]**	**(0.045)**
Panel C: Social norms				
How socially appropriate is it that				
… a mother with a child below school age works part-time?				
fairly appropriate	0.419	0.403	0.444	-0.041
	[0.494]	[0.492]	[0.500]	(0.070)
appropriate	0.219	0.261	0.148	0.113*
	[0.414]	[0.441]	[0.357]	(0.058)
… a mother with a child below school age works full-time?				
fairly appropriate	0.056	0.075	0.025	0.050
	[0.230]	[0.264]	[0.156]	(0.032)
appropriate	0.042	0.052	0.025	0.028
	[0.201]	[0.223]	[0.156]	[0.028]
… a father with a child below school age works part-time?				
fairly appropriate	0.460	0.465	0.453	0.012
	[0.500]	[0.501]	[0.502]	(0.080)
appropriate	0.270	0.303	0.219	0.084
	[0.445]	[0.462]	[0.417]	(0.071)
… a father with a child below school age works not at all?				
fairly appropriate	0.335	0.336	0.333	0.002
	[0.473]	[0.474]	[0.474]	(0.067)
appropriate	0.344	0.343	0.346	-0.002
	[0.476]	[0.477]	[0.479]	(0.067)
Social norms about mothers	**0.637**	**0.664**	**0.593**	**0.072**
(=1 if appropriate and fairly appropriate to work part- or full-time, 0 otherwise)	**[0.482]**	**[0.474]**	**[0.494]**	**(0.068)**
Social norms about fathers	**0.451**	**0.463**	**0.432**	**0.031**
(=1 if appropriate to work part-time or not at all, 0 otherwise)	**[0.499]**	**[0.500]**	**[0.498]**	**(0.070)**

Continues on next page …

Table A.1. – continues from previous page

	(1) Pooled	(2) Girls	(3) Boys	(4) Diff
Panel D: Household chores				
Do you help at least occasionally with ...				
Doing the laundry	0.837	0.858	0.802	0.056
	[0.370]	[0.350]	[0.401]	(0.052)
Small repairs	0.437	0.343	0.593	-0.249***
	[0.497]	[0.477]	[0.494]	(0.068)
Grocery shopping	0.827	0.791	0.887	-0.096*
	[0.379]	[0.408]	[0.318]	(0.053)
Cleaning	0.771	0.836	0.662	0.173***
	[0.421]	[0.372]	[0.476]	(0.058)
Cooking	0.533	0.545	0.512	0.032
	[0.500]	[0.500]	[0.503]	(0.071)
Counter-stereotypical behavior	**0.603**	**0.567**	**0.662**	**-0.095***
(=1 if small repairs and grocery shopping (cleaning) for girls (boys), =0.5 if small repairs or grocery shopping for girls, =0 otherwise)	**[0.401]**	**[0.346]**	**[0.476]**	**(0.056)**
Panel E: Employment and family expectations				
In 20-year time, how do you see yourself?				
Not working and not having children	0.023	0.015	0.037	-0.022
	[0.151]	[0.122]	[0.190]	(0.021)
Working and not having children	0.344	0.358	0.321	0.037
	[0.476]	[0.481]	[0.470]	(0.067)
Not working and having children	0.033	0.022	0.049	-0.027
	[0.178]	[0.148]	[0.218]	(0.025)
Working part-time and having children	0.423	0.470	0.346	0.124*
	[0.495]	[0.501]	[0.479]	(0.069)
Working full-time and having children	0.177	0.134	0.247	-0.113**
	[0.382]	[0.342]	[0.434]	(0.053)
Counter-stereotypical expectations	**0.367**	**0.134**	**0.753**	**-0.619*****
(=1 (0) if full-time work and children for girls (boys), =0 (1) otherwise)	**[0.483]**	**[0.342]**	**[0.434]**	**(0.053)**

Note: The information reported is restricted to children born between 01.01.2007 and 23.03.2007 to show the descriptive statistics at baseline (the counterfactual group). Column (1) includes both girls and boys, while column (2) is restricted to girls and column (3) to boys. Column (4) displays the gender gap in the different measures. Panel A displays the share of pre-reform children providing a non-traditional answer to the battery of gender role attitudes questions taken from the ISSP. For question (a) and (b) it shows the percentage who" strongly agree" or" agree". For questions (c), (d), (f), (g) and (h), it displays the percentage who" strongly disagree" or" disagree". The **gender role attitudes index** is the first element resulting from a principal component analysis of the seven questions. The index is normalized to have mean 0 and standard deviation 1 for pre-reform children. Panel B displays respondents' opinion about the optimal labor supply of parents with young children. Missing categories are "I don't know" and "I don't want to answer". **Individual opinion about mothers** is an indicator that takes value 1 if the child answered that a mother with a child below school age should work full-time or part-time**. Individual opinion about fathers** is an indicator that takes value 1 if the child answered that a father with a child below school age should work part-time or not at all. Panel C shows the results of the incentivized coordination game. For every question it displays the percentage of children who answered that it is "fairly appropriate" and the percentage of children who answered that it is "appropriate". The **social norm about mothers** indicates the share who answered that it is at least "fairly appropriate" that a mother with a child below school age works part-time or full-time. The **social norm about fathers** indicates the share who answered that it is "appropriate" that a father with a child below school age works part-time or does not work at all. Panel D shows the share that contributes "at least occasionally" (i.e. less than once a week but more than once a month) to each domestic task. The variable **counter-stereotypical behavior** is the average of "small repairs" and "grocery shopping" for girls and the value of "cleaning" for boys. Panel E shows the expectations of respondents in 20 years' time regarding fertility and labor market participation. The variable **counter-stereotypical expectations** is 1 if a girl (boy) does (not) expect to work full-time and have children. The standard deviation is given in brackets. Column (4) displays a Wald test on gender differences and the respective standard errors are in parentheses: $*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$

Table A.2: Balancing test in covariates

	Pooled	Treated Cohort (2007)		Control Cohort (2006)		DiD
	(1)	(2) Post (24.03-12.06)	(3) Pre (01.01-23.03)	(4) Post (24.03-12.06)	(5) Pre (01.01-23.03)	(6)
Age	13.264	12.669	12.888	13.609	13.828	0.000
	[0.535]	[0.191]	[0.204]	[0.276]	[0.271]	(0.000)
Male	0.467	0.544	0.362	0.541	0.441	0.097
	[0.499]	[0.499]	[0.482]	[0.499]	[0.498]	(0.067)
Do you live with your mother?						
Yes	0.844	0.845	0.826	0.839	0.868	0.049
	[0.363]	[0.363]	[0.380]	[0.368]	[0.339]	(0.047)
Most days	0.063	0.057	0.068	0.069	0.057	-0.031
	[0.243]	[0.232]	[0.252]	[0.254]	[0.233]	(0.029)
Some days	0.080	0.083	0.098	0.078	0.062	-0.022
	[0.272]	[0.276]	[0.298]	[0.269]	[0.241]	(0.036)
No	0.013	0.016	0.009	0.014	0.013	0.004
	[0.112]	[0.124]	[0.092]	[0.117]	[0.114]	(0.017)
Do you live with your father?						
Yes	0.784	0.777	0.791	0.798	0.767	-0.029
	[0.412]	[0.417]	[0.407]	[0.402]	[0.424]	(0.052)
Most days	0.013	0.010	0.013	0.014	0.013	-0.006
	[0.112]	[0.102]	[0.113]	[0.117]	[0.114]	(0.017)
Some days	0.148	0.155	0.157	0.138	0.141	-0.002
	[0.355]	[0.363]	[0.365]	[0.345]	[0.349]	(0.046)
No	0.056	0.057	0.038	0.050	0.079	0.037
	[0.230]	[0.232]	[0.192]	[0.219]	[0.271]	(0.033)
Does your mother work?						
Full-time	0.504	0.487	0.498	0.541	0.489	-0.046
	[0.500]	[0.501]	[0.501]	[0.499]	[0.501]	(0.060)
Part-time	0.371	0.383	0.383	0.335	0.383	0.047
	[0.483]	[0.487]	[0.487]	[0.473]	[0.487]	(0.058)
Does not work	0.105	0.104	0.098	0.110	0.110	-0.010
	[0.307]	[0.306]	[0.298]	[0.314]	[0.314]	(0.038)
Does your father work?						
Full-time	0.675	0.648	0.621	0.711	0.718	0.081
	[0.469]	[0.479]	[0.486]	[0.454]	[0.451]	(0.062)
Part-time	0.244	0.280	0.298	0.211	0.189	-0.071
	[0.430]	[0.450]	[0.458]	[0.409]	[0.393]	(0.053)
Does not work	0.049	0.031	0.064	0.046	0.053	-0.032
	[0.217]	[0.174]	[0.245]	[0.210]	[0.224]	(0.033)
Did your mother go to college?						
Yes	0.498	0.513	0.489	0.509	0.485	0.016
	[0.500]	[0.501]	[0.501]	[0.501]	[0.501]	(0.057)
No	0.345	0.347	0.336	0.326	0.370	0.057
	[0.476]	[0.477]	[0.473]	[0.470]	[0.484]	(0.060)
Did your father go to college?						
Yes	0.394	0.383	0.374	0.427	0.392	0.011
	[0.489]	[0.487]	[0.485]	[0.496]	[0.489]	(0.062)
No	0.399	0.352	0.400	0.385	0.449	0.002
	[0.490]	[0.479]	[0.491]	[0.488]	[0.499]	(0.055)
Migrant mother	0.126	0.171	0.102	0.110	0.128	0.052
	[0.332]	[0.377]	[0.303]	[0.314]	[0.335]	(0.043)
… born in Americas	0.048	0.073	0.043	0.037	0.044	0.021
	[0.214]	[0.260]	[0.202]	[0.188]	[0.206]	(0.027)
… born in Africa	0.034	0.057	0.021	0.037	0.026	0.008
	[0.182]	[0.232]	[0.145]	[0.188]	[0.161]	(0.023)
… born in Europe	0.011	0.010	0.021	0.009	0.004	-0.015
	[0.106]	[0.102]	[0.145]	[0.096]	[0.066]	(0.017)
... born somewhere else	0.015	0.021	0.017	0.000	0.022	0.028
	[0.121]	[0.143]	[0.130]	[0.000]	[0.147]	(0.017)
Migrant father	0.117	0.166	0.098	0.092	0.119	0.074
	[0.321]	[0.373]	[0.298]	[0.289]	[0.324]	(0.045)
… born in Americas	0.036	0.057	0.043	0.009	0.035	0.029
	[0.185]	[0.232]	[0.202]	[0.096]	[0.185]	(0.023)
… born in Africa	0.032	0.057	0.017	0.037	0.022	0.009
	[0.176]	[0.232]	[0.130]	[0.188]	[0.147]	(0.022)
… born in Europe	0.018	0.016	0.021	0.018	0.018	0.002
	[0.134]	[0.124]	[0.145]	[0.135]	[0.132]	(0.021)
… born somewhere else	0.017	0.031	0.013	0.014	0.013	0.013
	[0.130]	[0.174]	[0.113]	[0.117]	[0.114]	(0.018)

Notes: Column (1) display the mean of each variable for our baseline sample (i.e. January 1 to June 12, 2006 and January 1 to June 12 in 2007). Column (2) and (3) are restricted to the treated cohort (2007) and Column (4) and (5) to the control cohort (2006). Column (6) shows the DiD estimate for the respective variable using equation (1) in the main text and controlling for birth-date fixed effects and school fixed effect. The respective standard errors are in parentheses. $*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$.

Table A.3: Alternative way to construct the gender role attitudes index

	(1) Standard battery of gender attitudes items	(2) Augmented battery of gender attitudes items
Panel A: Principal component analysis	0.264**	0.319`***
	(0.125)	(0.105)
Panel B: Equal weighting	0.362**	0.450***
	(0.170)	(0.171)
Panel C: Inverse covariance weighting	0.265**	0.264**
	(0.126)	(0.113)

Note: Each coefficient comes from a separate regression. Column (1) displays the results when constructing the gender attitudes index using the 7 original items from the ISSP questionnaire (Questions I.1.a-g in the Questionnaire in Appendix B.2), column (2) when using additional the 2 further items we included in the questionnaire for explorative purposes (Questions I.1.h-i in the Questionnaire in Appendix B.2) and the questions related to children's individual opinions of mother and fathers with young children working full-time, part-time or not at all (Questions I.2 in the Questionnaire in Appendix B.2). Panel A displays the coefficients when aggregating the different items using the first component of a principal component analysis, panel B when using equal weighting, and Panel C when using inverse-covariance weighting. Standard errors are clustered at the class level and in parentheses: $*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$.

Table A.4: Robustness checks using standard error correction methods

	(1) Baseline	(2) School cluster	(3) Bonferroni - Holm	(4) Romano - Wolf
Gender role attitudes index	0.0373	0.0706	0.0208	0.0189
Individual opinions about mothers	0.0141	0.0213	0.0048	0.0072
Social norms about mothers	0.0128	0.0029	0.0112	0.0072
Individual opinions about fathers	0.5791	0.5766	0.4614	0.4614
Social norms about fathers	0.0453	0.0832	0.0163	0.0189
Counter-stereotypical behavior	0.0076	0.0094	0.0062	0.0048
Counter-stereotypical expectations	0.0083	0.0130	0.0035	0.0048

Notes: Each cell contains a p-value of the reform effect on the main outcomes. Column (1) uses our preferred specification using equation (1) including individual controls (i.e. gender, date-of-birth fixed effects, parental education and migration background), school fixed effects and Liang-Zeger robust standard errors clustered at the class level. Column (2) uses the same specifications as in column (1) but Liang-Zeger robust standard errors are clustered at the school level. Columns (3) and (4) report p-values providing control of the familywise error rate. These are implemented using the *rwolf2* command in Stata using our preferred specification and clustering while relying on 100,000 bootstrap replications (see *Clarke, Romano, and Wolf 2020*).

Appendix B: Information letter and Questionnaire

Appendix B.1: Information letter provided to the parents (translated from Catalan)

Dear families,

we would like to inform you that the school of your child will participate in a project led by researchers from Universitat Pompeu Fabra, Universitat de Barcelona and Universität Würzburg (in Germany). These researchers will visit the school within the next few days and will ask all students enrolled in 1st and 2nd grade of Compulsory High School [6th and 7th grade] to participate in a survey as well as in some mathematical quizzes. The researchers will compensate all participating students with a voucher of a symbolic amount that can be exchanged at any Abacus [stationary] store nearby.

The answers of the students to the survey and the mathematical quizzes will be anonymous. The researchers will share with the school only the aggregated results once the project is finished.

Please find attached a document where you can find more details about the research project.

Thank you for your attention.

Lídia Farré (Professor at the University of Barcelona)

Research project: The impact of public policies on the cognitive and non-cognitive development of children

Principal investigator: Lídia Farré (Universitat de Barcelona)

Main goal of the project: The objective of the research project is to determine the effects of different public policies on the cognitive and non-cognitive development during childhood.

Methodology: The researchers will visit the school and will ask all students attending 1st and 2nd grade of Compulsory High School [6th and 7th grade] to participate in a survey as well as some mathematical quizzes. The participation in the study will last approximately 30 minutes.

Risks and benefits of participation: Students will participate in a study that will help to improve the design of public policies. To acknowledge their participation in the study, students will receive a voucher to be exchanged at a local stationary store (Abacus). Participating students must exert some effort, in particular they must concentrate and focus on a screen for 20-30 minutes in order to complete the exercises. As such there is a slight risk of fatigue. In addition, some children might find it stressful to solve simple mathematical quizzes (additions) under time pressure.

Privacy: To protect privacy, children's responses will be kept completely anonymous. Any results that will be shared or made public will refer only to the aggregate responses of children attending multiple schools and will be done so in a completely anonymized way. As such, it is impossible to identify neither the school nor the municipality.

Voluntary Participation: Participation in this project is completely voluntary. We will inform students that their participation is voluntary, and that they can withdraw at any time without having to justify their decision. We will also request the explicit consent by the teacher.

If you have any questions about the study, please contact: Lidia Farré (lidia.farre@ub.edu).

Appendix B.2: Questionnaire

START

INFORMATION AND CONSENT
We are conducting a research project to analyze the impact of public policies on the cognitive and non-cognitive development of children and adolescents. The principal investigator on the project is Dr. Lídia Farré from the University of Barcelona.

I CONFIRM that:

- the information about the research project has been read to me,
- I have been able to ask questions about the project,
- I have received enough information about the project.

I UNDERSTAND that my participation in the project is voluntary and that I can withdraw from it at any time without having to justify my decision. I GIVE MY CONSENT to take part in this research project

Yes – No

I. ATTITUDES

We are now going to ask you some questions. Please answer these questions sincerely. We want to know what you really think. No one will know how you chose to respond. There are no right or wrong answers.

1. Read the following statements and say whether you: Strongly agree / Agree / Neither agree nor disagree / Disagree / Strongly disagree.

a) A mother who goes out to work can have just as good a relationship with her children as a mother who does not go out to work.

b) It can be bad for a child under the age of 3 if her mother goes out to work.

c) When a mother spends the whole day (morning and afternoon) out working, family life can suffer.

d) Having a job is fine, but what most women want is to form a family and have children.

e) Taking care of the home and family can make a woman just as happy as having a job.

f) Both partners, should bring money into the home.

g) The man should be the breadwinner while the woman should take care of the home and family.

h) When a woman earns more than her husband, there are certainly problems.

i) Both the mother and father should take leave from work for a few weeks after the birth of their son or daughter.

2.a) Do you think a **father** should work full-time (mornings and afternoons), part-time (mornings or afternoons only) or not work at all when his child has not yet started school (under the age of 3).

2.b) Do you think a **mother** should work full-time (mornings and afternoons), part-time (mornings or afternoons only) or not work at all when her child has not yet started school (under the age of 3).

- Shouldn't work at all.
- Should work part-time (mornings or afternoons only).
- Should work full-time (mornings and afternoons).
- I don't know
- I prefer not to answer

3. Imagine a family with a child who is still too young to go to school (under the age of 3). What do you consider the best way to organize their family and work life?

- The mother stays at home and the father goes out to work full-time (mornings and afternoons).
- The mother works part-time (mornings or afternoons only) and the father goes out to work full time (mornings and afternoons).
- Both the mother and father go out to work full-time (mornings and afternoons).
- Both the mother and father work part-time (mornings or afternoons only).
- The father works part-time (mornings or afternoons only) and the mother go out to work full-time (mornings and afternoons).
- The father stays at home and the mother go out to work full-time (mornings and afternoons).
- I don't know.

II. CONTEST

In this part of the study you have to complete three different tasks to win points. The number of points you win will depend on the number of correct answers you give when completing the tasks. Before beginning each task, we will give you instructions on how you can win points.

Test run

In the three tasks, you will be asked to add up 3 numbers. To get used to doing the task on the computer, you will now be allowed a 30-second test run. During the test run you cannot win any points.

1. Task 1 - Individual task

You will now have 2 minutes to do the sums. For each sum you get right, you will win 1 point. If you make a mistake, no points are deducted. This task is called the **individual task**.

2. Task 2 - Quiz

You have been put in a group with three boys or girls from your class (but you do not know who they are). As in task 1, you will have 2 minutes to do the sums. The boy or girl from your group that correctly solves most sums will receive 4 points for each correct answer. The rest of the group will not win any points. This task is called the **quiz**.

3. Task 3 - Choose the task type you want to do to win points

As in the previous tasks, you will have 2 minutes to do the sums. But now you have to choose which task you want to do: the *individual task* or the *quiz*. If you choose the *individual task*, you will win 1 point for each sum you get right. If you choose the *quiz*, you will only win points if you solve more sums than those solved by the same boys and girls in your group in task 2 above. If you choose the quiz, you will win 4 points for each correct answer.

Which task do you prefer to do to win points?
Individual task – Quiz

a) Task 3 - Individual task

You have chosen the individual task. As before, you have 2 minutes to do the sums. For each sum you get right, you will win 1 point. If you make a mistake, no points are deducted.

b) Task 3 – Quiz

You have chosen the quiz. As before, you have 2 minutes to do the sums. Now you will only win points if you solve more sums than those solved by the same boys and girls in your group in task 2 above. In this case, you will win 4 points for each correct answer.

4. This question is about the **quiz** you took in **task 2**. How well do you think you did in relation to the other members of your group? If you answer correctly, you will earn 4 points.

I finished: First, Second, Third, Last

5. We played this same game with boys and girls in the same grade as you but at a different school. Think again about the **quiz** you took in **task 2**.

How many boys and girls do you think there were among the three who got **the most points** at the **other** school? If you answer correctly, you will win 4 points.

How many boys and girls do you think there were among the three who got **the fewest points** at the **other** school? If you answer correctly, you will win 4 points.

3 boys, 2 boys and 1 girl, 1 boy and 2 girls, 3 girls

6. Now, to win points, you have to choose to take part in one of the following lotteries. It's like tossing a coin in the air and seeing if it lands as heads or tails. If you choose Lottery 1, you are guaranteed to win 5 points. In the other lotteries, the number of points you win depends on how lucky you are. If you choose Lottery 2, you can win either 4 point or 8 points, etc.

Lottery 1 - 5 points or 5 points
Lottery 2 - 4 points or 8 points
Lottery 3 - 3 points or 10 points
Lottery 4 - 2 points or 12 points
Lottery 5 - 1 point or 14 points
Lottery 6 - 0 points or 15 points

III. NORMS

You will now play a game with a classmate but you won't know who he or she is. In this game, we will ask you both the same question. For example: **Do you think it will rain tomorrow?** If you both give the same answer, you will each win 2 points. If you give different answers, neither of you will win any points. If you have any doubts, please raise your hand.

Test Question 1: If your partner says "Yes, it'll rain tomorrow", what must you answer to win two points?

Yes, it'll rain tomorrow - No, it won't rain tomorrow
Correct answer. Incorrect answer. To win points, you must give the same answer as your partner.

Test Question 2: If your partner thinks that you will answer: "No, it won't rain tomorrow", what must your answer be to win two points?
Yes, it'll rain tomorrow - No, it won't rain tomorrow
Correct answer. Incorrect answer. If your partner thinks that you will answer: "No, it won't rain tomorrow", he or she will answer: "No, it won't rain tomorrow". When he or she answers, "No, it won't rain tomorrow", you must answer: "No, it won't rain tomorrow" to win points.

Test Question 3: To win points in this game, do you think it's important that it rains tomorrow?
Yes – No
Correct answer. Incorrect answer. In this game, tomorrow's weather (whether it rains or not) is not important to win points. What is important is that you and your partner give the same answer.

1. Let's start the game. We are now going to ask you and your partner if you think it'll rain tomorrow. If you give the same answer, you will each win 2 points. If you give different answers, neither of you will win any points.
Do you think it will rain tomorrow? Yes, it'll rain tomorrow - No, it won't rain tomorrow

2. Let's continue playing the game. We are now going to ask you and your partner if you think it is appropriate to copy in an exam. When we say "appropriate", we refer to behavior that most people think is correct or good. In contrast we say that behavior is "inappropriate" when most people think it is incorrect or bad. If you and your partner give the same answer, you will each receive 4 points.
Copying in an exam: Is appropriate, Is fairly appropriate, Is fairly inappropriate, Is inappropriate

3. We are now going to ask you and your partner four more questions. Remember, only if you give the same answer will you each receive 4 points.

a) That a **mother** goes out to work **full-time** (mornings and afternoons) when her child has not yet started school (under the age of 3).

b) That a **mother** goes out to work **part-time** (only mornings or afternoons) when her child has not yet started school (under the age of 3).

c) That a **father** goes out to work **part-time** (only mornings or afternoons) when his child has not yet started school (under the age of 3).

d) That a **father does not go out to work** at all so as to look after his child when the child has not yet started school (under the age of 3).

Is appropriate, Is fairly appropriate, Is fairly inappropriate, Is inappropriate

4. How do you think most people in your class responded to the following statement: “The man should be the breadwinner while the woman should take care of the home and family”. If you answer correctly, you will win 5 points. Strongly agree / Agree / Neither agree nor disagree / Disagree / Strongly disagree.

IV. OUTCOMES

We are now going to ask you some questions about how you see yourself in the future. Please answer these questions sincerely and, remember, no one will know how you chose to respond.

1. How do you see yourself in 20 years’ time?

- I’ll have children and not go out to work
- I’ll have children and go out to work part-time (only mornings or afternoons)
- I’ll have children and go out to work full-time (mornings and afternoons)
- I’ll go out to work and I’ll have no children
- I’ll not go out to work and I’ll have no children

2. What do you want to be when you grow up? Choose just ONE of the jobs on the list:

- Football player
- Police officer
- Primary or Secondary school teacher
- Scientist
- Architect
- Engineer
- Doctor
- Firefighter
- Vet
- Computer scientist
- Hairdresser
- Singer or Musician
- Nurse
- Actor
- Gymnast or Dancer
- Designer
- Journalist
- Lawyer or Judge
- Biologist

If the job you’d like to do is not on the list, write it here:

V. DEMOGRAPHICS

1.a) What year were you born in?
1.b) What month were you born in? January, February, March, April, May, June, July, August, September, October, November, December
1.c) What day were you born on? Between the 1st and the 12th, between the 13th and the 23rd, between the 24th and the 31st

2. Are you a boy or a girl? Boy, Girl

3.a) Where were you born?
3.b) Where was your **mother** born?
3.c) Where was your **father** born?
Pilot: In Catalonia, somewhere in the rest of Spain, in another country, I don't know

Main: Morocco, Romania, Ecuador, Another European country, Another African country, Another American country, An Asian country, Other, I don't know

4.a) Do you live with your **mother**?
4.b) Do you live with your **father**?
Yes; No; Yes, some days; Yes, most days

5.a) Does your **mother** have a job?
5.b) Does your **father** have a job?
Yes, a full-time job (mornings and afternoons)
Yes, a part-time job (only mornings or afternoons)
No; I don't know

6.a) Did your **mother** go to college?
6.b) Did your **father** go to college?
Yes, No, I don't know

7.a) How many **older brothers** do you have?
7.b) How many **older sisters** do you have?
7.c) How many **younger brothers** do you have?
7.d) How many **younger sisters** do you have?
0; 1; 2; more than 2
Including stepbrothers and stepsisters

VI. MECHANISM

We now ask you some questions about you and your family. You should tell us who normally does the chores in the house. We also want to know about you and which of the chores you do.

1. Who normally does these chores around your house?

a) Wash the clothes and put them away.

b) Do small repair jobs. For example, hang a picture, repair a door knob, paint a wall.

c) Go to the supermarket or the market.

d) Clean the house.

e) Cook.
Always my mother; My mother more than my father; Always my father; My father more than my mother; Both my father and my mother; Another person; My parents don't live together; I don't know

2. What about you? When do you do these chores or when do you help out with them?

At least once a week; Occasionally (less than once a week); Almost never; Never

3. We want you now to think about your parents,

a) Who helps you with your homework?

b) Who stays at home when you are sick?

c) Who spends more time with you on weekends?

d) Who's home when you get back from school?

e) Who do you talk to when you're worried or have a problem?

f) Who's home when you eat at night?

g) Who asks you if you've had a good day?

Always my mother; My mother more than my father; Always my father; My father more than my mother; Both my father and my mother; Another person; My parents don't live together; I don't know

3. Now we would like to know if you think your father is a supporter of feminism.

Yes, No, I don't know, I prefer not to answer

VII. OPTIONAL

1. We are now going to ask you some more questions about yourself. Please answer these questions sincerely and, remember, no one will know how you chose to respond.

a) When someone does me a favor, I am more than willing to return that favor.

b) I assume people's intentions are always good.

c) I am in the habit of putting off until later work I know it would be better to finish right away.

d) This statement does not describe me at all; This statement describes me perfectly

e) Do you like to take risks or take risky actions?

f) Do you like to make donations to a good cause without expecting anything in return? I usually put off until tomorrow the jobs I should get done today

This statement does not describe me at all; This statement describes me perfectly

2. To finish, we would like you to answer the following questions. You should answer either True or False

a) I always show respect to the elderly:

b) Sometimes I don't feel like doing what the teacher asks us to do:

c) I sometimes feel like throwing or breaking things:

d) I am never disrespectful to my parents or answer them back:

e) When I make a mistake, I'm the first to admit it:

f) I sometimes laugh at people:

g) I always wash my hands before eating:

h) I sometimes feel like lazing around and not going to school:

i) I have never been tempted to break the rules or the law:

j) Sometimes I don't feel like helping my parents out even though I know they need my help around the house:

k) I sometimes say things just to impress my friends:

l) I never shout when I'm angry:

3. And last but not least:

a) What do cows drink?

b) If I have 3 apples and you take away 2, how many apples do you have?

c) A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?

PAYMENT

Thank you very much for taking part. The following page shows how many euros you have contributed to the voucher we will give to your school.