

DISCUSSION PAPER SERIES

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Expectations**

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## ABSTRACT

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# The Causal Impact of Gender Norms on Mothers' Employment Attitudes and Expectations\*

This field experiment investigates the causal impact of mothers' perceptions of gender norms on their employment attitudes and labor-supply expectations. We provide mothers of young children in Germany with information about the prevailing gender norm regarding maternal employment in their city. At baseline, over 70% of mothers incorrectly perceive this gender norm as too conservative. Our randomized treatment improves the accuracy of these perceptions, significantly reducing the share of mothers who misperceive gender norms as overly conservative. The treatment also shifts mothers' own labor-market attitudes towards being more liberal—and we show that specifically the shifted attitude is a strong predictor of mothers' future labor-market participation. Consistently, treated mothers are significantly more likely to plan an increase in their working hours one year ahead.

**JEL Classification:** J16, J18, J22, C93

**Keywords:** gender norms, maternal employment, gender equality, randomized controlled trial

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## 1. Introduction

Gender inequalities in paid and unpaid work remain a fundamental challenge, even in highly developed countries like Germany. It is well established that the arrival of children persistently reduces mothers’ labor-market attachment by increasing care-related work at home (see, e.g., Kuziemko et al., 2018; Andresen and Nix, 2022a,b). A key question is why women continue to shoulder primary child care responsibilities and reduce their labor-market participation after becoming mothers, although they have caught up to (or even surpassed) men in their education and pre-parenthood labor-market outcomes. One possible explanation is that mothers are influenced by actual or perceived gender norms. Indeed, there is a striking positive cross-country correlation between the extent of gender inequalities in the labor market and the conservativeness of gender norms related to mothers’ labor-market participation (Steinhauer, 2018; Kleven et al., 2019). However, very little is known about the malleability of (perceived) gender norms among mothers, and how they affect mothers’ labor-market behavior.

We study the causal effect of correcting mothers’ misperceptions of gender norms on their attitudes towards maternal employment and labor-supply expectations. Importantly, our sample comprises mothers with children about three years old, who are on the cusp of re-entering the labor market. This makes our sample particularly relevant for analyzing the effects of gender norms directly addressing these mothers. Descriptive evidence demonstrates a strong correlation between the magnitude of the “child penalty”—the labor-market impact of parenthood on women relative to men—and prevailing gender norms addressing mothers across countries and regions (Kleven et al., 2019; Kleven, 2024). This evidence underscores the potential of addressing these norms for improving mothers’ labor-market success (Bertrand et al., 2015; Blau and Kahn, 2017). However, establishing a causal relationship between gender norms and labor-market outcomes is challenging, as norms are often deeply rooted in societies (Alesina et al., 2013), highly persistent, and typically lack exogenous variation. To overcome this identification problem, we leverage the fact that individuals frequently misperceive prevailing norms. Correcting these misperceptions through targeted information interventions offers an opportunity to causally examine how aligning perceptions with actual norms can influence labor-market-relevant outcomes (Bursztyn and Yang, 2022; Bursztyn et al., 2023).

We conduct a randomized field experiment with 451 mothers of children aged between 2.5 and 3.5 years in two German cities. Germany provides an interesting context for studying gender norms and mothers’ labor-market behavior: First, while gender inequalities in the labor market are relatively small before parenthood, post-childbirth inequalities

between mothers and fathers are among the largest in OECD countries (Kleven et al., 2019; Ilieva and Wrohlich, 2022; OECD, 2023). Second, Germany is among the countries with the most conservative gender norms regarding mothers’ labor-market participation (ISSP, 2016).

Our experimental design consists of two consecutive surveys conducted with the same mothers. The first survey collects detailed data on mothers’ gender attitudes (i.e., their personal views on gender roles) and their perceptions of the prevailing gender norms in their city (i.e., their beliefs about gender attitudes of their environment).<sup>1</sup> To obtain a comprehensive picture of actual and perceived gender norms, we examine norms related not only to maternal and paternal labor supply, but also to the division of housework, child care obligations, and earnings. This approach helps identify potentially misperceived norms that could be targeted in an information intervention. In the second survey, conducted nine months later, we implement a randomized information treatment to correct misperceptions about the gender norm that was most strongly misperceived in the first survey. We then assess treatment effects on mothers’ perceptions of gender norms, their personal attitudes, and their labor-supply expectations.

Our descriptive analysis of the first survey reveals substantial misperceptions of various gender norms, with mothers frequently overestimating the conservativeness of prevailing norms. Misperceptions also vary widely across norms: while perceptions of norms about paternal labor supply and unpaid work are relatively accurate, norms concerning maternal labor supply are strongly misperceived. The most misperceived norm concerns the statement, *“Mothers with children below the age of 3 should not work.”* Only 17% of mothers in our sample agree with this statement (i.e., actual norm), yet they believe, on average, that 40% of other mothers in their city agree with it (i.e., perceived norm). Put differently, 71% of mothers perceive the norm in their city as more conservative than it actually is. Notably, this particular gender norm is strongly correlated with actual labor-market participation, both contemporaneously and in the future, highlighting its relevance for understanding mothers’ employment decisions. The norm’s strong predictive power for labor-market outcomes, combined with its widespread misperception, makes it a ideal target for our information treatment.

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<sup>1</sup>Following Bursztyn et al. (2023), we distinguish between “attitudes,” referring to mothers’ own normative views; “norms,” referring to average attitudes among respondents; and “perceptions,” referring to beliefs about others’ average attitudes (i.e., norms). These attitudes and perceptions are sometimes termed “personal normative beliefs” and “normative expectations,” respectively (Bicchieri, 2006).

In the second survey, we implement a randomized treatment informing mothers about the actual level of agreement with the statement concerning maternal labor supply in their city. This treatment significantly shifts mothers’ perceptions, reducing the likelihood that they believe their reference network (i.e., friends and acquaintances) agrees with the statement by 7.8 percentage points (pp), or 27% relative to the control-group mean.<sup>2</sup> The treatment also improves the accuracy of incentivized perceptions about the share of women in Germany agreeing to the following related statement “*When a mother works, her children suffer.*” Mothers in the control group significantly overestimate agreement with this statement (37.5% perceived agreement vs. 25.9% actual agreement). The treatment lowers these perceptions by 8.5 pp, decreasing the likelihood of overly conservative perceptions by 19 pp.

Next, we study treatment effects on mothers’ own attitudes towards maternal labor supply. The treatment significantly reduces their conservativeness, lowering the likelihood that they agree with the statement that mothers with children below age 3 should not work by 6.6 pp—a 24% decrease compared to the control-group mean. Consistent with rational information-based updating (Bleemer and Zafar, 2018), this effect is especially pronounced among mothers who overestimated the norm’s conservativeness prior to the treatment and among those with low confidence in their pre-treatment beliefs. Furthermore, the treatment is particularly effective for mothers with moderate pre-treatment attitudes—those whose views on various aspects of gender roles were neither strongly conservative nor liberal in the first survey.<sup>3</sup>

Finally, we examine how the treatment affects mothers’ labor-supply expectations. Specifically, we elicit how many hours mothers expect to work one year after the survey. The treatment increases the likelihood that mothers plan to expand their current working hours by 18%—either by entering employment (extensive margin) or by increasing working hours when already employed (intensive margin). This effect is most pronounced among mothers who face fewer barriers to employment, such as those with access to child care services and with partners actively involved in caregiving. Furthermore, the treatment effect is particularly strong for mothers whose own mothers worked full-time during

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<sup>2</sup>The impact on perceptions about mothers’ reference network is critical, as it is the norms held within these close circles that ultimately determine behavior (e.g., Bicchieri and Dimant, 2022).

<sup>3</sup>Further analyses shows that the information treatment does not change mothers’ beliefs regarding how transitioning to full-time employment would affect other key life outcomes, such as family income, career prospects, personal well-being, or child development. Thus, the treatment does not impact “best-practice considerations” (Grewenig et al., 2020), a concept suggesting that social norms can serve as heuristics or practical guidelines for what behaviors to adopt to achieve desired outcomes (see, e.g., Cialdini and Goldstein, 2004).

their adolescence, suggesting that exposure to progressive role models during these formative years may amplify responsiveness to information about gender norms. Notably, the treatment predominantly affects the intensive margin, possibly because increasing hours within an existing job is easier to plan and forecast than entering new employment.

In summary, our results demonstrate that providing accurate information about prevailing gender norms regarding maternal employment not only affect mothers’ perceptions of gender norms, but also shapes their own gender attitudes and labor-supply expectations. These findings are externally valid for mothers with young children across Germany, as applying propensity score weights derived from a representative population produces very similar results. Furthermore, all effects remain statistically significant after adjusting for multiple hypothesis testing and employing randomization inference.

We present the first experimental evidence on how providing information about gender norms affects mothers’ employment attitudes and labor-supply expectations. Doing so, we contribute to multiple strands of literature. First, we add to the literature on the role of gender norms in driving gender gaps in the labor market (see Olivetti et al., 2024, for a recent overview). While existing studies generally examine women as a broader category rather than focusing specifically on mothers, they demonstrate that women’s labor-market outcomes are influenced by their social or cultural backgrounds (Fernández et al., 2004; Fernández, 2007; Fernández and Fogli, 2009; Alesina et al., 2013; Olivetti et al., 2020; Boelmann et al., 2024). These results are often interpreted as evidence for the importance of social norms. However, such interpretations mainly rely on indirect evidence, as women’s social or cultural backgrounds—usually measured as the cultures in which they grew up—include a diverse array of customs, beliefs, and collective experiences beyond specific gender norms. Some studies employ direct survey-based measures of gender norms and show correlations with women’s labor-market outcomes (Fortin, 2005; Giavazzi et al., 2013; Fortin, 2015), but few focus explicitly on mothers (Steinhauer, 2018; Kleven et al., 2019). Our work complements this largely descriptive literature by experimentally isolating the causal impact of perceived gender norms on mothers’ outcomes.

Closest to our work, a few recent experimental studies investigate how providing information about prevailing gender norms affects outcomes related to female labor supply. Bursztyn et al. (2020) show in the context of Saudi Arabia’s male guardianship system that altering married men’s perceptions of norms about female labor supply increases

their likelihood of allowing their wives to join the labor force.<sup>4</sup> Focusing on norms regarding maternal labor supply, Cortés et al. (2024) find that providing information prompts a representative sample of U.S. residents to make less conservative recommendations regarding mothers’ labor supply in hypothetical scenarios. Additionally, Grewenig et al. (2020) show that information about maternal and paternal labor-supply norms reduces teenage boys’ and girls’ labor-supply expectations when envisioning themselves as parents. Importantly, this literature has focused on the effects of providing gender-norm information to secondary parties, such as husbands, the general population, or adolescents, rather than those whose labor-supply decisions are directly addressed by the norm. Our study extends this research by examining how information about gender norms regarding the labor supply of mothers with young children influences these mothers themselves.

By studying the effects of correcting misperceptions of gender norms among mothers with young children on the verge of re-entering the labor market, we also contribute to the literature on child penalties. It is well-documented that gender gaps in the labor market typically emerge following childbirth (see, e.g., Bertrand et al., 2010; Angelov et al., 2016; Kuziemko et al., 2018; Kleven et al., 2019), yet the underlying causes of these child penalties remain insufficiently understood. Recent evidence indicates that these penalties are not inherent to the biological mother-child relationship (e.g., Kleven et al., 2021; Andresen and Nix, 2022b), but are instead shaped by socialization factors. We demonstrate that social norms play a causal role in driving child penalties by showing that providing accurate information about these norms impacts mothers’ labor-market-related outcomes. The fact that these gender norms are often misperceived as overly conservative and can be corrected through targeted information highlights the potential of such interventions to mitigate the negative effects of childbirth on women’s careers.<sup>5</sup>

The remainder of this paper is structured as follows: Section 2 provides institutional background on gender norms and maternal labor supply in Germany. Section 3 describes our sample. Section 4 presents descriptive results on actual and perceived gender norms in our sample. Section 5 outlines our experimental design and reports the experimental results. Section 6 concludes.

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<sup>4</sup>Under the male guardianship system, women must obtain permission from their male guardians—typically husbands or fathers—for major life decisions. This system does not exist in Western countries, with such customs abolished in Germany in 1957 (Grewenig et al., 2020).

<sup>5</sup>Growing descriptive evidence shows the extent to which gender norms are misperceived in societies. For instance, Bursztyn et al. (2023) compare actual and perceived gender norms concerning (i) allowing women to work outside the home and (ii) prioritizing women for leadership positions across 60 countries. Brosch et al. (2024) document regional discrepancies within Germany between actual and perceived norms related to the labor supply of mothers and fathers.



## 2. Institutional Setting: Gender Norms and Maternal Labor Supply in Germany

We examine gender norms and labor-market outcomes in Germany, a particularly relevant setting for several reasons: While large child penalties are observed globally (Kleven et al., 2019, 2023; Hermes et al., 2024), mothers in Germany experience one of the highest child penalties among OECD countries (OECD, 2017; Kleven et al., 2019). Among parents of children under three in Germany, only 36% of mothers are in paid employment compared to 87% of fathers. This gap is even more striking for full-time employment: just 11% of mothers, versus 83% of fathers, work full-time, resulting in a 72 pp gender gap (BPB, 2021). These disparities persist as children grow older, since mothers typically assume greater child care responsibilities, leading to reduced participation in paid work. For instance, even when the youngest child is 15 to 17 years old, the gender gap in full-time employment remains substantial at 54 pp (BPB, 2021).

At the same time, gender norms in Germany are very conservative, especially for mothers with young children. According to the International Social Survey (ISSP, 2016), 90% of Germans believe that mothers with children below school age should not work more than part-time, with 23% believing these mothers should not work at all and 67% believing they should work part-time. Among the 41 countries surveyed by the ISSP (2016), Germany ranks in the top tertile for conservatism in gender norms.<sup>6</sup>

Turning to perceptions of gender norms, Bursztyn et al. (2023) demonstrate that misperceptions of such norms are widespread globally. While their findings focus on gender norms about women in general rather than specifically mothers, Cortés et al. (2024) show that a representative sample of the U.S. population also holds misperceived beliefs about gender norms related to maternal labor supply. Our data reveal significant misperceptions among mothers themselves, not only about maternal labor supply but also about paternal labor supply and the division of unpaid work.

Labor-market participation for mothers with young children in Germany is closely tied to access to child care. While many parents face challenges securing slots for children under three (Hermes et al., 2024), over 90% of children aged three and older are enrolled in child care (*Kindergarten*), potentially enabling mothers to return to work or increase their working hours (Destatis, 2024). However, most mothers do not transition to full-

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<sup>6</sup>For historical reasons, gender norms in East Germany are less conservative than in West Germany (EVS, 2011; Boelmann et al., 2024). Since our experiment is conducted in two cities in Rhineland-Palatinate, a federal state in Western Germany, it is reassuring that gender norms in this region are consistent with those observed across Western Germany overall (Brosch et al., 2024).

time employment as their children grow older. The prevalence of part-time work among mothers is exceptionally high in Germany relative to other OECD countries (OECD, 2020; Müller and Wrohlich, 2020; Ilieva and Wrohlich, 2022).<sup>7</sup> At the same time, mothers frequently express a desire to work more than they currently do (Mueller et al., 2018; Geis-Thöne, 2021). We examine whether (misperceived) gender norms constitute an additional barrier hindering mothers’ labor-market participation.

### 3. Sample

Our analytical sample consists of 451 mothers with children aged around three years, residing in the German federal state of Rhineland-Palatinate. We sampled these mothers from birth registry data of two medium-sized cities. We conducted a total of four surveys with these mothers, creating a comprehensive panel dataset (see Appendix Figure A1 for the timeline of the surveys). In the following, we describe the two most recent surveys, which are most relevant to this paper. For exposition, we refer to these surveys as “first survey” and “second survey” throughout. However, some control variables are drawn from the earlier surveys (see Appendix Table B1 for an overview).

The first survey, conducted in spring 2020, used computer-assisted telephone interviews to collect data on mothers’ gender attitudes and perceptions of various gender norms (see Section 4 for the survey wording). Mothers received 20 EUR for participating in the survey. One objective of this survey was to elicit the actual gender norm among these mothers. We do so by asking mothers about their attitudes regarding different statements about gender roles and aggregate their answers on the city level. An additional purpose of this survey was to examine mothers’ perceptions of gender norms in their cities to investigate whether mothers misperceive gender norms and whether these misperceptions vary depending on the type of norm.

In the second survey, conducted in winter 2020, we implemented the information provision experiment via an online survey. Following the collection of sociodemographic information, we reassessed mothers’ perceptions of the gender norm regarding maternal employment. Mothers in the treatment group were then informed about the actual gender norm in their city (see Section 5.1 for details). Mothers were pre-randomized into treatment and control groups using the following stratification variables: city of residence, employment status, migration background, and a dummy indicating whether they had

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<sup>7</sup>Part-time work is particularly common in West Germany, where our study takes place. Accordingly, child penalties are substantially larger in West Germany than in East Germany (Lim and Duletzki, 2024).

perceived gender norms in their city as overly conservative in the first survey. After the treatment, we collected data on (i) mothers’ perceptions about gender norms held by their friends, acquaintances, and women in Germany more broadly, (ii) their own gender attitudes, and (iii) their labor-market plans. Mothers were paid 15 EUR for participating in the survey and had the opportunity to earn an additional EUR 5 during the survey.

Conducting these two surveys enabled us to carefully design the information experiment in the second survey by leveraging insights gained from the first. The first survey provided precise data on actual gender norms in the two cities, allowing us to measure whether gender norms were misperceived — an essential prerequisite for an effective information experiment. Additionally, it revealed which gender norms and attitudes were correlated with labor-market outcomes (in fact, we can show this both contemporaneously and for outcomes measured nine months later in the second survey; for details, see Figure 2 and Appendix Figure C1). For the information treatment in the second survey, we chose the gender norm that was most misperceived and strongly correlated with maternal labor supply.

Table 1 summarizes the pre-treatment characteristics of our analytical sample (see Appendix Table B1 for details about the variables). The upper panel of Table 1 reports pre-treatment outcomes for mothers’ perceptions of gender norms, their attitudes towards employment, and their labor-market participation. To measure perceptions of gender norms, we asked mothers how many out of 100 mothers with children aged 2–3 years in their city they believed agreed with the statement: *Mothers with children under 3 years should not work*. On average, mothers estimated that 40 (first survey) and 41 (second survey) out of 100 would agree with the statement. In reality, only 17% of mothers agreed with the statement, meaning the majority of mothers (71% in the first survey and 75% in the second) overestimated this share, perceiving their environment as more conservative than it actually was.<sup>8</sup> Regarding pre-treatment employment, mothers in our sample work on average 14 hours per week (counting the 45% of mothers who do not work with zero hours).

The middle panel of Table 1 shows sociodemographic characteristics of mothers and their children. On average, mothers are 34 years old, and their children are approximately 35 months (three years) old. About 36% of mothers do not have a college entrance degree (“Abitur”) and 32% have a migration background (i.e., were not born in Germany). The average net household income per month is 3,440 EUR. Additionally, 24% of mothers

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<sup>8</sup>In Section 4 and Table 2, we present additional descriptives on perceptions and attitudes regarding other aspects of gender roles.

have a younger child than the target child, with these younger children being, on average, 10 months old. About 6% of mothers are pregnant at the time of the interview.

In 98% of households, the mother serves as the main caregiver, while in 42% of households, the mother’s partner contributes at least one hour of child care per week. Furthermore, 52% of mothers participated in a previous intervention (see Hermes et al., 2024, for details); while we always control for the prior treatment status, its inclusion does not affect our results.

The lower part of Table 1 summarizes the strata variables used in the randomization. These include maternal employment from the first survey (56%), migration background (32%), city of residence (69% live in City A, 31% live in City B), and whether mothers overestimated gender norms in the first survey; as mentioned above, 71% did.

The following section presents descriptive findings from our first survey about maternal gender attitudes and perceptions of gender norms. Section 5 outlines the experiment conducted in the second survey, detailing the treatment, empirical strategy, and results.

Table 1: Analytical Sample (Mothers): Descriptives and Balancing Tests

	All (1)	Control (2)	Treatment (3)	$\Delta(3)-(2)$ (4)	p-val for (4) (5)	Observations (6)
<b>Pre-treatment outcomes</b>						
Statement: <i>Mothers with children below the age of 3 should not work</i>						
First survey:						
Agreement (1:Yes, 0: No)	0.165	0.141	0.191	0.050	0.176	405
Agreement, missing	0.102	0.100	0.104	0.003	0.912	451
Perception of agreement	0.397	0.398	0.397	0.001	0.947	406
Perception of agreement, missing	0.100	0.105	0.095	-0.010	0.718	451
Second survey:						
Perception of agreement	0.406	0.392	0.420	0.028	0.202	451
Mothers' working hours (0 if not working)	14.35	14.89	13.78	-1.11	0.442	444
Mothers' working hours, missing	0.016	0.013	0.018	0.005	0.674	451
<b>Sociodemographic characteristics</b>						
Age of mother (in years)	33.64	33.64	33.65	0.01	0.973	436
Age of mother, missing	0.033	0.026	0.041	0.015	0.398	451
Age of child (in months)	34.76	34.43	35.10	0.674	0.043	451
Mother has no college entrance degree	0.364	0.345	0.383	0.038	0.404	451
Household income	3440	3500	3377	-122	0.519	437
Household income, missing	0.031	0.026	0.036	0.010	0.549	451
Mother has younger child	0.242	0.249	0.234	-0.015	0.717	451
Age of younger child (in months)	9.61	9.56	9.66	0.100	0.934	107
Age of younger child, missing	0.004	0.004	0.005	0.000	0.982	451
Mother is pregnant	0.060	0.057	0.063	0.006	0.779	451
Mother is maincarer	0.980	0.974	0.986	0.013	0.334	451
Father is involved in child care	0.424	0.430	0.419	-0.011	0.815	451
Family participated in previous intervention	0.517	0.546	0.486	-0.059	0.208	451
<b>Strata variables</b>						
Mother works (first survey)	0.557	0.555	0.559	0.004	0.933	451
Migration background	0.317	0.310	0.324	0.014	0.745	451
City A	0.687	0.686	0.689	0.004	0.934	451
City B	0.313	0.314	0.311	-0.004	0.934	451
Overestimator (first survey)	0.709	0.698	0.721	0.024	0.598	406
Overestimator, missing	0.100	0.105	0.095	-0.010	0.718	451

*Notes:* Table reports means of pre-treatment attitudes, perceptions, and labor-market outcomes, as well as sociodemographic characteristics of mothers in our analytical sample. Most of the variables come from the first or the second survey, for a detailed overview of the collection dates see Appendix Table B1. Column (1) reports means for the full sample, Column (2) for the control group, and Column (3) for the treatment group. Column (4) shows the difference between the means of the treatment and control groups, and Column (5) shows the p-value of a two-sided t-test which tests the null hypothesis that the means in Columns (2) and (3) are equal. *First Survey: Agreement (1:Yes, 0: No)* is a dummy equal to one if the mother agrees to the statement *Mothers with children below the age of 3 should not work* in the first survey, zero otherwise. *First Survey: Agreement, missing* is a dummy equal to one if the mother did not participate in the first survey ( $n = 43$ ) or the mother did not answer the question ( $n = 3$ ), zero otherwise. *First Survey: Perception of agreement* is mothers' perception of the share of other mothers in their city agreeing to the statement: *Mothers with children below the age of 3 should not work* in the first survey. In our regression, we do not explicitly include this variable. However, one of our stratification variables (see below) is a binary indicator of whether the mother overestimated the proportion of other mothers who agreed with this statement. *First Survey: Perception of agreement, missing* is a dummy equal to one if the mother did not participate in the first survey ( $n = 43$ ) or the mother did not answer the question ( $n = 2$ ), zero otherwise. *Second Survey: Perception of agreement* is mothers' perception of the share of other mothers in their city agreeing to the statement: *Mothers with children below the age of 3 should not work* in the second survey. *Mothers' working hours (0 if not working)* indicates mothers' hourly working hours in the second survey. *Mothers' working hours, missing* is a dummy equal to one if the mother did not answer the question ( $n = 7$ ), zero otherwise. *Mother has no college entrance degree* is a dummy equal to one if the mother has no college entrance degree ("Abitur"), zero otherwise. *Household income* is the net monthly household income in EUR. *Household income, missing* is a dummy equal to one if the household income was not reported ( $n = 14$ ). *Mother has younger child* is a dummy equal to one if the mother has a child younger than the focus child. *Mother is pregnant* is a dummy equal to one if the mother is pregnant at the time of the survey. *Mother is main caregiver* is a dummy equal to one if the mother is the main caregiver of the child, zero otherwise. *Father is involved in child care* is a dummy equal to one if the father spends at least one hour per week in caregiving for the child, zero otherwise. *Family participated in previous intervention* is a dummy equal to one if the family participated in a previous intervention (see Hermes et al., 2024, for details). *Mother works* is a binary variable equal to one if the mother reported working at the time of the first survey, and zero otherwise. In cases where the mother did not provide information on her current working status, we approximate it using her reported pre-birth working status. *Migration background* is a dummy equal to one if the mother was not born in Germany, zero otherwise. *City A / City B* indicates in which of the two sample cities the mother lives. *Overestimator* is a binary indicator of whether the mother overestimated the proportion of other mothers who agreed with the statement: *Mothers with children below the age of 3 should not work* in the first survey (allowing for a range of 0.5 standard deviations around the actual value). In our stratification, we did not allow for a range of 0.5 standard deviations around the true value, resulting in eight more mothers overestimating the conservativeness in their environment. *Overestimator, missing* is a binary variable indicating that the mother did not participate in the first survey.

## 4. First Survey: Gender Attitudes and Perceptions of Gender Norms

### 4.1. Pre-Treatment Gender Attitudes

In the first survey, we assess mothers' gender attitudes by asking whether they agree (yes/no) with the following statements:

1. Mothers with children below the age of 3 should not work.
2. Mothers and fathers should divide the housework equally.
3. A woman should earn at most as much as her partner.
4. Mothers and fathers should equally share caring obligations for the child.
5. Fathers with children below the age of 3 should work at most part-time.
6. Mothers with children below the age of 3 should work at most part-time.
7. Fathers with children below the age of 3 should not work.

This approach allows us to capture attitudes towards maternal and paternal labor supply, gender equality in earnings, and the division of household and childcare responsibilities between parents. Column (1) of Table 2 reports the share of mothers agreeing with each statement.<sup>9</sup> The findings reveal that mothers hold relatively conservative attitudes towards maternal full-time employment (63% agree with statement 6) but relatively liberal attitudes towards maternal employment overall (only 17% agree with statement 1).<sup>10</sup> This contrast is reflected in mothers' pre-treatment behavior: while 54% of mothers work, only 19% work full-time in the first survey.

Regarding statements about fathers, few mothers believe that fathers should reduce their working hours: 21% agree that fathers with children under 3 should work at most part-time, and only 3% of mothers agree that fathers should not work at all. Interestingly, a large majority of mothers endorse equality in unpaid work, with 87% agreeing that housework should be shared equally and 79% agreeing that childcare responsibilities should be divided equally. This finding highlights the multiplicity of norms, as most mothers advocate for shared unpaid work while simultaneously supporting (at most) part-time paid employment for mothers. Finally, only 12% of mothers agree that women should

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<sup>9</sup>These results are based on the subset of the analytical sample (second survey participants) who also took part in the first survey (about 400). Results are nearly identical when analyzing the full first survey sample (about 440 participants, see Appendix Table C3).

<sup>10</sup>Compared to the attitudes from the ISSP (2016) reported in Section 2, our sample displays somewhat more liberal views. This discrepancy likely reflects that the ISSP includes the entire population, whereas our sample focuses on young mothers, who are directly affected by these norms (Geis-Thöne, 2021). Additionally, as gender norms have become more liberal in recent years, the eight-year gap between the ISSP data and our study may also (partially) explain this difference.

Table 2: Mothers’ Own Gender Attitudes and Perceptions of Gender Norms

	Share agreeing (1)	Perception of agreement (2)	$\Delta(2)-(1)$ (3)	Distribution of $\Delta(2)-(1)$		
				underestimated	correct	overestimated
				(4)		
1. Mothers with children below the age of 3 should not work (1: Conservative)	0.17	0.40	0.23	0.13	0.16	0.71
2. Mothers and fathers should divide the housework equally (0: Cons.)	0.86	0.69	-0.17	0.12	0.31	0.57
3. A woman should earn at most as much as her partner (1: Cons.)	0.12	0.29	0.17	0.20	0.29	0.51
4. Mothers and fathers should equally share caring obligations for the child (0: Cons.)	0.79	0.69	-0.10	0.20	0.31	0.49
5. Fathers with children below the age of 3 should work at most part-time (0: Cons.)	0.21	0.27	0.06	0.29	0.37	0.34
6. Mothers with children below the age of 3 should work at most part-time (1: Cons.)	0.63	0.59	-0.04	0.53	0.17	0.30
7. Fathers with children below the age of 3 should not work (0: Cons.)	0.03	0.18	0.15	0.38		0.62

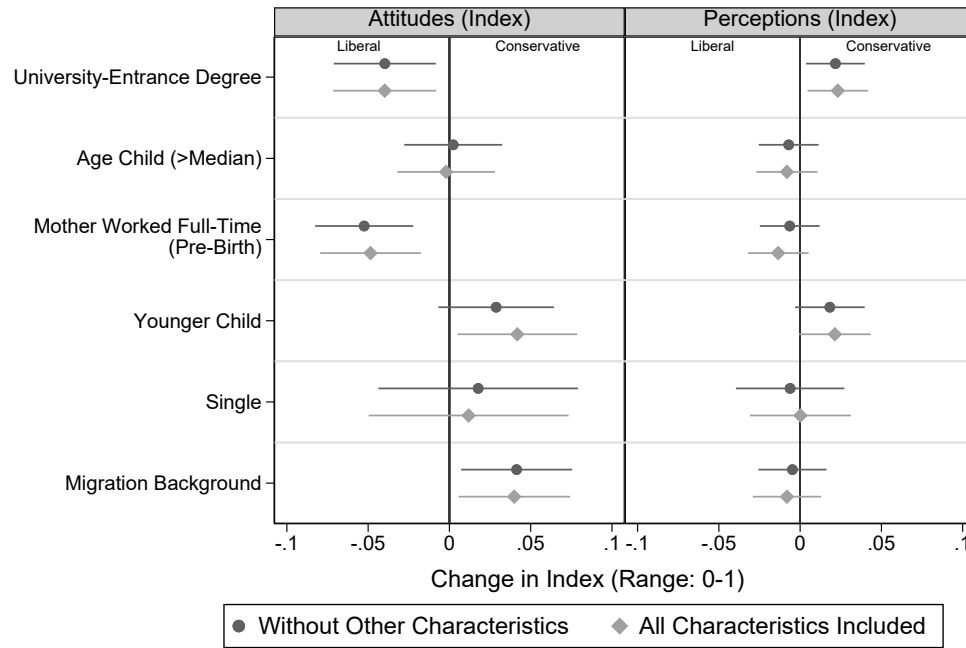
*Notes:* Table shows mothers’ own gender attitudes and their perceptions of the prevailing gender norms for seven statements regarding gender roles. Column (1) shows the share of mothers agreeing to the statements. Agreeing with statements 1, 3, and 6, as well as disagreeing with statements 2, 4, 5, and 7 indicate conservative attitudes. Column (2) shows mothers’ perceptions about the share of other mothers in their city agreeing with the statement. In Column (3), positive values for statements 1, 3, and 6, and negative values for statements 2, 4, 5, and 7, indicate that mothers, on average, perceive their environment as more conservative than it actually is. Column (4) shows the distribution of the differences between Column (2) and Column (1). The light gray bar shows the share of mothers who underestimate the conservativeness around them. The medium gray bar shows the share of mothers whose perceptions are correct (allowing for a range of 0.5 standard deviations around the actual value). The black bar indicates the share of mothers who overestimate the conservativeness around them. Statements are ordered based on the share of mothers who overestimate the conservativeness of other mothers (in descending order).

earn at most as much as their partners. We define the share of mothers in each city agreeing to these statements as the actual, prevailing gender norm in the city.

Since we also elicited some gender attitudes after the treatment (i.e., in the second survey about nine months after the first survey), we can use responses from the control group to investigate the intertemporal stability of maternal attitudes. Specifically, in the second survey we again gathered responses to statements 1, 3, and 4. On average, about 80% of mothers in the control group consistently agreed or disagreed with these statements across surveys, with “consistency rates” of 79%, 84%, and 74% for statements 1, 3, and 4, respectively. This suggests that (i) these attitudes are relatively stable over time and (ii) our method of measuring these attitudes is closely aligned with mothers’ actual, latent attitudes.

Our panel dataset also enables an analysis of correlations between mothers’ sociodemographic characteristics and their gender attitudes. For this analysis, we construct a gender attitude index based on responses to the seven statements. The index ranges from 0 to 1, where 0 represents the strongest possible liberal attitudes towards the seven state-

Figure 1: Correlates of Maternal Characteristics and Mothers' Gender Attitudes/Perceptions of Gender Norms



*Notes:* Figure shows the correlations between mothers' sociodemographic characteristics and their own gender attitudes (left panel) and perceptions of gender norms (right panel). Both, attitudes and perceptions, are measured by an index summarizing the seven statements. To construct the index, we divide the reported perceptions for each statement by 100 to standardize them on a scale from 0 to 1; this normalization is not necessary for attitudes, which are already provided on a binary scale. These values are then summed across the seven statements, and the total is divided by 7 to compute the average. The resulting index ranges from 0 (indicating extremely liberal attitudes or perceptions) to 1 (indicating extremely conservative attitudes or perceptions). For a definition of the maternal characteristics variables, see Appendix Table B1. The dark gray circles represent bivariate correlations between the characteristic of interest and attitudes or perceptions, while the light gray diamonds represent multivariate correlations that account for all other characteristics as controls. Lines represent the 95% confidence interval.

ments, and 1 represents the strongest possible conservative attitudes.<sup>11</sup> The left panel of Figure 1 shows clear differences in attitudes based on mothers' characteristics. Mothers with a university degree have much more liberal attitudes than those without. Similarly, mothers who worked full-time before the birth of their child exhibit more liberal attitudes. Conversely, mothers with a younger child and those with a migration background

<sup>11</sup>Agreement with statements 1, 3, and 6 indicates conservative attitudes, while agreement with statements 2, 4, 5, and 7 reflects liberal attitudes. To calculate the gender attitude index, we recode statements 2, 4, 5, and 7 accordingly.



have more conservative attitudes compared to mothers without these characteristics. No significant differences are observed based on partnership status or the age of the child.<sup>12</sup>

But do these attitudes matter? How predictive are these gender attitudes for mothers' labor-market outcomes? We explore this question by examining the relationship between mothers' own attitudes and labor-market outcomes in the first survey. Figure 2 illustrates the correlations between agreeing with various statements and employment (both general and full-time). Agreement with the statement "*Mothers with children below the age of 3 should not work*" is strongly negatively correlated with both general employment and full-time employment in the first survey. The same is true for the statement "*Mothers with children below the age of 3 should work at most part-time,*" albeit with a somewhat weaker correlation. Likewise, the statement "*Mothers and fathers should divide the housework equally*" is positively correlated with (full-time) employment.<sup>13</sup> These relationships, while purely correlational, are substantial: For example, agreeing with the statement "*Mothers with children below the age of 3 should not work*" is associated with a 32 pp lower likelihood of being employed and a 12 pp lower likelihood of working full-time, controlling for all other statements.

Leveraging the panel nature of our data, we find that results are very similar when we examine correlations between gender attitudes from the first survey and realized labor-market outcomes nine months later, as elicited in the second survey (see Appendix Figure C1). Overall, these findings underscore the relevance of gender attitudes regarding maternal employment—in particular, the attitude used in our treatment—for mothers' actual labor-market participation.

#### 4.2. Pre-Treatment Perceptions of Gender Norms

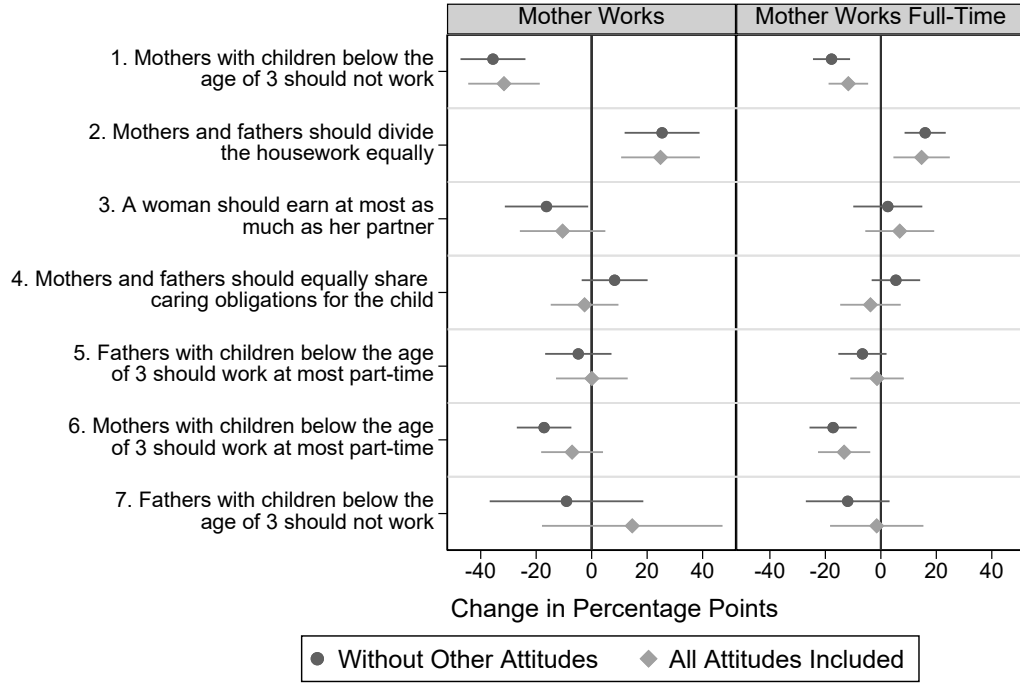
After eliciting mothers' own attitudes regarding the seven statements about gender roles, we also assess their *perceptions* of how many other mothers in their city agree with these statements, capturing their second-order beliefs about prevailing norms. Specifically, we ask mothers how many out of 100 mothers with children aged between 2–3 years in their city they think would agree with each of the seven statements. Column (2) of Table 2 shows mothers' perceptions about the share of other mothers agreeing with each statement. Column (3) displays the difference between the actual share of mothers agreeing and mothers' perceptions of this share.<sup>14</sup> Column (4) further shows the distributions

<sup>12</sup>The right panel of Figure 1 is described in Section 4.2.

<sup>13</sup>The remaining statements show no significant correlations with (full-time) employment.

<sup>14</sup>Positive differences for statements 1, 3, and 6, and negative differences for statements 2, 4, 5, and 7 indicate that, on average, mothers perceive their environment as more conservative than it actually is.

Figure 2: Correlates of Gender Attitudes and Labor-Market Participation



*Notes:* Figure shows correlations between mothers' own gender attitudes and their labor-market outcomes in the first survey. The left (right) part of the figure shows the correlations with working in general (working full-time, i.e., working hours  $\geq 30$ ). Note that agreement with statements 1, 3, and 6, and disagreement with statements 2, 4, 5, and 7 indicate conservative attitudes. The dark gray circles represent bivariate correlations between the gender attitude of interest and the realized labor-market outcome, while the light gray diamonds represent multivariate correlations that account for all other gender attitudes as controls. Lines represent the 95% confidence interval. Appendix Figure C1 shows correlations between mothers' gender attitudes in the first survey and their realized labor-market outcomes in the second survey.

of these differences: the light gray bar indicates the share of mothers underestimating the conservativeness of other mothers in their city, the medium gray bar indicates the share of mothers with accurate perceptions (defined as being within 0.5 standard deviations of the true value, see Bursztyn and Yang, 2022), and the black bar indicates the share of mothers overestimating the conservativeness of other mothers.

The accuracy of mothers' perceptions varies across the statements. The share of mothers with correct perceptions is highest for statements regarding paternal labor supply (37% for statement 5 and 62% for statement 7). This higher precision likely reflects the rarity of scenarios where fathers reduce their labor supply in Germany. For instance, while nearly 90% of fathers work when the child is under three, only about 7% work part-time (BPB, 2021). Mothers also show relatively accurate perceptions for statements

about equal sharing of housework or childcare obligations, and about the distribution of earnings within the household, with shares of 31%, 31%, and 29%, respectively.

Examining the statements related to maternal labor supply reveals a strikingly different pattern. Only a small share of mothers—16% for statement 1 and 17% for statement 6—have accurate perceptions of the prevailing norm. This high level of misperception is not related to the actual share of mothers agreeing to a statement: while only 17% of mothers agree with statement 1, 63% agree with statement 6. Instead, it seems that mothers struggle to accurately evaluate their environment when it comes to prevailing gender norms about maternal labor supply. One possible explanation is that while gender norms regarding maternal labor supply have recently become more liberal in Germany, actual (full-time) employment rates among mothers remain low, creating mixed signals about the true norm.

The distribution of perceptions also differs strongly between these statements. For instance, only about 30% of mothers perceive their environment as too conservative regarding the statement that *mothers with children under 3 years should work at most part-time*. However, 71% of mothers overestimate the conservativeness of their surroundings regarding the statement that *mothers with children under 3 years should not work*.

Given the limited correct perceptions and substantial overestimation of conservativeness, our subsequent information intervention focuses on the statement: *Mothers with children under 3 years should not work*. This choice is further justified by the strong correlation between agreement with this statement and actual labor-market participation in the same survey, as well as its predictive power for labor-market participation in the second survey (see Figure 2 and Appendix Figure C1).

Similar to the previous section, we examine the correlations between mothers' sociodemographic characteristics and their perceptions of gender norms. To do so, we construct an index that measures mothers' perceptions of agreement with the seven statements. This perception index ranges from 0 to 1, where 0 indicates the strongest possible liberal perceptions of the seven statements and 1 indicates the strongest possible conservative perceptions.<sup>15</sup> The right panel of Figure 1 reveals that mothers with a university degree and mothers with a younger child have more conservative perceptions of gender norms. For the other maternal characteristics—such as child's age, pre-birth full-time employment, having a partner, or having a migration background—we find no notable differences in perceptions of gender norms.

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<sup>15</sup> As for the gender attitude index, perceptions of agreement with statements 2, 4, 5, and 7 are recoded so that a higher perceived share of agreement always reflects more conservative perceptions.

## 5. Second Survey: Information Experiment

### 5.1. Treatment

Our information treatment was implemented in the second survey. Prior to the treatment, all mothers were again asked about their belief regarding how many out of 100 mothers with children aged 2–3 years in their city would agree with the statement: “*Mothers with children under 3 years should not work.*” Notably, perceptions of this statement show strong stability across the two surveys: 82% of mothers who overestimated the conservativeness of their environment in the first survey also do so in the second survey.

On the following screen, mothers in the treatment group were informed about the actual gender norm in their city held by other mothers with children aged 2–3 years (see Figure A2 for details). This information was presented both in written form and graphically, emphasizing that the data originated from the first survey conducted with participating mothers. Additionally, the mother’s initial belief was displayed at the bottom of the information slides (see, e.g., Haaland et al., 2023). Mothers in the control group received no further information and moved directly from the belief elicitation to the outcome questions.

Following prior research (e.g., Bursztny et al., 2020), we define existing norms as the average attitudes of participating mothers in the same city. A potential concern is that these study participants may not constitute a relevant reference group for the mothers, which could reduce the effectiveness of the information. Reassuringly, we demonstrate below that the information treatment shifts mothers’ perceptions of the norms prevailing within their actual reference network (i.e., friends and acquaintances), which are likely to influence behavior (Bicchieri and Dimant, 2022).

### 5.2. Outcomes

After the treatment, we measured three categories of outcomes: (i) mothers’ perceptions of gender norms, (ii) their own gender attitudes, and (iii) their labor-market plans.<sup>16</sup> First, we assessed mothers’ perceptions of gender norms held by their friends and acquaintances and by women in Germany. For friends and acquaintances, we asked mothers to estimate the share agreeing with the statement: “*Mothers with children under 3 years*

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<sup>16</sup>To mitigate experimenter demand effects, we avoided asking about mothers’ perceptions directly after informing them about the true gender norm in their city (for the treatment group). Instead, we elicited outcomes in a different order than described above. Specifically, we first asked about labor-market plans, followed by attitudes, and finally perceptions. We also checked that there is no bunching for perceptions around the numbers used in the information treatment (12 and 21). As such, our data do not provide evidence for experimenter demand effects.

*should not work.*” This allowed us to examine spillover effects from the reference group in the information treatment (mothers in their city) to another important reference group (their friends and acquaintances). When assessing perceptions about women in Germany, we slightly changed the gender norm compared to the treated gender norm to reduce experimenter demand effects and to examine whether participants generalized the provided information to related contexts (Settele, 2022). Specifically, mothers estimated the share of women in Germany agreeing with the statement: “*When a mother is in paid work, her children suffer.*” This question was incentivized: With a probability of 50%, mothers received an additional payment of 5 EUR if their perception was correct.<sup>17</sup> For the analysis, we also created a dummy variable indicating whether the mother overestimated the share of women in Germany agreeing with this statement (again allowing for a range of 0.5 standard deviations around the true value).

Second, we measured mothers’ own attitude towards working. In line with the first survey, we asked whether they agreed with the statement: “*Mothers with children under 3 years should not work.*” For the analysis, we use a dummy variable indicating whether the mother agreed with the statement.

Third, we elicited mothers’ labor-market expectations for the following year.<sup>18</sup> Specifically, we asked whether mothers planned to work and how many hours they expected to work one year after the survey. Our primary outcome is a dummy variable indicating whether the mother planned to increase her working hours in one year. This includes both transitions from not working to employment (extensive margin) and increases in working hours for mothers already employed (intensive margin). Furthermore, we asked mothers whether they were interested in a job counseling meeting with the local employment office.

### 5.3. Randomization and Balancing

We assigned treatment status using stratified randomization (Athey and Imbens, 2017). Stratas are defined based on mothers’ employment status (two categories), migration background (two categories), city of residence (two categories), and an indicator for whether the mother assessed her city as too conservative in the first survey (three categories: yes, no, missing). Within these strata, we randomized mothers into the treatment group with 50% probability. In our analytical sample ( $n = 451$ ), 229 mothers (51%) are in the control group and 222 mothers (49%) are in the treatment group.

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<sup>17</sup>The true value was derived from the World Value Survey (Haerpfer et al., 2020).

<sup>18</sup>The time horizon for eliciting labor-market expectations in previous studies ranges from one year to about 40 years (Giustinelli, 2023). We selected a one-year horizon to balance the time required to realize changes in labor supply with the difficulties of forming accurate long-term expectations.

This stratified randomization ensured that observable characteristics were well balanced between treatment and control groups (see Column (4) of Table 1). The only variable showing a significant difference is the age of the child, which is slightly higher in the treatment group (significant at the 5%-level). To ensure that this difference does not affect our results, we include child age as a control variable in all regressions.

#### 5.4. Empirical Strategy

We employ an ordinary least squares (OLS) regression model to assess the causal effect of our information treatment on maternal outcomes:

$$Y_i = \alpha + \beta_1 Treatment_i + \mathbf{X}_i' \delta + \varepsilon_i \quad (1)$$

$Y_i$  is the outcome variable of interest for mother  $i$ , namely her perceptions of gender norms, her own gender attitudes, and her labor-market expectations (see Section 5.2 for details).  $Treatment_i$  equals one if the mother is part of the treatment group and zero if she is part of the control group.

Furthermore, we include a vector of control variables,  $X_i$ , to improve the precision of our estimates. These controls encompass maternal pre-treatment perceptions and attitudes, working hours, college entrance degree, age, pregnancy status, household income, father’s involvement in child care, and whether the mother is the main caregiver. Additional child-related controls include the child’s age, whether the child has a younger sibling, and the younger sibling’s age. We also include strata fixed effects and a dummy for participation in a prior intervention (Hermes et al., 2024). In the few cases where control variables have missing values, we impute missings using the sample mean and add imputation dummies. The error term is represented by  $\varepsilon_i$ .

The inference is based on robust standard errors. The results also hold when employing randomization inference or adjusting for multiple hypothesis testing (see Appendix Table D2).

#### 5.5. Results

*Perceptions of Gender Norms.* We start evaluating our information intervention by examining its effects on mothers’ perceptions of gender norms. Treated mothers received information about the actual gender norm in their city, specifically the share of mothers with similarly aged children agreeing with the statement: “*Mothers with children under the age of 3 should not work.*” First, we assess whether this information affects mothers’ perceptions of gender norms held by their friends and acquaintances. This question

Table 3: Treatment Effects on Perceptions of Gender Norms

	Perceptions about ...		
	Friends and Acquaintances agreeing to <i>Mothers with children below the age of 3 should not work</i>	Women in Germany agreeing to <i>When a mother works, her children suffer</i>	Women in Germany agreeing to <i>When a mother works, her children suffer</i>
	Perception (0–100)	Perception (0–100)	Dummy: Perception too conservative
	not incentivized (1)	incentivized (2)	incentivized (3)
Treatment	-7.767*** (2.070)	-8.540*** (2.003)	-0.190*** (0.046)
Pre-Treatment Outcome	Yes	Yes	Yes
Strata Controls	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes
Control Mean	29.01	37.53	0.53
N	451	451	451

*Notes:* Table shows intention-to-treat effects on maternal perceptions of gender norms, all models are estimated by OLS. In Column (1), the outcome variable is mother’s perception about the number of friends and acquaintances (0–100) agreeing with the statement: *Mothers with children under the age of 3 should not work*. In Column (2), the outcome variable is mother’s perception about the number of women in Germany (0–100) agreeing to the statement: *When a mother engages in paid work, her children suffer*. In Column (3), the outcome variable is a dummy equal to one if mothers overestimate the share of women in Germany agreeing with the statement: *When a mother engages in paid work, her children suffer*. Overestimation is defined as a perception exceeding the actual value by more than 0.25 standard deviations. All models include strata fixed effects and sociodemographic controls (see Section 5.4 for details). Imputation dummies for missing values in control variables are also included. *Control mean* is the mean of the outcome in the control group. Robust standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

was not incentivized since the true answer is unknown. Second, we analyze whether the treatment influences mothers’ incentivized perceptions of a related gender norm at the national level (“*When a mother engages in paid work, her children suffer*”). Investigating these spillover effects on a mother’s close social network is crucial, as gender norms held by relevant reference networks are most likely to affect mothers’ work-related decision (Bicchieri and Dimant, 2022).

Column (1) of Table 3 shows that our treatment strongly influences mothers’ perceptions of their friends’ and acquaintances’ agreement with the statement that “*Mothers with children under the age of 3 should not work*.” Treated mothers, on average, believe that 7.8 (out of 100) fewer of their friends and acquaintances agree with the statement ( $p < .01$ ), equivalent to a reduction by 27% relative to the control mean. Similarly, the treatment substantially affects mothers’ (incentivized) perceptions of a related gender norm held by women in Germany. Specifically, treated mothers estimate that 8.5 (out of 100) fewer women in Germany believe that mothers engaging in paid work hurts their children ( $p < .01$ ), which translates to 23% of the control mean. Consistently, the treatment

reduces the probability that mothers perceive women in Germany as too conservative by 19 pp ( $p < .01$ ), or 36% relative to the control mean.<sup>19</sup>

In summary, these findings reveal that providing information about a city-level gender norm has strong effects on mothers' perceptions of both their local reference groups and a related national norm. This complements evidence from Bursztyn et al. (2023), who show that information about a national-level gender norm causally impacts perceptions of norms at the state and workplace levels.

*Own Attitudes.* After demonstrating significant shifts in maternal perceptions of gender norms, we now turn to mother's own gender attitudes. Our information treatment about the actual gender norm has a strong impact on mothers' attitudes toward maternal labor supply (see Figure 3 and Appendix Table C1). Specifically, being informed about the actual gender norm reduces the probability that mothers agree with the statement "*Mothers with children under the age of 3 should not work.*" by 6.6 pp ( $p = .049$ ), equivalent to 25% of the control mean (see Panel (A) of Figure 3). This result implies that perceptions of gender norms have a causal impact on mothers' own attitudes.

As with any information treatment (see Haaland et al., 2023), the effects of our intervention are likely to vary based on mothers' initial perceptions of their environment (and the direction and intensity of the information update), their confidence in these perceptions, and their pre-treatment gender attitudes. Our analysis shows that average treatment effects are primarily driven by mothers who initially perceived their environment as too conservative, as measured pre-treatment. For these mothers, the treatment reduces the probability of agreeing with the statement "*Mothers with children under the age of 3 should not work.*" by 8.5 pp ( $p = .042$ , Panel (B) of Figure 3). This is consistent with the fact that these mothers were informed that their environment was more liberal than they had initially believed.<sup>20</sup> Furthermore, the treatment has stronger effects on mothers who lack confidence in their pre-treatment perceptions. As shown in Panel (C) of Figure 3, these mothers are 12.1 pp less likely to agree with the statement following the treatment ( $p = .013$ ). This aligns with the idea that mothers with less confidence in their beliefs are more responsive to information updates. The treatment also has particularly

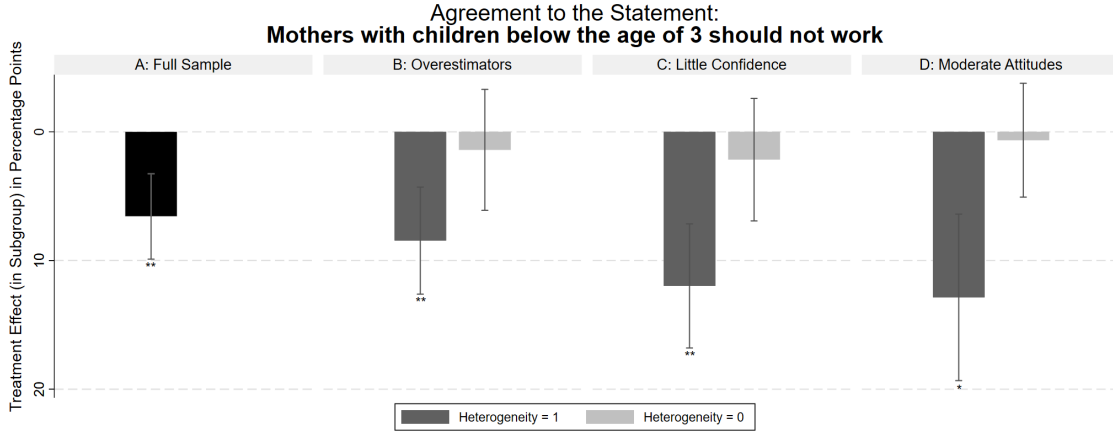
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<sup>19</sup>Additional analysis shows that mothers in the treatment group only update perceptions directly related to the treated norm. There is no evidence of a generalized shift in their answering behavior, as we find no treatment effect on perceptions of a norm more distant from the treated one (i.e., "*It leads to problems if women earn more than their husbands*").

<sup>20</sup>This analysis uses perceptions measured in the second survey, but the results are similar when using perceptions from the first survey.



Figure 3: Treatment Effect on Mothers' Own Attitudes Towards Labor Supply



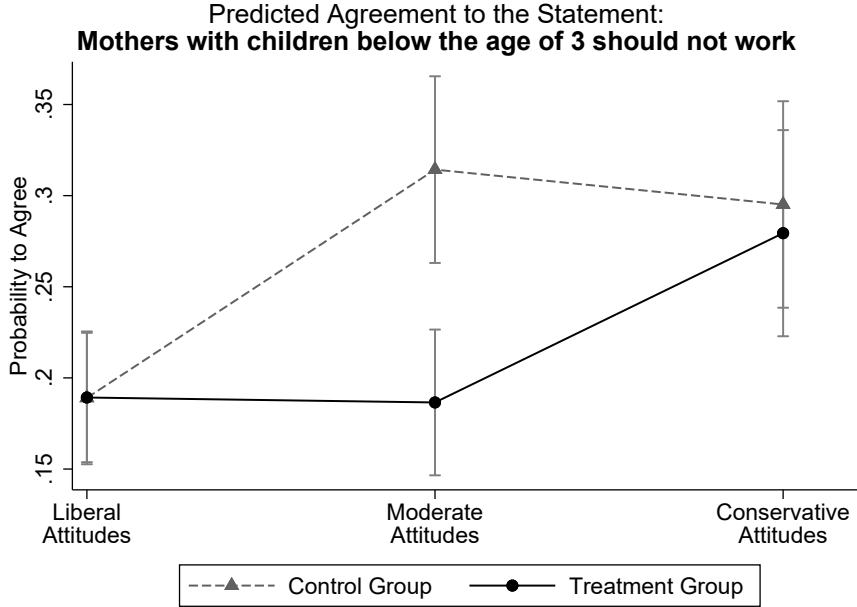
Notes: Figure shows the intention-to-treat effects on mothers' agreement with the statement: *Mothers with children under the age of 3 should not work*, all models are estimated by OLS (see Appendix Table C1 for detailed results). While Panel (A) shows the average effect, the next three panels (B, C, and D) show heterogeneous treatment effects for different subgroups estimated by using models with interaction terms. Panel (B) reports heterogeneity based on whether the mother overestimates the conservativeness in her environment in the second survey (results are similar when using overestimators from the first survey). Panel (C) reports heterogeneity based on whether the mother has little confidence about her pre-treatment perception. Panel (D) reports heterogeneity based on pre-treatment gender attitudes of the mother (Heterogeneity=1 indicates moderate gender attitudes, Heterogeneity=0 indicates liberal or conservative gender attitudes). In Panels (B)–(D), the left-hand bar represents the estimated treatment effect for the subgroup of mothers to whom the specific heterogeneity applies (e.g., mothers who overestimate the conservativeness around them in Panel (B)). The right-hand bar indicates the treatment effect for the remaining mothers (e.g., those who did not overestimate the conservativeness around them in Panel (B)). All models include strata fixed effects and sociodemographic controls (see Section 5.4 for details). Imputation dummies for missing values in control variables are also included. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

large effects on mothers with moderate pre-treatment gender attitudes, defined as the middle tertile of our gender attitude index from Figure 1 (with the lower tertile representing liberal and the upper tertile conservative attitudes). For mothers with moderate attitudes, the treatment reduces agreement with the statement by 12.7 pp ( $p = .052$ , Panel (D) of Figure 3).<sup>21</sup>

Further extending this analysis, we estimate marginal effects across the three subgroups (liberal, moderate, and conservative gender attitudes) by interacting the treatment

<sup>21</sup>We also examine treatment effects on other gender attitudes, such as agreement with statements that *a woman should earn no more than her partner* and that *mothers and fathers should share child care responsibilities equally*. We find no significant treatment effects for these more distant attitudes, suggesting that the treatment's influence is limited to attitudes closely related to the treated norm.

Figure 4: Predicted Agreement by Pre-Treatment Gender Attitudes



*Notes:* Figure shows heterogeneous treatment effects (ITT) on mothers’ agreement with the statement: *Mothers with children under the age of 3 should not work* for mothers with liberal, moderate, or conservative pre-treatment gender attitudes, estimated by OLS. Heterogeneous treatment effects are estimated by using models with interaction terms. Results show the predicted agreement to the statement for the control group (dashed line) and the treatment group (solid line). Pre-treatment gender attitudes of mothers are measured by mothers’ agreement to the seven statements described in Section 4.1. We create an index by calculating mother’s average agreement to the statements (recoding all statements in a way that agreement represents conservative attitudes). We then divide the distribution of the index into three tertiles. The first tertile includes mothers with liberal gender attitudes, the second includes mothers with moderate gender attitudes, and the third includes mothers with conservative gender attitudes.

indicator with an indicator for each group. As shown in Figure 4, only mothers with moderate gender attitudes respond significantly to the treatment. This likely occurs because a majority of liberal mothers already disagree with the statement at baseline, leaving little room for change, while conservative mothers tend to hold more entrenched traditional views, making their attitudes less malleable. This finding complements evidence from Miho et al. (2023), which suggests that groups culturally closer to new gender norms adapt more quickly. Similarly, our results show that mothers with attitudes closer to the new norm are more likely to adjust, likely because individuals tend to reject information that contradicts their pre-existing beliefs (Bicchieri and Mercier, 2014).

In addition, the information about actual gender norms could potentially influence how mothers perceive the returns to working or the barriers to finding a job. To assess

this, we asked mothers hypothetical questions about how full-time work might affect various aspects of their lives, including their career, personal well-being, child’s well-being, relationship, and social acceptance. We also asked about general problems mothers may face when seeking suitable employment. However, we find no significant treatment effects on these outcomes (see Appendix E for details).

In summary, we have shown that our treatment has strong effects on mothers’ perceptions of gender norms and their own attitudes. These own attitudes (or “personal norms”) have been shown to directly influence behavior (Bašić and Verrina, 2024). As demonstrated in Section 4.1 and Figure 2, the attitude shifted by the treatment is a strong predictor of both current and future labor-market behaviors. Thus, it is plausible to expect that the treatment also affects mothers’ plans for their own labor-market participation, which we analyze in the following section.

*Labor-Market Participation.* The final set of results examines the effects of our treatment on mothers’ plans for labor-market participation. Specifically, we investigate whether being informed about the actual (more liberal) gender norm leads to changes in expected labor supply. To assess this, we elicited mothers’ labor-market expectations for one year after the experiment, asking whether and how many hours they planned to work. Based on this, we construct a dummy variable indicating whether mothers intend to increase their working hours. The variable equals one if the mother plans to start working within the next year or, if already employed at the time of the second survey, intends to work more hours. As shown in Column (1) of Table 4, treated mothers are 7.4 pp (or 18%) more likely to plan an increase in their current working hours ( $p = .095$ ).

To better understand which mothers responded more strongly to the information treatment, we conducted an exploratory analysis focusing on potential barriers to employment. Specifically, we analyzed three factors that might moderate the treatment effect: access to child care, the partner’s active involvement in child care, and the mother’s cultural background. Following the literature, we regard a mother’s cultural background as more liberal and gender-equal if her own mother was working full-time when the mother was 15 years old (see, e.g., Fernández et al., 2004; Fernández and Fogli, 2009; Schmitz and Spiess, 2021). Columns (2)–(4) of Table 4 show that the treatment effect was significantly stronger for mothers facing fewer barriers to employment. Treated mothers with access to child care are 13.2 pp more likely to plan an increase in their working hours compared to the control group with child care access ( $p = .021$ ). Likewise, treated mothers with a partner actively engaging in child care are 16.4 pp more likely to intend to increase their working hours ( $p = .014$ ). Finally, treated mothers who grew up in a more gender-equal

environment are 13.6 pp more likely to plan an increase in their current working hours ( $p = .063$ ). Mothers who face these structural or cultural barriers consistently show small and statistically insignificant treatment effects. These findings suggest that the information treatment is particularly effective for mothers with fewer barriers to employment. Access to supportive conditions, such as child care availability or active partner involvement, and exposure to more gender-equal norms during childhood seem to amplify the treatment’s impact on mothers’ labor-market plans.

Our main outcome variable, “Increase in Working Hours,” combines both the extensive margin (i.e., transitioning from non-employment to employment) and the intensive margin (i.e., increasing hours for already employed mothers) of maternal labor supply. To disentangle which margin responds more strongly to the treatment, we estimate heterogeneous effects based on employment status at the time of the second survey. This analysis reveals that the treatment effect is primarily driven by the intensive margin, with treated mothers already employed in the second survey being 9.8 pp more likely to increase their working hours compared to employed mothers in the control group ( $p = .092$ ). For mothers currently not employed, treatment effects are positive, but not statistically significant (see Column (2) of Appendix Table C2).

Although the information provided in the treatment explicitly referred to a norm about the extensive margin of employment, it plausibly also impacts the intensive margin. First, the treatment likely reduced the perceived social cost of working, which aligns with marginal increases in working hours.<sup>22</sup> Second, perceptions of gender norms related to employment are likely correlated, meaning that shifting perceptions of a norm about “working or not” may also influence norms about full-time work.<sup>23</sup> Third, since the outcomes are measured within the same survey, it seems plausible that responses occur along the easier-to-shift intensive margin—e.g., increasing working hours in an existing job—rather than along the extensive margin, which requires more planning, such as finding and starting a new job.

Consistent with this reasoning, we find no treatment effect on mothers’ interest in seeking job consultancy from the local employment agency. While 19% of mothers in

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<sup>22</sup>A reduction in perceived social cost would also predict that mothers lower their reservation wage. Estimating treatment effects on the reservation wage, we observe a 7.9 pp increase in the likelihood that mothers report a lower reservation wage (hourly wage) in the second survey compared to the first ( $p = .161$ ). Albeit not statistically significant at conventional levels, this finding suggests that the treatment may have reduced the perceived social cost associated with maternal employment.

<sup>23</sup>In support of this argument, Figure 2 demonstrates that the treated norm is also predictive of whether mothers work full-time.

Table 4: Treatment Effects on Labor-Market Participation

	Increase in Working Hours			
	Overall Effect (1)	Slot in Child Care (2)	Father Involved in Child Care (3)	Mother With Liberal Background (4)
Treatment	0.074* (0.044)	0.132** (0.057)	0.164** (0.067)	0.136* (0.073)
Treatment $\times$ No Slot in Child Care		-0.147 (0.092)		
No Slot in Child Care		0.012 (0.064)		
Treatment $\times$ Father Not Involved in Child Care			-0.164* (0.089)	
Father Not Involved in Child Care			0.153** (0.065)	
Treatment $\times$ Mother With Conservative Background				-0.097 (0.092)
Mother With Conservative Background				0.063 (0.062)
Pre-Treatment Outcome	Yes	Yes	Yes	Yes
Strata Controls	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes
Treatment Effect for No Slot in Child Care		-0.015 (0.071)		
Treatment Effect for Father Not Involved in Child Care			0.000 (0.059)	
Treatment Effect for Mother With Conservative Background				0.039 (0.056)
Control Mean	0.402			
Without Child Care/Father/Liberal B.		0.510	0.508	0.428
With Child Care/Father/Liberal B.		0.320	0.265	0.357
N	450	449	449	450

*Notes:* Table shows intention-to-treat effects on mothers' plans for labor-market participation, all models are estimated by OLS. The outcome is a dummy variable indicating whether the mother plans to increase her working hours in the following year; this includes both transitions from not working to employment (extensive margin) and increases in working hours for mothers already employed (intensive margin). Column (1) shows the effect in the full sample, while Columns (2)–(4) show heterogeneous treatment effects. We do not have information on their current working hours for seven mothers; for six of these mothers, we use values from the first survey to impute the missing data (see Appendix Table B1). In Column (2), *Slot in Child Care* equals one if the child spends at least one hour per week in child care. Information on whether the child is in child care is missing for one mother. In Column (3), *Father Involved in Child Care* equals one if the father provides at least one hour per week of care for the child alone. This information is missing for one mother. In Column (4), *Mother With Liberal Background* equals one if the mother's own mother worked full-time when the mother was 15 years old. Since information on a mother's liberal background was collected in the first survey, this variable is missing for mothers who did not participate in the first survey (see Appendix Table B1). To avoid losing these mothers from the analysis, we conservatively assign them a value of zero (results remain very similar when these mothers are excluded from the analysis). All models include strata fixed effects and sociodemographic controls (see Section 5.4 for details). Imputation dummies for missing values in control variables are also included. *Control Mean* is the mean of the outcome in the control group. *Control Mean With(out) Child Care/Father/Liberal Background* is the mean of the outcome in the control group for mothers with(out) access to child care/involvement of the father in child care/a mother with liberal background. Robust standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

our sample express interest in such consultancy and provide their personal contact information (mail or phone number), the treatment has no significant effect on this outcome ( $b = -0.030$ ;  $p = .429$ ). This further supports the notion that the treatment primarily en-

courages mothers who are already employed to increase their working hours, rather than prompting non-employed mothers to enter employment—a process that is more likely to require or benefit more from employment agency support.

*Robustness Checks.* We conduct two sets of robustness checks to ensure the validity of our results. First, recognizing that our study was conducted in two specific cities in Western Germany, we leverage a comprehensive dataset representative of the German population (German Socioeconomic Panel, see Goebel et al., 2019; SOEP, 2021) to re-estimate our treatment effects using propensity score weights (for a similar approach, see Hermes et al., 2024). Results using SOEP population weights are very similar across all three groups of outcomes and, if anything, tend to become slightly larger (see Appendix Table D1). Second, we account for potential concerns regarding multiple hypothesis testing and calculate standard errors using randomization inference, which randomly reassigns treatment status within strata. All findings remain robust to these corrections (see Appendix Table D2).

## 6. Conclusion

We provide causal evidence that informing mothers about the actual gender norm regarding maternal employment influences their perceptions of gender norms, their own work attitudes, and their labor-market expectations. Specifically, when mothers learn about the (typically more liberal) gender norms in their city, they adjust their perceptions about gender norms both in Germany overall and within their social networks. The information also shifts mothers’ own attitudes towards work in a more liberal direction. Moreover, it impacts labor-market expectations, with treated mothers being more likely to plan an increase in their working hours. This effect is particularly pronounced for mothers who face fewer barriers to employment, such as those with access to child care or partners actively involved in caregiving.

An important question is whether the increased labor-market expectations observed among treated mothers in our study will translate into actual labor-market outcomes. Evidence from Gong et al. (2022) shows that labor-supply expectations measured among college students in their third year strongly predict realized labor-market outcomes after graduation. Similarly, leveraging the panel structure of our own survey, we can assess how accurately mothers predict their labor supply. When their children were aged 0–1 years (see Appendix Figure A1), we asked mothers about their working plans for the following year. Comparing these expectations with realized labor-market outcomes 18 months later, we find that 72% of mothers who planned to return to work within a year were indeed

employed. An additional 16% of mothers were on parental leave, suggesting they would normally be in paid employment but are temporarily out of the labor force due to the arrival of another child. Furthermore, we observe that mothers’ attitudes toward work strongly predict their future labor-market participation. These findings provide additional reassurance that both labor-market expectations and attitudes are meaningful predictors of actual behavior.

Our findings have three main policy implications. First, they demonstrate that gender norms—long considered a non-institutional factor contributing to the child penalty—held by the actually relevant group, mothers, are malleable and responsive to targeted interventions. By shifting perceptions of prevailing norms, our information treatment induces meaningful changes in mothers’ attitudes and labor-market expectations. This underscores the potential for addressing gender gaps in the labor market not only through institutional reforms (e.g., child care expansion) but also through interventions that target the social norms shaping maternal behavior.

Second, our results align with broader theories of “bad equilibria” in social norms, as described by Bursztyn et al. (2023). In such equilibria, mothers may overestimate the conservativeness of their social environment, leading them to adopt similarly conservative behavior that, in turn, perpetuates the initial misperceptions. By breaking this cycle of misperception, our intervention enables mothers to align their attitudes and decisions more closely with their own preferences, contributing to a more gender-equal labor supply (and, more generally, an increase in overall labor supply).

Finally, the simplicity and scalability of our intervention are particularly promising. The information was straightforward to deliver, and mothers trusted and internalized the message. These findings suggest that even modest efforts to correct misperceptions about gender norms can have substantial impacts. Future research should explore how such interventions can be systematically integrated into broader policy strategies to reduce the child penalty and promote gender equality in the labor market.

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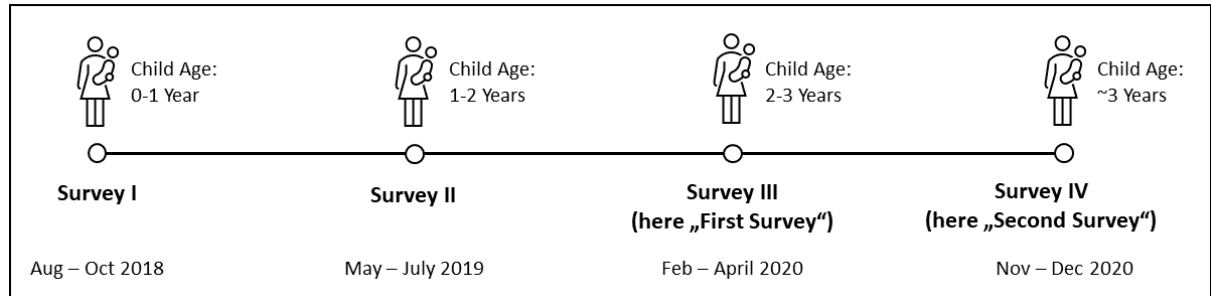
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## Appendix A. Details on the Study

Figure A1: Timeline of Surveys



Notes: Figure gives an overview of all surveys and their timing.

Figure A2: Information Treatment



Notes: Figure shows how the information treatment was presented to participants. Note that the actual gender norm differs in the two cities, with 21% of mothers in one city agreeing to the statement compared to 12% in the other city.

## Appendix B. Further Details on Variables

Table B1: Variable Definitions

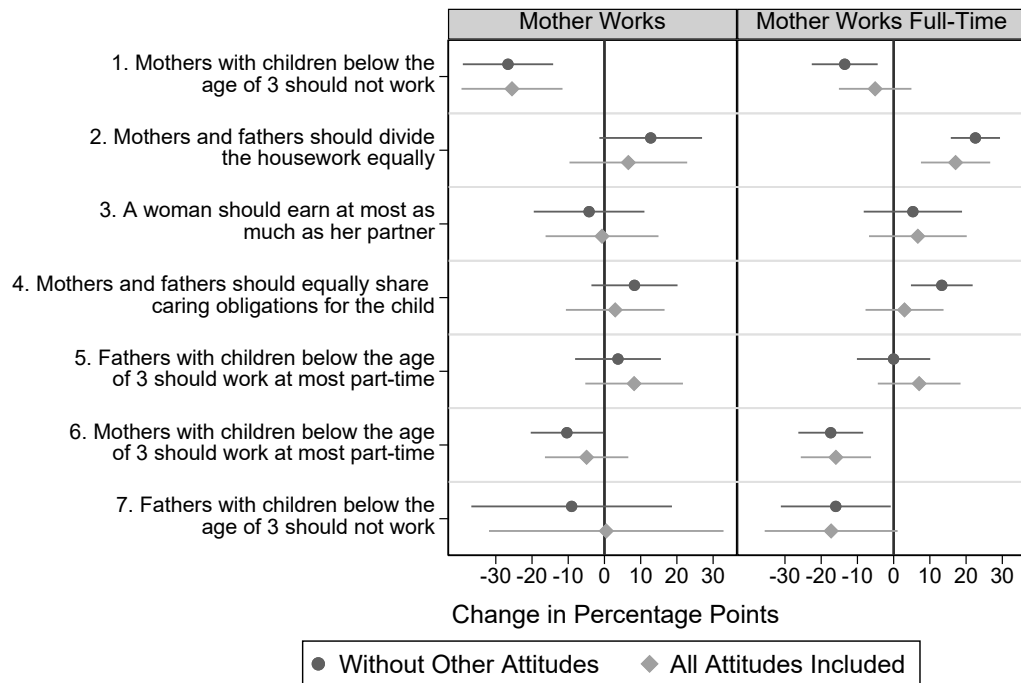
	Survey Wave (1)	Definition (2)	Values (3)	Missings (4)	N (5)
<b>Outcome variables</b>					
Perception about friends and acquaintances agreeing to <i>Mothers with children below the age of 3 should not work</i>	Survey IV	Answer to the following question: What is your estimate, out of 100 mothers with approximately 2-3 year old children from your circle of friends or acquaintances how many mothers agree with the following statement? <i>Mothers with children below the age of 3 should not work</i>	0-100	-	451
Perception about women in Germany agreeing to <i>When a mother works, her children suffer</i>	Survey IV	Answer to the following question: What is your estimate, out of 100 women in Germany how many women agree with the following statement? <i>When a mother works, her children suffer</i>	0-100	-	451
Dummy: Perception about women in Germany agreeing to <i>When a mother works, her children suffer</i> is too conservative	Survey IV	The answer to the following question is higher than the actual value (allowing for a 0.5 std puffer around the truth): What is your estimate, out of 100 women in Germany how many women agree with the following statement? <i>When a mother works, her children suffer</i>	0 or 1	-	451
Agreement to the statement: <i>Mothers with children below the age of 3 should not work</i>	Survey IV	The answer to the following question: Do you agree with the following statement? <i>Mothers with children below the age of 3 should not work</i>	0 or 1	-	451
Increase in working hours	Survey IV	A dummy equal to one if the planned working hours in a year from now exceed the current working hours reported in the second survey. For six observations, we lack information on the current working hours. In these instances, we use the working hours reported in the first survey.	0 or 1	Missing if we have no information on the working hours from neither the second nor the first survey ( $n = 1$ ).	450
Interest in job consultancy	Survey IV	A dummy variable is set to one if the respondent answers positively to the following question and provides their contact details (either an email address or phone number). <i>In order to support you with your occupational progress in the best possible way, we realized the possibility to make use of a counseling with the officer of equal opportunities at the employment agency in [city]. Such a counseling could provide you with individual support regarding your occupational plans. Would you be interested in a counseling?</i>	0 or 1	-	451
Perceived benefits of full-time work: Income	Survey IV	Answer to the following question: if you went from not working at all to working full time, would the your family income improve, stay the same or get worse?	1 (worsen), 2 (stay the same) or 3 (improve)	Missing if the mother did not answer this question ( $n = 1$ ).	450
Perceived benefits of full-time work: Career	Survey IV	Answer to the following question: if you went from not working at all to working full time, would the your career opportunities improve, stay the same or get worse?	1 (worsen), 2 (stay the same) or 3 (improve)	Missing if the mother did not answer this question ( $n = 2$ ).	449
Perceived benefits of full-time work: Child	Survey IV	Answer to the following question: if you went from not working at all to working full time, would the development of your child improve, stay the same or get worse?	1 (worsen), 2 (stay the same) or 3 (improve)	Missing if the mother did not answer this question ( $n = 3$ ).	448
Perceived benefits of full-time work: Partnership	Survey IV	Answer to the following question: if you went from not working at all to working full time, would the satisfaction with your partnership improve, stay the same or get worse?	1 (worsen), 2 (stay the same) or 3 (improve)	Missing if the mother has no partner ( $n = 30$ ), or did not answer this question ( $n = 3$ ).	418
Perceived benefits of full-time work: Own Well-Being	Survey IV	Answer to the following question: if you went from not working at all to working full time, would your own well-being improve, stay the same or get worse?	1 (worsen), 2 (stay the same) or 3 (improve)	Missing if the mother did not answer this question ( $n = 3$ ).	448
Perceived benefits of full-time work: Social Prestige	Survey IV	Answer to the following question: if you went from not working at all to working full time, would your social prestige improve, stay the same or get worse?	1 (worsen), 2 (stay the same) or 3 (improve)	Missing if the mother did not answer this question ( $n = 4$ ).	447
Perceived barriers to employment: Salary	Survey IV	Answer to the following question: what problems do you think mothers of young children encounter when looking for a job: salary is too low?	1 (fully applies) to 6 (does not apply at all)	Missing if the mother did not answer this question ( $n = 1$ ).	450
Perceived barriers to employment: Unsuitable Working Hours	Survey IV	Answer to the following question: what problems do you think mothers of young children encounter when looking for a job: working hours are not suitable?	1 (fully applies) to 6 (does not apply at all)	Missing if the mother did not answer this question ( $n = 2$ ).	449

(continued on next page)

Table B1: Continued

	Survey Wave (1)	Definition (2)	Values (3)	Missings (4)	N (5)
Perceived barriers to employment: Long Commutes	Survey IV	Answer to the following question: what problems do you think mothers of young children encounter when looking for a job: long commutes?	1 (fully applies) to 6 (does not apply at all)	Missing if the mother did not answer this question ( $n = 2$ ).	449
Perceived barriers to employment: Mismatched Qualification	Survey IV	Answer to the following question: what problems do you think mothers of young children encounter when looking for a job: missing qualification?	1 (fully applies) to 6 (does not apply at all)	Missing if the mother did not answer this question ( $n = 2$ ).	449
Perceived barriers to employment: Lack of Child Care	Survey IV	Answer to the following question: what problems do you think mothers of young children encounter when looking for a job: lack of child care?	1 (fully applies) to 6 (does not apply at all)	Missing if the mother did not answer this question ( $n = 1$ ).	450
Perceived barriers to employment: Insufficient Job Flexibility	Survey IV	Answer to the following question: what problems do you think mothers of young children encounter when looking for a job: insufficient job flexibility?	1 (fully applies) to 6 (does not apply at all)	Missing if the mother did not answer this question ( $n = 2$ ).	449
<b>Control variables</b>					
Perception about mothers in the own city agreeing to <i>Mothers with children below the age of 3 should not work</i>	Survey IV	Answer to the following question: What is your estimate, out of 100 mothers with approximately 2-3 year old children in [city] how many mothers agree with the following statement? <i>Mothers with children below the age of 3 should not work</i>	0-100	-	451
Agreement to the statement: <i>Mothers with children below the age of 3 should not work</i>	Survey III	The answer to the following question: Do you agree with the following statement? <i>Mothers with children below the age of 3 should not work</i>	0 or 1	Missing for 46 mothers, 43 did not participate in the first survey and 3 did not answer the question. Missing mothers are imputed with the median answer.	451
Mothers' working hours (0 if not working)	Survey IV	The answer to the following question: To how many hours per week amounts your working time as provided by your contract? (0 if not working)	0 - 84	Values for missing mothers are imputed with the mean ( $n = 7$ ).	451
Age of mother (in years)	Survey IV	Age of mother in years.	21 - 46	Values for missing mothers are imputed with the mean ( $n = 15$ ).	451
Age of child (in months)	Survey IV	Age of child in months.	29 - 42	-	451
Mother has no college entrance degree	Survey I	Indicator of mothers having no college entrance qualification ("Abitur").	0 or 1	-	451
Household income	Survey IV	Net monthly household income.	75 - 18.000	Values for missing mothers are imputed with the mean ( $n = 14$ ).	451
Mother has younger child	Survey IV	Mother has a younger child than the three-year old.	0 or 1	-	451
Age of younger child (in months)	Survey IV	Age of this younger child in months.	0 - 32	Values for missing mothers are imputed with the mean ( $n = 2$ ).	451
Mother is pregnant	Survey IV	Mother is pregnant at the time of the interview.	0 or 1	-	451
Mother is maincarer	Survey I	Mother is the main caregiver.	0 or 1	-	451
Father is involved in child care	Survey IV	Father takes at least one hour per week care of the child (without the mother).	0 or 1	-	451
Family participated in previous intervention	Survey I	Family participated in previous intervention related to the access to child care.	0 or 1	-	451
<b>Strata variables</b>					
Mother works	Survey III	Indicator of the the mother working. If this information is missing, we use information about the pre-birth working status.	0 or 1	-	451
Migration background	Survey I	Indicator of the the mother not being born in Germany. In 14 cases the father answered the survey, so the information refers to his migration background.	0 or 1	-	451
City A (B)	Survey I	Indicator of the the mother living in city A (B)	0 or 1	-	451
Overestimator	Survey III	Dummy equal to one if the mother overestimates the share of mothers in her city agreeing with the statement <i>Mothers with children below the age of 3 should not work</i> in the first survey (allowing for a range of 0.5 std around the actual value). In our stratification we did not allow for a range of 0.5 std around the true value, resulting in eight more mothers overestimating the conservativeness around them.	0 or 1	Missing if the mother did not participate in the first survey ( $n = 43$ ) or did not answer this question ( $n = 2$ ).	451
<b>Further variables</b>					
Single (Figure 1)	Survey IV	Mother has no partner.	0 or 1	-	451
Age child > Median (Figure 1)	Survey IV	Child is older than the median age.	0 or 1	-	451
Mother worked full-time, pre-birth (Figure 1)	Survey I	Indicator of full-time employment in the year before the child was born.	0 or 1	-	451
Migration background (Figure 1)	Survey I	Indicator of the the mother not being born in Germany.	0 or 1	Missing if father answered survey I ( $n = 14$ ).	437
Slot in child care	Survey IV	Dummy equal to one if the child visits a child care center at least one hour per week.	0 or 1	-	451
Mother with a liberal background	Survey III	Dummy equal to one if the mother of the mother worked full-time when she was 15 years old.	0 or 1	This information is missing for mothers who did not participate in the first survey ( $n = 44$ ) or who did not answer the question ( $n = 5$ ), we code these mothers with zero.	451

Figure C1: Correlates of Gender Attitudes (First Survey) and Labor-Market Participation (Second Survey)



*Notes:* Figure shows correlations between mothers' own gender attitudes in the first survey and their realized labor-market outcomes in the second survey, conducted about nine months later. The left (right) part of the figure shows the correlations with working in general (working full-time, i.e., working hours  $\geq 30$ ). Note that agreement with statements 1, 3, and 6, and disagreement with statements 2, 4, 5, and 7 indicate conservative attitudes. The dark gray circles represent bivariate correlations between the gender attitude of interest and the realized labor-market outcome, while the light gray diamonds represent multivariate correlations that account for all other gender attitudes as controls. Lines represent the 95% confidence interval.



## Appendix C. Further Results

Table C1: Treatment Effect on Mothers' Own Attitudes

	Do you agree with the following statement: Mothers with children below the age of 3 should not work			
	Average Effekt	Effect for: Perception Too Conservative	Effect for: Little Confidence About Perception	Effect for: Mothers with Moderate Attitudes
	(1)	(2)	(3)	(4)
Treatment	-0.066** (0.033)	-0.085** (0.042)	-0.121** (0.048)	-0.127* (0.065)
Treatment × Perception Not Too Conservative		0.072 (0.063)		
Perception Not Too Conservative		-0.007 (0.060)		
Treatment × Confident About Perception			0.100 (0.069)	
Confident About Perception			-0.067 (0.050)	
Treatment × Liberal or Conservative Attitudes				0.119 (0.080)
Liberal or Conservative Attitudes				-0.080 (0.061)
Pre-Treatment Outcome	Yes	Yes	Yes	Yes
Strata Controls	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes
Treatment Effect for Perception Not Too Conservative		-0.013 (0.047)		
Treatment Effect for Confident About Perception			-0.021 (0.048)	
Treatment Effect for Liberal or Conservative Attitudes				-0.008 (0.044)
Control Mean	0.27			
Perception Not Too Conservative/ Confident About Perception/ Liberal or Conservative Attitudes		0.086	0.260	0.209
Perception Too Conservative/ Little Confidence About Perception/ Moderate Attitudes		0.327	0.274	0.319
N	451	451	451	407

Table shows the intention-to-treat effects on mothers' agreement to the statement: *Mothers with children under the age of 3 should not work*, all models are estimated by OLS. While the first Column (1) shows the average effect, the next three Columns (2, 3, and 4) show heterogeneous treatment effects for different subgroups estimated by using models with interaction terms. Column (2) reports heterogeneity based on whether the mother overestimates the conservativeness in her environment in the second survey (results are similar when using the overestimators from the first survey). Column (3) reports heterogeneity based on whether the mother has little confidence about her pre-treatment perception. Column (4) reports heterogeneity based on whether the mother has moderate pre-treatment attitudes. All models include strata fixed effects and sociodemographic controls (see Section 5.4 for details). Imputation dummies for missing values in control variables are also included. *Control Mean* is the mean of the outcome in the control group. *Control Mean Perception Not Too Conservative/ Confident About Perception/ Liberal or Conservative Attitudes* is the mean of the outcome in the control group for mothers who do not overestimate the conservativeness in their environment/ are confident about their perception/ have liberal or conservative pre-treatment attitudes. *Control Mean Perception Too Conservative/ Little Confidence About Perception/ Moderate Attitudes* is the mean of the outcome in the control group for mothers who overestimate the conservativeness in their environment/ have little confidence about their perceptions/ have moderate pre-treatment attitudes.\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

Table C2: Treatment Effect on Labor-Market Expectations: Extensive and Intensive Margin

	Increase in Working Hours	
	Overall Effect (1)	Employed (2)
Treatment	0.074* (0.044)	0.098* (0.058)
Treatment $\times$ Not Employed		-0.055 (0.089)
Not Employed		0.411*** (0.079)
Pre-Treatment Outcome	Yes	Yes
Strata Controls	Yes	Yes
Sociodemographic Controls	Yes	Yes
Treatment Effect for Not Employed		0.043 (0.065)
Control Mean	0.402	
Control Mean Not Employed		0.625
Control Mean Employed		0.216
N	450	450

Table shows intention-to-treat effects on maternal labor-market expectations, all models are estimated by OLS. In Columns (1) and (2), the outcome variable is a dummy equal to one if the mother plans to increase her current working hours in the following year (either from zero to a positive value or by increasing to a higher value). While the first Column (1) shows the average effect, the second Column (2) shows heterogeneous treatment effects by the mother's employment status. All models include strata fixed effects and sociodemographic controls (see Section 5.4 for details). Imputation dummies for missing values in control variables are also included. *Control Mean* is the mean of the outcome in the control group. *Control Mean (Not) Employed* is the mean of the outcome in the control group for (not) employed mothers. Robust standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

Table C3: Comparison: Analytical Sample and Full Sample From First Survey

	Share agreeing		Perception of agreement	
	Analytical sample	First survey	Analytical sample	First survey
	(1)	(2)	(3)	(4)
1. Mothers with children below the age of 3 should not work (1: Conservative)	0.17	0.18	0.40	0.40
2. Mothers and fathers should divide the housework equally (0: Cons.)	0.86	0.86	0.69	0.69
3. A woman should earn at most as much as her partner (1: Cons.)	0.12	0.13	0.29	0.30
4. Mothers and fathers should equally share caring obligations for the child (0: Cons.)	0.79	0.79	0.69	0.70
5. Fathers with children below the age of 3 should work at most part-time (0: Cons.)	0.21	0.22	0.27	0.28
6. Mothers with children below the age of 3 should work at most part-time (1: Cons.)	0.63	0.65	0.59	0.59
7. Fathers with children below the age of 3 should not work (0: Cons.)	0.03	0.03	0.18	0.18

*Notes:* Table shows mothers' own gender attitudes and perceptions of other mothers' attitudes towards seven statements regarding gender roles. Column (1) shows the share of mothers agreeing to the statements in our analytical sample ( $n = 404$  to  $n = 407$ ), Column (2) in the full sample from the first survey ( $n = 443$  to  $n = 445$ ). Column (3) shows mothers' perceptions about the share of other mothers agreeing with the statement in our analytical sample ( $n = 404$  to  $n = 406$ ), Column (4) in the full sample from the first survey ( $n = 441$  to  $n = 444$ ).

## Appendix D. Robustness

Table D1: Treatment Effects on Perceptions of Gender Norms, Attitudes and Labor-Market Expectations Using SOEP Population Weights

	Perceptions about ...						Attitudes		Labor-Market Expectations	
	Friends and Acquaintances agreeing to <i>Mothers with children below the age of 3 should not work</i>		Women in Germany agreeing to <i>When a mother works, her children suffer</i>		Women in Germany agreeing to <i>When a mother works, her children suffer</i>		Agreement to the Statement <i>Mothers with children below the age of 3 should not work</i>		Increase in Working Hours	
	Perception (0-100)		Perception (0-100)		Dummy: Perception too conservative		Dummy		Dummy	
	Unweighted (1)	SOEP Weights (2)	Unweighted (3)	SOEP Weights (4)	Unweighted (5)	SOEP Weights (6)	Unweighted (7)	SOEP Weights (8)	Unweighted (9)	SOEP Weights (10)
Treatment	-7.403*** (2.108)	-7.494*** (2.248)	-8.838*** (2.014)	-9.712*** (2.216)	-0.196*** (0.046)	-0.207*** (0.049)	-0.061* (0.034)	-0.074* (0.038)	0.081* (0.045)	0.080* (0.047)
Pre-Treatment Outcome Strata	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls Sociodemographic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Mean	28.70	28.62	37.42	37.71	0.53	0.54	0.26	0.26	0.40	0.39
N	437	437	437	437	437	437	437	437	437	437

*Notes:* Table presents treatment effects calculated using propensity score weights based on data from the representative German Socio-Economic Panel Study (SOEP). In Columns (1) and (2), the outcome variable is the mother's perception about the number of friends and acquaintances (0-100) agreeing with the statement: *Mothers with children under the age of 3 should not work*. In Columns (3) and (4), the outcome variable is the mother's perception about the number of women in Germany (0-100) agreeing to the statement: *When a mother engages in paid work, her children suffer*. In Columns (5) and (6), the dummy variable is equal to one if mothers overestimate the share of women in Germany, agreeing with the statement: *When a mother engages in paid work, her children suffer*. We allow for a range of 0.5 standard deviations around the actual value. In Columns (7) and (8), the outcome variable is a dummy equal to one if the mother agrees to the statement: *Mothers with children under the age of 3 should not work*. Finally, in Columns (9) and (10) the outcome variable is a dummy equal to one if the mother plans to increase her current working hours in the following year — either by switching from no work to work or by working more hours. The regressions in the even Columns (2, 4, 6, 8, 10) are re-weighted to ensure that our sample is representative of mothers with young children in Germany. These weights are derived by estimating a probit model, with an outcome dummy that equals zero if the mother is part of the SOEP sample (specifically, mothers with 2-3-year-old children born in 2017, 2018, or 2019) and one if the mother participated in our second survey. The regression includes predictors such as the mother's migration background, having a college entrance qualification, employment status, and net household equivalent income. Since 14 mothers did not provide information on their household income, they are missing in these analyses. All models include strata fixed effects and sociodemographic controls (see Section 5.4 for details). Imputation dummies for missing values in control variables are also included. *Control Mean* is the mean of the outcome in the control group. In the even Columns (2, 4, 6, 8, 10) the control means are re-weighted with the propensity score weights based on the SOEP data. Robust standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

Table D2: Randomization Inference and Corrections for Multiple Hypothesis Testing

	Coefficient (1)	Rand. Inference (2)	List-Shaikh-Xu (3)	Westfall-Young (4)	Romano-Wolf (5)
<b>Panel A: Treatment Effects on Perceptions of Gender Norms (Table 3)</b>					
Perceptions about ...					
Friends and Acquaintances	-7.767***	<b>0.000</b>	<b>0.001</b>	<b>0.000</b>	<b>0.001</b>
Women in Germany	-8.540***	<b>0.001</b>	<b>0.001</b>	<b>0.000</b>	<b>0.001</b>
Women in Germany (Dummy)	-0.190***	<b>0.000</b>	<b>0.001</b>	<b>0.000</b>	<b>0.001</b>
<b>Panel B: Heterogeneous Treatment Effects on Mothers' Own Gender Attitudes (Figure 3 and Appendix Table C1)</b>					
Agreement to the Statement					
<i>Mothers with children below the age of 3 should not work</i>	-0.066**	<b>0.051</b>			
Overestimators	-0.085**	<b>0.049</b>	<b>0.075</b>	<b>0.061</b>	
Little Confidence	-0.121**	<b>0.014</b>	<b>0.040</b>	<b>0.027</b>	
Moderate Attitudes	-0.127*	<b>0.053</b>	<b>0.056</b>	<b>0.061</b>	
<b>Panel C: Treatment Effects on Labor-Market Expectations (Table 4)</b>					
Increase in Working Hours	0.074*	<b>0.079</b>			
Slot in Child Care	0.132**	<b>0.012</b>	<b>0.054</b>	<b>0.030</b>	
Father Involved	0.164**	<b>0.035</b>	<b>0.053</b>	<b>0.030</b>	
Liberal Background	0.136*	<b>0.055</b>	<b>0.051</b>	<b>0.049</b>	

*Notes:* Table presents p-values for our main results, calculated using randomization inference and adjusted for multiple hypothesis testing. P-values < 0.10 are highlighted in bold. For comparison, Column (1) reports coefficients along with significance stars based on robust standard errors (\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ), as displayed in the main tables. The p-values in Column (2) are derived using randomization inference (RI) based on 1,000 permutations, with treatment status assigned randomly within strata (using the Stata command 'ritest' provided by Hess, 2017). In Columns (3)–(5), we apply three distinct methods to correct for multiple hypothesis testing, focusing on controlling family-wise error rates, all of which utilize bootstrap resampling techniques. Column (3) follows the approach by List et al. (2019), Column (4) implements the stepdown-approach by Westfall and Young (1993), and Column (5) the procedure by Romano and Wolf (2005, 2016). The Westfall-Young approach (applied via the Stata command 'wyoung' by Julian Reif) and the Romano-Wolf approach (executed with the Stata command 'rwolf' by Clarke et al. (2020)) both account for stratified randomization by selecting bootstrap samples within each stratum. In Panel A, we account for three outcomes related to mothers' perceptions: perceptions about friends and acquaintances, perceptions about women in Germany (measured on a scale from 0 to 100), and a binary variable indicating whether women in Germany are perceived as too conservative. In Panel B, we adjust for the fact that effects on attitudes are measured across multiple subgroups. In Panel C, we adjust for the fact that effects on labor-market expectations are measured across multiple subgroups. Notably, some corrected p-values are smaller than the original ones due to the application of bootstrap methods. All control variables from the corresponding baseline specifications are included in the analysis.

## Appendix E. Treatment Effects on Perceived Returns of Full-Time Employment and Perceived Barriers to Employment

Providing information about the actual gender norm may influence mothers' work decisions for several reasons. First, it could affect these decisions because of perceived social pressure from peers. Specifically, mothers may refrain from working because they believe that people around them disapprove of them doing so. Our treatment effectively reduces the perception of conservatism not only of mothers in Germany in general but also within their immediate social circle, including friends and acquaintances. Therefore, the effect on labor-market expectations may stem from the perception of a more liberal environment.

Second, it might operate through the change of their own attitudes. Indeed, we observe that changes in the perception of gender norms have a causal effect on mothers' own attitudes towards work, which in turn may explain the effect on employment expectations.

However, the perception of gender norms could also influence maternal labor-market behavior for other reasons, such as serving as a guide for best practices. We investigate this aspect by examining the effects on mothers' perceived returns of working full-time across various life domains, including their family income, career prospects, personal well-being, child development, satisfaction with the partnership, and social prestige. We assess the perceived returns in these domains by asking a hypothetical question: *“If you went from not working at all to working full time, would these domains improve, stay the same or get worse?”* We find no treatment effects on five out of six domains, nor on a summary index that combines all these outcomes (Kling et al., 2007) (see Appendix Table E1). The only exception is satisfaction with the partnership, where treated mothers rate the impact of transitioning to full-time work 7% less favorably ( $p = .035$ ).

Table E1: Treatment Effects on Perceived Returns of Full-Time Work

	Perceived Benefits of Full-Time Work						Index
	Family	Career	Child	Satisfaction	Own	Social	
	Income	Opportunities	Development	Partnership	Well-Being	Prestige	(7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.007 (0.056)	-0.076 (0.056)	0.035 (0.062)	-0.147** (0.069)	-0.020 (0.079)	-0.004 (0.061)	-0.043 (0.093)
Pre-Treatment Outcome	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strata Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Mean	2.781	2.661	1.819	2.141	2.198	2.500	0.038
N	450	449	448	418	448	447	450

*Notes:* Table shows treatment effects on mothers' perceived returns to full-time work. We assess the perceived returns by asking a hypothetical question: *If you went from not working at all to working full time, would the following domains improve, stay the same, or get worse?* Outcome variables in Columns (1)–(6) range from 1 (worsen) to 3 (improve). Column (1) refers to the perceived returns to family income. Column (2) refers to the perceived returns in career opportunities. Column (3) refers to the perceived returns in child development. Column (4) refers to the perceived returns in satisfaction with the partnership. In Column (4), our sample is smaller as some mothers are single ( $n = 30$ ). Column (5) refers to the perceived returns to mothers' personal well-being. Column (6) refers to the perceived returns in social prestige. Column (7) shows the analysis for an index that combines all six dimensions of perceived returns to full-time work with a mean = 0 and a standard deviation = 1 (Kling et al., 2007). All models include the pre-treatment outcome, strata controls, and baseline sociodemographic controls (see Section 5.4 for details). Imputation dummies for missing values in control variables are included. *Control Mean* is the mean of the outcome in the control group. Robust standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

Finally, information about the actual gender norm may influence how mothers perceive barriers to employment. In particular, learning about the more liberal attitudes of other mothers may signal that finding a suitable job is actually easier than they previously thought. We ask mothers what types of problems they believe mothers with young children face when searching for a job. Potential issues include low wages, unsuitable working hours, long commutes, mismatched qualifications, lack of child care, or insufficient job flexibility. We observe no treatment effects on four out of these six potential barriers. However, there is a marginally significant positive effect on the perception that wages are too low—treated mothers are 7% less likely to consider this a problem ( $p = .097$ ). We also find a stronger effect concerning qualifications, with treated mothers being 9% less likely to regard inadequate qualifications as a barrier ( $p = .015$ ). When combining these outcomes into an index, however, we do not find a significant treatment effect. Additionally, we asked mothers if, assuming they would be looking for a job now, it would be easy, difficult, or nearly impossible for them to find a suitable job. We find no treatment effect on this outcome either (not shown).

Table E2: Treatment Effects on Perceived Barriers to Employment

	Perceived Barriers to Employment						Index (7)
	Salary Too Low	Unsuitable Working Hours	Long Commutes	Mismatched Qualifications	Lack of Child Care	Insufficient Job Flexibility	
	(1)	(2)	(3)	(4)	(5)	(6)	
Treatment	0.189* (0.114)	-0.103 (0.116)	-0.067 (0.119)	0.313** (0.128)	0.022 (0.121)	0.029 (0.118)	0.056 (0.096)
Pre-Treatment Outcome	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strata Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Mean	2.825	2.053	2.850	3.335	2.211	2.123	-0.015
N	450	449	449	449	450	449	451

*Notes:* Table shows treatment effects on mothers' perceived barriers to finding a suitable job. We asked mothers what kind of problems they think mothers with young children face when looking for a job. Outcome variables in Columns (1)–(6) range from 1 (fully applies) to 6 (does not apply at all). Column (1) focuses on whether the wage is perceived to be too low. Column (2) focuses on whether working hours are perceived as unsuitable. Column (3) focuses on whether the commute to work is perceived as too long. Column (4) focuses on whether qualifications do not match. Column (5) focuses on whether child care is missing. Column (6) focuses on whether jobs are not flexible enough. Column (7) shows the analysis for an index that combines all six dimensions of perceived barriers to finding a suitable job with a mean = 0 and a standard deviation = 1 (Kling et al., 2007). All models include the pre-treatment outcome, strata controls, and baseline sociodemographic controls (see Section 5.4 for details). Imputation dummies for missing values in control variables are included. *Control Mean* is the mean of the outcome in the control group. Robust standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .