WORKING PAPER

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Working Paper Series in Economics

No. 400

April 2021

www.leuphana.de/institute/ivwl/working-papers.html
ISSN 1860 - 5508

Of housewives and feminists: Gender norms and intra-household division of labour

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April 15, 2021

Abstract

To investigate the role of gender norms in household specialisation choices, I conduct a lab experiment with real hetero-sexual couples playing a *battle of the sexes* game. The salience of gender norms varies across treatments: the *Norm* group chooses between strategies labelled as a family specialisation game (*Career* vs. *Family*), the *Neutral* group chooses *A* vs. *B*. Women respond strongly to the salience of *Norms*; they opt for *Career* at a significantly lower rate compared to *Neutral*, regardless of familiarity with their partner. By contrast, men's response is weak and heterogeneous across partner and stranger pairings. Additional analyses suggest that the pattern is not explained by differential beliefs, but is consistent with marriage market motives, i.e. some men may want to signal progressive gender attitudes to their partner.

JEL Codes: D13, J16, J22
Key words: Experiment, labour division, battle of the sexes, norms, gender

*Valuable comments by two anonymous referees and Manuela Angelucci, Ralph Bayer, Miriam Beblo, Elisabeth Bublitz, Francesco Fallucchi, Evelyn Korn, Eva Markowsky, Gerd Mühlheußer, Daniele Nosenzo, Kristin Paetz, Grischa Perino, Elizabeth Peters, Arne Pieters, Ernesto Reuben, Patrick Schneider, Melanie Schröder, Joël van der Weele, David Wozniak, as well as participants of the 2018 Leuphana Workshop on Microeconomics and meetings of ASSA, MBEES and WEAI are gratefully acknowledged. I thank the WiSo Graduate School of *Universitaet Hamburg* and Miriam Beblo for providing funds in support of this project.

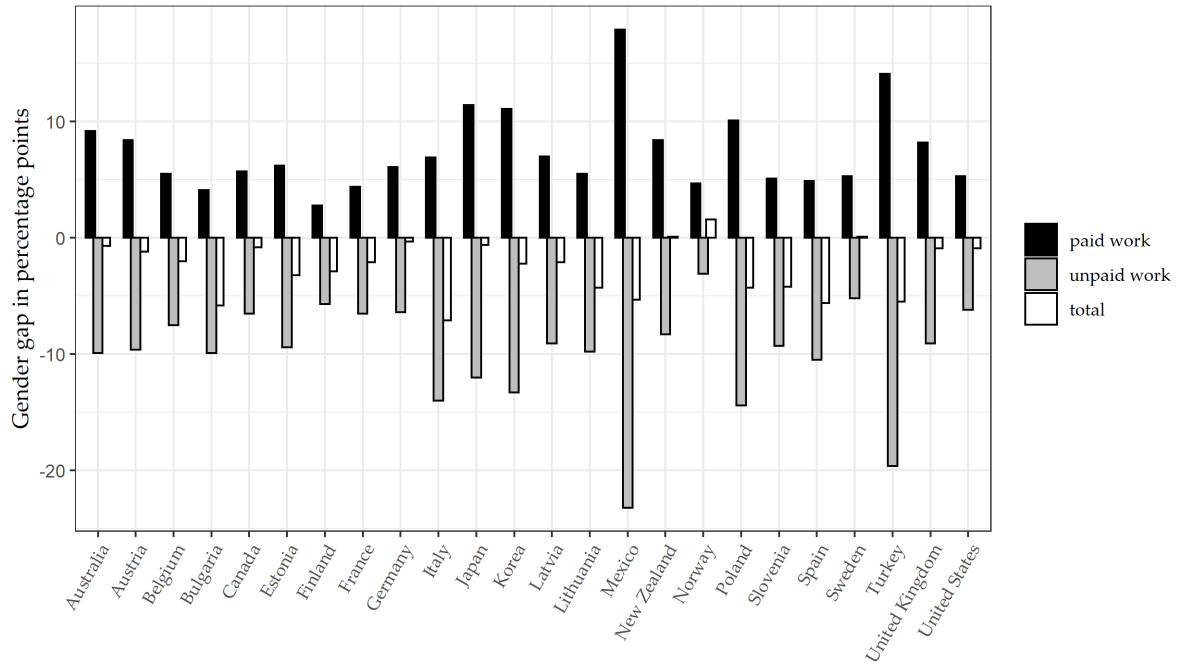
1 Introduction

In most industrialised societies, women perform more unpaid work in the home and less paid work in the market than men. Figure 1 documents this gendered division of labour for OECD countries: on average, men spend a larger fraction of their total daily time working for pay than women, while the reverse is true for unpaid work. Economists have long viewed this pattern as the result of intra-household specialisation according to comparative advantage (Becker, 1973; Gronau, 1973a,b), assuming that women are, on average, relatively less productive in the labour market than men.[1] More recent work, however, suggests that gender gaps in the labour market arise only *after* couples begin to divide labour along gender lines, assigning primary responsibility for unpaid child-rearing activities to women (Blau & Kahn, 2017; Goldin, 2014; Goldin *et al.*, 2017; Kleven *et al.*, 2018; Lundberg & Rose, 2000; Lundborg *et al.*, 2017; OECD, 2017a). But if gender differences in labour market productivity are more likely a result rather than the initial reason for gendered specialisation in families, what other factors motivate couples to divide labour along gender lines?

The present paper focuses on gender norms and their potential power to reinforce the gendered division of labour. In recent years, gender norms received increasing attention by academics and policy makers concerned over their potentially negative impacts on the economic efficiency of households (OECD, 2017a,b; European Commission, 2016; Akerlof & Kranton, 2000; Bertrand *et al.*, 2015). Using a model of household labour supply, Cudeville & Recoules (2015) show how gender norms and couples' desire for social conformity can distort male and female labour supplies in couples where women have a comparative advantage for market work. While the theoretical model is intuitive, the impact of norms on household division of labour is notoriously difficult to study empirically. Prior work has documented behaviours that are consistent with the notion that social gender norms women's relative involvement in market work (Akerlof & Kranton, 2000; Fernández *et al.*, 2004;

[1] This paper focuses on heterosexual couples. Homosexual households tend to specialise less (Black *et al.*, 2007; Grossbard & Jepsen, 2008), and there may be several explanations for this. First, gains from specialisation are lower in childless households, and same-sex couples are more likely to fall into this category. Second, many countries restrict the rights of homosexual couples to enter into binding contracts such as marriage, thereby making specialisation less appealing to them, especially to the individual taking on the homemaker role. Finally, hetero-normative gender roles may be less powerful in homosexual partnerships.

Figure 1: Gender gaps in percentage of total time spent in paid and unpaid work



Note: Own calculations based on OECD family database (2016) data, a compilation of time use studies from each country containing information on men's and women's (self-reported) time spent on work activities as a percentage share of total daily time. Gender gaps are calculated as the difference in male vs. female country averages. The category paid work is taken as is from the data, while the category unpaid work is formed by aggregating unpaid and care work (excluding personal care). The category total work is formed by aggregating paid and unpaid work.

Fernandez & Fogli, 2009; Fortin, 2005, 2015; Alesina *et al.*, 2013; Bertrand *et al.*, 2015), but much of the evidence is also consistent with alternative channels. For instance, systematic gender differences in productivities or in hedonic returns to engaging in market versus care work would yield similar results and are likely not orthogonal to gender norms (see Görges & Nosenzo, 2020, for a detailed discussion).[2]

In this paper, I take advantage of a controlled lab experiment to study the causal impact of gender norms on couples' specialisation choices. By varying the salience of gender norms exogenously and ruling out gender differences in productivity and preferences by design, this paper provides evidence that norms exert a *direct* effect on division of labour choices, independent of other motives that may factor into that decision outside the lab. 192 subjects, real heterosexual couples, play a symmetric *battle of the sexes*-style coordination game, in which each partner can choose one of two available actions. Across treatments, I vary whether the labeling of the actions is neutral (*A* vs. *B*) or makes gender norms salient (*Career* vs. *Family*). Coordination

[2]For instance, gender differences in preferences for market work seem to be more pronounced in societies where formal and informal institutions promote gender differences in labour force participation (Beblo & Görges, 2018).

occurs when each of the two available actions are simultaneously chosen by one of the partners (i.e., each partner 'specialises' in one of two actions), but payoffs are asymmetric and favour the player who chose *Career*/*A*. Each subject plays with their real partner and a randomly matched stranger of the same sex as their partner.

The main result of the experiment is that women's specialisation choices are highly sensitive to the salience of gender norms. Compared to the *Neutral* group, women opt for *Career* at a significantly lower rate in the *Norm* group. The reduction is large, women in *Neutral* choose *Career* more than twice as often compared to women in *Norm*. Notably, the drop occurs both when women are paired with their partners and strangers. This shows that gender norms directly affect women's behaviour and, by extension, lower their claims to a joint pie, even when they receive no other forms of compensation and intra-couple redistribution is ruled out (as is the case with strangers).

A second result is that men's response to the salience of norms is much weaker than that of women and sensitive to whether men are paired with a stranger or their real partner. When paired with their real partner, men in the *Norm* group are in fact no more likely to opt for *Career* than men in *Neutral*; a quantitatively large, yet statistically not significant increase of around 20 percentage points is only observed in stranger pairings. Exploring potential mechanisms for this heterogeneity, I find suggestive evidence that this discrepancy might be a result of men's marriage market signalling, in the spirit of Bursztyn *et al.* (2017). Specifically, I document patterns consistent with the interpretation that some men care to signal progressive gender attitudes to their potential long-term partners—"acting feminist"—but not to an anonymous, randomly matched woman. An alternative explanation, differential beliefs regarding partners' and strangers' *Career* choices, is not borne out by the data.

Apart from its contribution to the growing economics literature on gender norms, the paper's perspective on norms as a coordination device relates it to a small number of experimental studies on the effectiveness of focal points (Isoni *et al.*, 2013, 2014; Crawford *et al.*, 2008). In a study most closely related to this paper, Holm (2000) shows that gender in itself can provide a focal point in a symmetric coordination game where the two pure strategy Nash equilibria result in unequal payoffs. He presents evidence that mixed-sex pairs of players are indeed more likely to coordinate than same-sex pairs and that the equilibrium that favours the male player is fo-

cal. Surprisingly, despite recurring interest in the question of whether gender norms provide a focal point in the household division of labour problem in the theoretical literature (Engineer & Welling, 1999; Hadfield, 1999; Baker & Jacobsen, 2007), it has not been studied empirically. The present paper addresses this gap by studying a classic *battle of the sexes* game played by *real* heterosexual couples and mixed-sex pairs of strangers, thus offering insights into whether societal gender norms, or couple-specific norms, can improve coordination outcomes.

The paper also contributes to a growing literature on economic experiments with real couples (for an overview, see Munro, 2018; Hopfensitz & Munro, 2020). Most closely related to this study are the experiments by Görges (2015) and Cochard *et al.* (2018), who study division of labour. Görges (2015) finds that women are more likely to perform an unpaid real effort task to reach efficiency gains when paired with their partner compared to women paired with a male stranger. Cochard *et al.* (2018) present couples with an abstract public good game and show that women are no more likely than men to shift money or time from their private into the public account. This result is somewhat surprising given that, outside the lab, women are frequently observed to spend more time than men providing the family public good.[3] Both Görges (2015) and Cochard *et al.* (2018) conjecture that their findings may be related to the salience of gender norms, which is low in the lab setting in Cochard *et al.* (2018), and lower for individuals playing with strangers compared to real partners in Görges (2015). The present paper corroborates this interpretation by providing first empirical evidence that women tend to claim a smaller share of a joint pie when gender norms are salient.

The paper is organised as follows: Section 2 lays out the experimental game, while details on the procedure are provided in Section 3. The main results are supplied in Section 4, and Section 5 presents analyses regarding the mechanism. Section 6 offers a discussion and concludes the paper.

2 Experimental design

The present paper examines the effect of gender norms on household specialisation decisions in a non-cooperative *battle of the sexes*. The structure of the game is pre-

[3]This finding by Cochard *et al.* (2018) is consistent with women's behaviour in the *Neutral* group discussed in the present paper, where women and men are equally likely to choose the strategy that provides them with a higher payoff, conditional on coordinating.

sented in Table 1. Each player of gender $g \in \{f, m\}$ can choose between two actions $a \in \{A, B\}$ (labeled *Career* and *Family* in the *Norm* group, A and B in the *Neutral* group). For a given action chosen by m, f maximises her own pay-off by *not* matching m's action and vice versa. Subjects make two one-shot decision, once matched with their real partner and once with a stranger.[4] Payoffs were set at c = 200 ECU and f = 100 ECU and converted to Euro-cents at a rate of 1:1 at the end of the experiment.[5]

Table 1: Battle of Sexes, $c > f > 0$

		Player 2	
		A / Career	*B / Family*
Player 1	*A / Career*	0, 0	c, f
	B / Family	f, c	0, 0

Note: Strategies were labeled A and B in the *Neutral*, and *Career* and *Family* in the *Norm* group.

Applying standard game theory, there are two equilibria in pure strategies in this game: (*Career*, *Family*) and (*Family*, *Career*). In the neutrally framed version of the game, the mixed strategy equilibrium involves playing action A (*Career*) with probability $\frac{c}{c+f}$ and action B (*Family*) with $\frac{f}{c+f}$, i.e., $\frac{2}{3}$ and $\frac{1}{3}$, respectively, given the payoffs chosen in the experimental implementation. Expected payoffs are $\frac{cf}{c+f}$, i.e., nearly 67 ECU, and the probability to coordinate is just below 45%. When gender norms are salient, i.e. the available actions are labeled *Family* and *Career*, coordination rates might improve according to the *focal point effect* (Schelling, 1960), which induces rational players to play the equilibrium that is culturally dominant. In this setting, this would imply that the 'traditional', male-favouring, equilibrium would be reached more often, thus improving efficiency at the cost of increased inequality to the disadvantage of women.

The parameters of the game are chosen such as to capture a stylised decision problem arising in many families, in which partners have preferences over monetary income and well-raised children. Reflecting the gains from specialisation, total

[4] While the matrix representation is familiar to economists, the experimental instructions used a more intuitive illustration to convey the decision structure to subjects from different backgrounds. See Appendix A for details.

[5] A recent meta-study of ultimatum and dictator game studies by Larney *et al.* (2019) suggests that behaviour in strategic interactions is largely invariant to stake size. Given that strategic interaction is at the heart of the present study, the relatively small stake size may be regarded as a minor concern.

utility is highest when one partner invests most of their time in children (*Family*) and the other in generating income (*Career*).[6] Payoffs are lower (and normalised to zero), when both spouses invest equally into *Career* or *Family*. This does not assume that the spouse who chooses *Family* engages in childcare full-time. As is common in most families today, childcare may be partially outsourced, but the assumption is that a residual time input must be provided by a parent and reduces the time that parent can spend on *Career*.

A second noteworthy feature of the game is that payoffs are asymmetric and favour the spouse choosing *Career*. This assumption can be justified in a number of ways. An intuitive reason is that the spouse who acquires labour earnings may either have private information about the amount, or some discretionary power over its distribution, which allows them to determine a split in their favour.[7] Another possibility is that differences in payoffs implicitly reflect future consequences of the actions, such as a more privileged financial position of the spouse who maintained their career relative to the caretaker in case of divorce.[8] Lastly, and perhaps less gloomy, the asymmetry in payoffs can simply arise because both spouses care strongly about their career and prefer spending their time in pursuit of rather than cutting back from it.

A final important feature of the game is that payoffs are symmetric across the two equilibria. Thus, total payoffs are equal, regardless of the gender of the player choosing *Career*/*Family*.[9] This implies that both genders are equally productive in each of the two activities, and derive the same utility from engaging in them. Impor-

[6]Note that these gains do not derive from differences in relative productivities as in Becker (1973), but are inherent to the production function.

[7]Both phenomena—hiding of income or windfalls from spouses and exercising control over individually obtained income—are well-documented in the experimental family economics literature (Ashraf, 2009; Iversen *et al.*, 2011; Mani, 2011; Castilla & Walker, 2013; Kebede *et al.*, 2013; Ambler, 2015; Hoel, 2015).

[8]Once children have left the household, both parents derive the same utility from them, regardless of parents' marital state. Both spouses will now invest all their time in market work, but levels of wage productivity have diverged because one spouse has been (more) absent from the labour market in period 1. This may create an incentive for the richer spouse to divorce the poorer one, if in doing so they can keep a larger share of their labour income to themselves.

[9]Given that much of the recent debate in economics is concerned with the potentially detrimental effects to household efficiency, higher total payoffs in the female-favouring equilibrium would have also presented an interesting case to examine. Predictions would clearly be different for the *Neutral* case, since the expected rate of reaching the female-favouring equilibrium would be higher in this payoff structure. Yet, predictions for the effect of norms would be qualitatively similar, as we would expect their salience to raise the relative likelihood of the male-favouring equilibriumin the *Norm* group.

tantly, payoffs are constant across treatments, allowing us to investigate the impact of the salience of gender norms on choices *independent of other considerations*. This is important since it is often argued that couples' specialisation choices likely reflect that women, relative to men, prefer time with children over time in the labour market or are more productive in child-rearing. Outside the lab, it is hard to determine the extent to which such gender differences exist and matter. Moreover, it is virtually impossible to separate them from the effect of societal norms, as they are likely correlated. For instance, prior research has documented lower relative preferences for work in women (Beblo & Görges, 2018) and stronger beliefs about higher relative returns of maternal time inputs on child outcomes (Bauernschuster & Rainer, 2012; Fortin, 2015) in societies with more traditional gender norms.

Analysing the household specialisation problem as a non-cooperative, one-shot *battle of the sexes* game is of course a gross simplification of the reality of this decision. Yet, it allows us to capture the essence of a specific decision environment in which we want to study the influence of gender norms. A one-shot simultaneous move game without communication provides the desired properties of a non-cooperative bargaining environment.[10] It is important to note that I create this non-cooperative environment intentionally for *all* subjects to be observed in, regardless of whether they would usually come to an agreement using cooperative bargaining. One reason for this is rather technical. Communication would have changed the decision environment into a cooperative one for some couples (those couples who generally bargain cooperatively), whereas it would have remained a non-cooperative choice for others. While this would have complicated the comparison between *Neutral* and *Norm* in real couples considerably, comparisons between real couples and anonymous strangers would have been rendered meaningless entirely. Strangers would have likely continued to bargain non-cooperatively, given the lack of possibilities to make binding agreements, even with communication.

There are also important conceptual reasons for studying specialisation choices as a non-cooperative bargaining game. While family economic models often assume cooperation among household members and thus predict productive efficiency (Manser & Brown, 1980; McElroy & Horney, 1981; Chiappori, 1988), often non-cooperative

[10] Communication was prevented using several measures. Partners were seated in closed booths, several booths apart from each other. They had to turn over their mobile phones to the lab team for the duration of the experiment. See Section 3 for details.

behaviour plays an important role, at least in the threat point (Lundberg & Pollak, 1994; Konrad & Lommerud, 2000). Empirically, numerous economic experiments with couples have documented that non-cooperative behaviour is far from uncommon (Peters *et al.*, 2004; Ashraf, 2009; Iversen *et al.*, 2011; Mani, 2011; Castilla & Walker, 2013; Kebede *et al.*, 2013; Ashraf *et al.*, 2014; Cochard *et al.*, 2014; Ambler, 2015; Beblo *et al.*, 2015; Hoel, 2015; Beblo & Beninger, 2017). Closely related to the specialisation game studied here, Fahn *et al.* (2016) have shown that divorce and alimony legislation affects whether couples bargain cooperatively or non-cooperatively and that non-cooperative environments lead to inefficiently low public good investments with lower fertility. In light of rising divorce rates and weakened alimony laws in many countries (e.g., for the US, see Stevenson & Wolfers, 2007), relationships are increasingly characterised by contractual incompleteness and thus non-cooperation.

While bargaining over the division of labour is plausibly a repeated game, there are good reasons to focus on the one-shot version of the game when studying the effect of norms on outcomes. It is likely that the outcome of the 'first shot' is strongly predictive of outcomes in subsequent games and is therefore the most relevant to study. The reason is that specialisation choices typically feed back into spouses' relative productivities, since wage profiles diverge as one partner focuses more on their career than the other. As a result, the spouse who assumed the primary caregiver role upon arrival of the first child will likely do so upon arrival of the second.[11] The recent COVID-19 pandemic attest to this: As schools and childcare facilities closed, households' demand for private child care is most likely met by the parent who had already supplied more childcare before the pandemic, in most couples the mother (Fuchs-Schündeln *et al.*, 2020). Moreover, recent survey evidence shows that a sizeable fraction of couples have *never discussed* their division of household and market work during lockdown (Cosaert *et al.*, 2021), when excess childcare burdens were at their peak, indicating that the bargaining over the division of this burden followed indeed a non-cooperative protocol not entirely unlike the one we study here using a stylized *battle of the sexes* game.

In light of these considerations, the aim of the present paper is to test empirically whether gender norms affect the probability that couples reach a male- vs. female

[11] This means that the payoff structure of the game would change such that the equilibrium in which spouses choose the same actions as in a past game now generates higher individual and total payoffs than before, thus increasing the likelihood that spouses coordinate on it.

favouring division of labour in a non-cooperative setting. Since a higher rate of male-favouring equilibra comes at the cost of female players, it is important to understand, in a scenario where economic advantages or gains in non-monetary satisfaction from time spent with children can be ruled out, whether such a shift can occur *simply* due to the salience of gender norms. Comparing differences in outcomes between *Norm* and *Neutral* across pairs consisting of real partners and strangers allows us to further assess whether inequality between men and women only arises when it can easily be attenuated by intra-couple redistribution (as is the case for real partners) or whether subjects are similarly likely to expect that women accept a smaller share of the pie when that division is final (as is the case with strangers). In addition, comparing coordination rates across real partners and strangers might reveal whether individual norms can superimpose societal norms. For example, individuals holding progressive gender attitudes might play the female-favouring equilibrium with their partners but rationally expect a randomly drawn stranger from a representative distribution of gender attitudes to play differently, implying that the female-favouring equilibrium occurs with a higher frequency in real couples compared to strangers.[12]

3 Procedure & sample

The experiment was programmed in ztree (Fischbacher, 2007) and conducted in the economics lab at the University of Hamburg in 2016 and 2017. The *battle of the sexes* game analysed in this paper was part of a larger experiment on labour division, analysed in a companion paper (Görges, 2019), and was added at the end of 9 out of 12 sessions. Completing this part took about 10 minutes in sessions lasting 2.5 hours on average. Average payouts for the sessions as a whole were €27.43 (approximately $34 at the time of writing this paper). Four sessions (80 participants) were assigned to the *Norm*, and the remaining five (112 participants) to the *Neutral* group. All subjects played the game with both their real partner and a randomly matched stranger,

[12]The reverse phenomenon might, of course, occur when subjects expect that gender attitudes in the student population are on average more progressive than their own. Moreover, if subjects are inequality-averse, they may prefer an equal payoff of 0 over an unequal distribution, and thus try to prevent coordination. But since advantageous and disadvantageous inequality aversion would have to be rather pronounced to alter the pure-strategy equilibria (2 and 1 for advantageous and disadvantageous inequality aversion, respectively, in a Fehr & Schmidt (1999) model given the payoffs chosen in this experiment), I do not consider it as a motive. Moreover, Charness & Rabin (2002) have shown in their large-scale experiments that the majority of individuals are most strongly concerned with raising social welfare, more so than inequality.

where partner gender was held constant across pairings.[13] Thus, the data features between-subject variation in the presence of a gender norm focal point and within-subject variation in the pairing.

Subjects were recruited via hroot (Bock *et al.*, 2014) from a regular student subject pool. The invitation email instructed subjects to pre-register their partner and bring them to the experimental session. Being married or cohabitating with their partner was not required, nor were partners required to be enrolled as students. Upon arrival in the lab, participants were reminded that they needed to be true couples in a relationship, not merely study partners or housemates, in order to participate in the experiment. They were asked to leave if this was not the case; however, no one left the experiment. Additional ex-post checks that mitigate concerns regarding potential "fake couples" are provided in Appendix B.

Instructions for the game explicated the payoff consequences of the two available actions for both possible scenarios (partner choosing $A/Career$ or $B/Family$). They further informed subjects that they would play once with their partner and once with a randomly matched stranger (same sex as partner), and that they would have no knowledge of their partner's chosen action when making their decision, but would find out about each other's respective choices once the payouts were revealed.[14] As the experiment involved only a simple choice between two options, subject's comprehension was not tested formally, but subjects were invited to raise their questions in case of comprehension issues.

After having read the instructions, subjects were paired with their first partner (real or stranger) and entered their choice. Next, they were asked to predict their partner's decision. Upon completing this step, but before finding out the result, they were paired with their second partner (real or stranger) to repeat the previous steps. Once completed, subjects were confronted with four more prediction tasks: How many women (men) had chosen *Career* when playing with their real partner (stranger)? All prediction tasks were incentivised.[15] Finally, the outcomes of both games and the

[13] Order effects were ruled out by design because the result of each interaction was not revealed until both had been completed. Based on a regression of round-specific earnings on a round-2 dummy, we cannot reject the hypothesis that the difference between round 1 and 2 earnings is zero (p = .36). For completeness, Appendix-Table C.5 shows that the main results presented in this paper are robust to including the round-2 dummy as control.

[14] A translated version of the instructions can be found in Appendix A.

[15] Throughout the experiment, subjects were asked to make several predictions and were informed that two-thirds of the predictions would be randomly selected and paid out. They received 50ECU

corresponding payoffs were revealed.

Descriptive statistics are reported in Table 2.[16] All sessions were gender balanced by design. On average, participants in the *Neutral* group were about 25 years old, and 27 years old in the *Norm* group. Because the difference is significant, age will be included as a control in subsequent analyses. Union characteristics are measures that describe subjects' relationships with their partner. Most were very similar across treatments: The average union duration (time spent in the relationship with their partner) was three years, almost a third of the couples were cohabiting, and participants reported high satisfaction levels with their relationship on average. The *Norm* and *Neutral* groups differ with respect to the proportion of married couples: 7% of the participants in the *Neutral* group were married, while no couples in *Norm* were married. Consequently, marital status will also be included as a control variable in subsequent analyses.

Most subjects were currently enrolled in some form of educational institution, primarily university. The *Norm* and *Neutral* samples do not differ statistically with respect to enrollment status or the level of study. Furthermore, the two groups are very similar with respect to labour market activity. About a third of subjects are not active at all, and the rest are either unemployed or employed (full-time, part-time, or irregularly). Finally, the samples differ with respect to the proportion of subjects who ever participated in a lab experiment; thus, this indicator variable will be included in the subsequent analyses as well.[17]

4 Main results

4.1 Do gender norms affect coordination outcomes?

We begin by examining the effect of the salience of gender norms on coordination outcomes. Figure 2 summarises the raw data, breaking down by treatment (*Norm* vs. *Neutral*) the fraction of pairings—strangers (real partners) in the left (right) panel—

for correctly predicting their partners' choice between *Career* vs. *Family*, and 100ECU for the total number of men (women) choosing *Career* in their session.

[16] The data analyses and the presentation of results in this paper were prepared using the *R programming environment for statistical computing* (R Core Team, 2018), version 3.6.3, and several add-on packages: *emmeans* (Lenth, 2020), *extrafont* (Chang, 2014), *glue* (Hester, 2020), *lme4* (Bates *et al.*, 2015), *MASS* and *nnet* (Venables & Ripley, 2002), *readxl* (Wickham & Bryan, 2019), *stargazer* (Hlavac, 2018), *texreg* (Leifeld, 2013), *tidyverse* (Wickham *et al.*, 2019), and *xfun* (Xie, 2020).

[17] Appendix-Table C.5 presents several robustness checks, including results from a restricted sample of subjects who never participated in an experiment. The results are qualitatively similar, but lack statistical power as the sample is reduced by more than half.

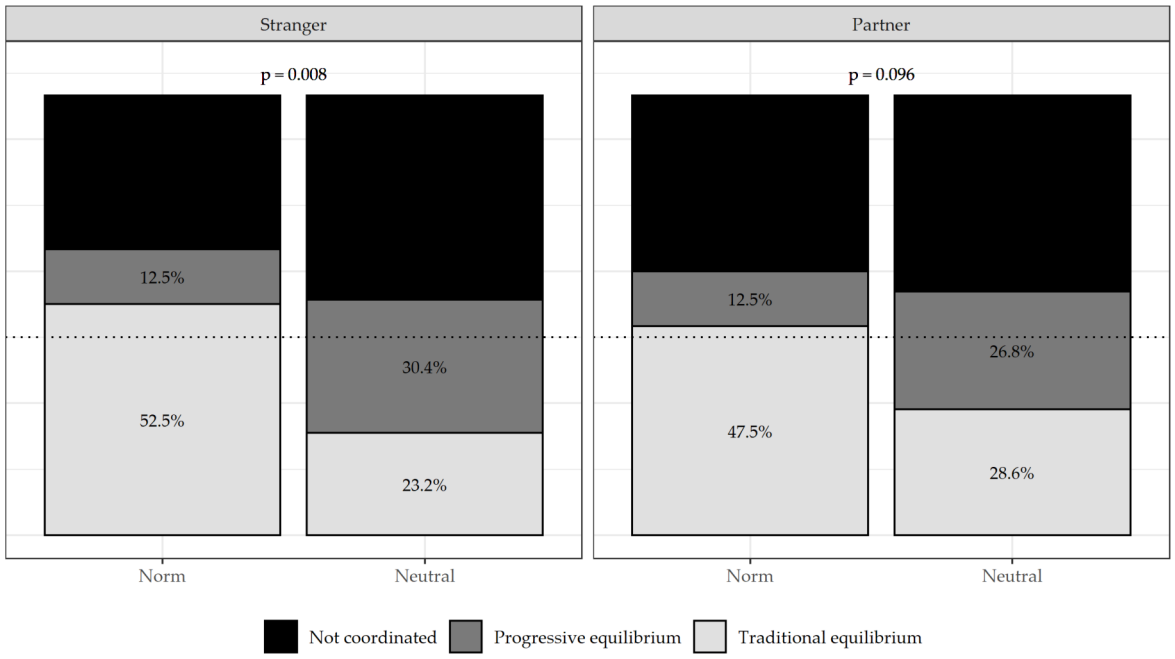
Table 2: Summary statistics by treatment

	Neutral (*N*)	*Norm* (*S*)	Difference (*N* – *S*)	
variable	Mean (*N* = 112)	Mean (*N* = 80)	Mean	p-value
Demographics				
Female	0.50 (.)	0.50 (.)	0.00	1.000
Age*	24.75 (4.36)	27.09 (5.5)	-2.34	0.002
Union charateristics				
Union duration*	3.00 (2.98)	3.00 (4.26)	0.00	0.995
Cohabitating	0.27 (.)	0.28 (.)	-0.01	1.000
Married	0.07 (.)	0.00 (.)	0.07	0.038
Satisfaction with union*	8.83 (1.45)	8.53 (1.95)	0.31	0.238
Currently in education				
Not in education	0.12 (.)	0.16 (.)	-0.04	0.599
High school student	0.04 (.)	0.03 (.)	0.01	1.000
Undergraduate student	0.52 (.)	0.46 (.)	0.06	0.542
Postgraduate student	0.20 (.)	0.26 (.)	-0.07	0.364
Other university student	0.13 (.)	0.11 (.)	0.02	0.825
Labour market activty				
Not active in the labour market	0.29 (.)	0.31 (.)	-0.02	0.915
Full time employed	0.16 (.)	0.20 (.)	-0.04	0.609
Part-time employed	0.24 (.)	0.20 (.)	0.04	0.619
Irregularly employed	0.30 (.)	0.29 (.)	0.02	0.936
Unemployed	0.04 (.)	0.05 (.)	-0.01	0.903
Knowledge of economics, experience with experiments, risk aversion				
Ever studied economics	0.33 (.)	0.45 (.)	-0.12	0.125
Ever participated in experiment	0.46 (.)	0.71 (.)	-0.25	0.001
Risk aversion*	5.24 (2.25)	5.18 (2.48)	0.07	0.850

Note: Variables are contious when asterisked and binary otherwise. p-values are obtained from a test of equal proportions for binary, and from a t-test for continuous variables. Standard deviations are reported in parantheses for the means of continuous variables. Age and union duration are measured in years, satisfaction with the union is self-reported on a 11-point scale, where 0 indicates not satisfied at all and 10 very satisfied. The F-statistic from a regression with the treatment indicator as dependent variable and all characteristics presented in the table as independent variables is $F(18, 173) = 2.274$, with $p = 0.003$.

that achieve one of the three possible outcomes: *Not coordinated*, *Progressive* (female-favouring) and *Traditional* (male-favouring) equilibrium. For both stranger and real partner pairings, the figure documents a large difference between the *Neutral* and *Norm* group in the proportion of couples who reached a *Progressive* rather than *Traditional* equilibrium. While the *Traditional* equilibrium occurs at about the same or even a slightly lower rate than the *Progressive* equilibrium in the *Neutral* group, it is reached more than twice as often in the *Norm* group. We also observe that the fraction of couples who fail to coordinate is smaller in *Norm* than in *Neutral*, although the effect is not as pronounced as one might have expected when introducing a focal point. A Pearson's chi-square test confirms a significant effect of the salience of norms on outcomes for both strangers and real partners, though only marginally significant in the latter group (see p-values at the top of each panel in Figure 2).

Figure 2: Coordination outcomes across treatments



Note: Proportions of pairings who achieve one of three possible outcomes: *No Coordinatio*, *Progressive* (female-favouring) equilibrium, *Traditional* (male-favouring) equilibrium. Reported p-values are obtained from a Pearson's chi-squared test comparing counts of observed outcomes across *Norm* and *Neutral*. The dotted line shows the theoretical prediction of a coordination rate of 45% (see Section 2 for details).

To further examine the difference in outcomes between the *Neutral* and the *Norm* condition, I estimate a multinomial logit model in which the dependent variable *Outcome* is an unordered factor variable that can take on of three possible values: *Not coordinated*, *Progressive*, *Traditional*, with the latter serving as the base outcome. The

main variables of interest are the treatment indicators: *Norm* (1 if an outcome was observed in the *Norm* group and 0 otherwise), *Partner* (1 for outcomes that occured between real partners and 0 otherwise), and their interaction. Since outcomes occur at the couple level rather than the individual level, I use women only for the estimation to ensure that the sample is not artificially inflated; the results are (nearly) identical when using the male sample.[18] Since each woman plays once with their partner and once with a randomly matched stranger, the estimation is based on $N = 196$ observations. To account for potentially heterogeneous treatment effects, estimated standard errors are Huber-White robust.

Table 3 reports the estimated coefficients of interest from the model alongside the estimated average marginal effect of the *Norm* treatment on the probability to reach any of the three outcomes. The results in column (1) stem from a model without any additional covariates. In column (2), I include controls for age, duration of the union, a survey measure for risk aversion,[19] as well as indicators for (i) being married to one's partner, (ii) having ever studied economics, and (iii) having ever participated in a lab experiment. As can be seen by comparing columns (1) and (2), controling for additional covariates hardly changes the results on the coefficients of interest. The interpretation of the negative sign of the coefficients is as follows: Playing in *Norm* rather than *Neutral* significantly decreases the probability to reach the *Progressive* equilibrium relative to the *Traditional* equilibrium, the base outcome. Similarly, the probability of miscoordinating rather than reaching the *Traditional* equilibrium also increases significantly in the *Norm* treatment.

Since the effect of playing with one's *Partner* rather than with a stranger, as well as the interaction between the treatment indicators *Norm* × *Partner* are statistically insignificant, the table presents the average marginal effect of playing in the *Norm* rather than the *Neutral* group on the probability to reach either of the three outcomes. Overall, the estimated marginal effects of the treatment from the full model are remarkably similar to the treatment differences in the raw data shown in Figure 2. As can be seen in the rows labelled *AME Norm* in Table 3, the probability to to reach a *Progressive* equilibrium declines by around 17 percentage points, whereas the proba-

[18] Slight differences in estimated coefficients are due to the inclusion of individual-level controls that may differ between partners, such as risk aversion, whether the subject ever studied economics or has ever participated in an experiment before.

[19] The questionnaire item was validated by Dohmen *et al.* (2011).

Table 3: Estimated treatment effects on coordination outcomes (multinomial logit)

Outcome		(1)		(2)	
Progressive	*Norm*	-1.703***	(0.62)	-1.805***	(0.69)
	Partner	-0.333	(0.52)	-0.334	(0.52)
	Norm × Partner	0.433	(0.88)	0.434	(0.88)
	AME Norm	-0.161**	(2.84)	-0.171***	(0.06)
Traditional (Reference)	*Norm*	—		—	
	Partner	—		—	
	Norm × Partner	—		—	
	AME Norm	0.241***	(3.46)	0.255***	(0.075)
Not coordinated	*Norm*	-1.099**	(0.49)	-1.155**	(0.51)
	Partner	-0.247	(0.47)	-0.248	(0.47)
	Norm × Partner	0.480	(0.67)	0.484	(0.68)
	AME Norm	-0.080	(1.12)	-0.085	(0.08)
	Controls	No		Yes	
	N	192		192	

Note: Coefficients from a multinomial logistic regression of *Coordination Outcome* on treatment indicators (*Norm*, *Partner*), with *Traditional equilibrium* as reference category. Rows labeled *AME Norm* show the average marginal effects of the *Norm* treatment on the probability to reach a given outcome. Column (1) shows results from a model only including treatment indicators, column (2) shows results with additional controls for subject *Age*, *Riskaversion*, *Unionduration*, *Cohabiting*, *Married*, *Everinlab*, *Everstudiedecon*. Estimations are based on the female sample. Huber-White robust standard errors are reported in parantheses, stars indicate significance at *p<0.1; **p<0.05; ***p<0.01.

bility reach a *Traditional* equilibrium increases by around 25 percentage points for a couple in *Norm* relative to one in *Neutral*. Both effects are statistically significant at the 1-percent level. As expected in the presence of the focal point that norms provide, miscoordination rates also decline in the *Norm* condition, by nearly 9 percentage points, but the effect fails to reach statistical significance at conventional levels (p = .29 in the model with controls).

Given the payoff structure of the game–higher payoffs for the male (female) partner in the *Traditional* (*Progressive*) equilibrium–the differences in coordination outcomes across treatments have direct consequences for payoff inequality. Since the *Traditional* equilibrium is the most frequent outcome in the *Norm* group, the male-

female earnings gap in this group is large and positive; on average, women earn 67% of men's income. By contrast, both genders earn about the same in the *Neutral* group: around 70% of the average male income in the *Norm* group, reflecting the somewhat higher rate of coordination failure in this group. Average earnings by gender and treatment are summarised in Appendix-Table C.2.

Why is it that the salience of norms has a strong effect on the *type* of equilibrium couples coordinate on, but surprisingly little effect on the overall coordination rate? To better understand this result, a closer look at subjects' individual *Career* choices is warranted.

4.2 Do gender norms affect individual *Career* choices?

Next, we investigate the effect of gender norms on subjects' choices. A priori, one might expect that both men and women adapt their behaviour in the presence of a gender norm focal point, albeit in opposite directions (i.e., compared to the *Neutral* group, women choose *Career* less frequently in *Norm*, while men choose it more often). To test these hypotheses, I estimate a linear probability model in which the dependent variable is an indicator, *Career*, which is equal to one if an individual chose option *A*/*Career* and zero otherwise. The key explanatory variables of interest are indicators for playing in the *Norm* treatment, with one's real *Partner*, for being of *Female* gender and their respective interactions. To address potential clustering of observations at the session level, I estimate a multi-level model that includes session-specific random intercepts (Moffatt, 2015) and Huber-White robust standard errors to account for possible heterogeneity in treatment effects.[20]

The regression results are provided in Table 4. Column (1) includes indicators for the *Norm* group, female subjects, and their interactions. The coefficient on the intercept thus gives the proportion of male subjects choosing *Career* in the *Neutral* group (53.6%). The coefficient on *Norm* tells us that this share increases slightly (by about 9 percentage points) in the *Norm* group, but the difference is not statistically significant. Looking at the coefficient on *Female*, we learn that, in the *Neutral* group, women's propensity to choose *Career* does not differ from that of men. However, the

[20]Since the treatment variable *Norm* varies at the session level, its effect cannot be identified using a session-fixed effects model. Reassuringly though, all interaction effects with the *Norm* indicator that are studied in this paper, such as *Female*, *Partner* and *Committed* (see Section 5.2) turn out very similar in a fixed-effects model compared to those presented in the paper obtained from the multilevel model. Results are available upon request.

Table 4: Treatment effects on Career choices

	(1)		(2)		(3)	
Norm	0.089	(0.11)	0.217	(0.16)	0.192	(0.17)
Female	0.027	(0.02)	0.071	(0.08)	0.068	(0.08)
Norm x Female	-0.402***	(0.12)	-0.471**	(0.22)	-0.467**	(0.22)
Partner			0.107***	(0.04)	0.107***	(0.04)
Norm x Partner			-0.257**	(0.12)	-0.257**	(0.12)
Female x Partner			-0.089	(0.14)	-0.089	(0.14)
Female x Norm x Partner			0.139	(0.23)	0.139	(0.23)
Intercept	0.536***	(0.04)	0.482***	(0.04)	0.423**	(0.17)
N	384		384		384	
Controls	No		No		Yes	

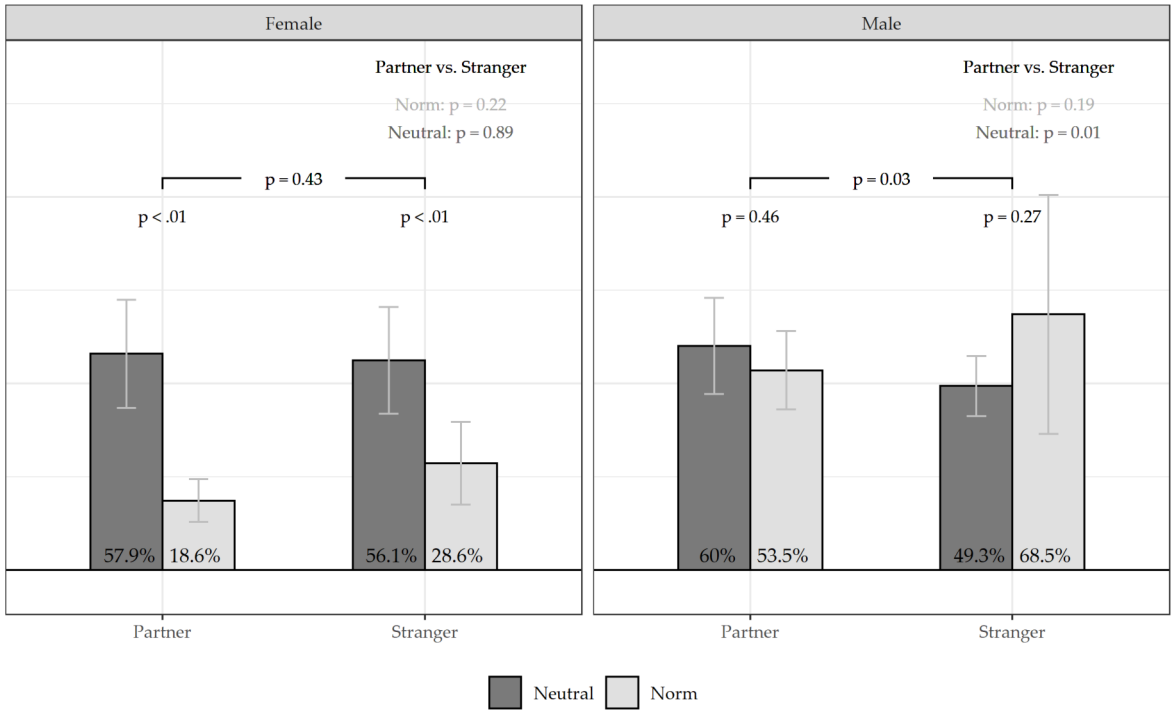
Note: Results obtained from a multilevel linear model including session-level random intercepts to account for clustering. Huber-White robust standard errors are reported in parantheses; stars indicate significance *p<0.1; **p<0.05; ***p<0.01. The full set of controls includes: *Age*, *Unionduration*, *Married*, *Riskaversion*, *Everstudiedecon*, *Everinlab*. Estimated group means from the full specification (3) are shown in Figure 3.

large and statistically significant coefficient on the interaction, *Norm* × *Female* shows that the effect of gender norm salience on women's *Career* choices differs markedly from the effect on men's choices, with the difference in differences amounting to 40 percentage points. Taken together with the coefficient on *Norms*, this indicates that women's propensity to choose *Career* decreases by more than 30 percentage points in *Norm* relative to *Neutral*. In sum, these results suggest that women respond to the salience of gender norms while men do not, despite the economic incentives for both genders to do so if norms make the *Traditional* equilibrium focal. This is surprising and calls for further investigation.

Column (2) of Table 4 generates the group means disaggregated by familiarity with the partner, and Column (3) presents the results additionally controlling for the familiar set of personal covariates. To ease interpretation, predicted group means obtained from estimation (3), holding personal covariates fixed at their average, are plotted in Figure 3. It also displays p-values obtained from testing for differences in group means using F-tests of (linear combinations of) coefficients. The left (right) panel shows the predicted means for women (men). Within each panel, the first (second) set of bars refers to pairings with the real partner (stranger). Dark (light)

gray bars show the estimated fraction of subjects that choose *Career* in the *Neutral* (*Norm*) treatment.

Figure 3: Proportion of subjects choosing *Career*



Note: Proportions, p-values, and 95% confidence intervals (shown by whiskers) are calculated from the multilevel linear model with Huber-White robust standard errors, presented in column 3 of Table 4, holding all other controls constant at their average.

The first result is that women in the *Neutral* treatment choose *Career* at a rate more than twice as high compared to women in the *Norm* treatment, regardless of who they are paired with. As can be seen from the p-values displayed directly above the bars, these differences are highly significant both in real partner and stranger pairings ($p < .01$ in both). There is no evidence to support a difference in the size of the effect of norm salience on women's behaviour across pairings ($p = .43$), neither are there significant differences in women's behaviour in the stranger vs. partner pairing within the *Norm* ($p = .22$) or *Neutral* ($p = .89$) group. Thus, in the presence of norms, women are significantly less likely to choose *Career* and to claim the larger fraction of the pie for themselves, regardless of whether there is scope for ex-post re-distribution (as is the case for real partners) or not (with strangers). This is consistent with women perceiving the male-favouring *Traditional* equilibrium, in which women choose *Family* and men *Career*, as focal when gender norms are salient.

The results for men show a more nuanced picture. In the *Neutral* group, the

rates of choosing *Career* are around 50-60%, similar to the rates in women.[21] Perhaps surprisingly, Figure 3 confirms that there is no impact of gender norms on men's behaviour when paired with their partner (p = .46). The expected *increase* in *Career* choices in the *Norm* treatment is only observed in stranger pairings, where we see a quantitatively large difference of almost 20 percentage points, yet not significant statistically at conventional levels (p = .27). The difference-in-difference in the effect of norms across partner and stranger pairings, however, is significant statistically at the 5-% level (p = .03). Thus, it appears that there is at best weak evidence for an effect of gender norms on men's *Career* choices, and a suprising heterogeneity in men's responses across partner and stranger pairings. The following Section 5 presents an exploration of potential mechanisms.

5 Mechanisms

The main results presented in Section 4 have shown that women's *Career* choices change across treatments in a way that is consistent with the presence vs. absence of a gender norm focal point, i.e. their rate of choosing *Career* decreases when norms are salient. Men's response, however, responds much less to the salience of norms and is heterogeneous across partner and stranger pairings. One explanation could be related to differential beliefs regarding their partners' choice. If men expect their real partners to hold more progressive attitudes than the average female student, they may consider them more likely to choose *Career*. While the following subsection 5.1 shows that this explanation is not borne out by the data, subsection 5.2 investigates a marriage market motive in the spirit of Bursztyn *et al.* (2017): Men may want to signal progressive gender attitudes, a quality that might be desirable in the marriage market.

5.1 Differences in beliefs regarding real partner's and stranger's choices?

If beliefs were to explain *Career* choices across treatments, women's beliefs about men's behaviour (real partners and strangers) ought to show higher rates of *Career* choices in the *Norm* than in the *Neutral* group. Men's beliefs regarding women's choices, however, should not differ much between *Norm* and *Neutral*, but should show the lowest levels of *Career* choices for the randomly matched women in the

[21] Differences between men and women are never (always) significant in the *Neutral* (*Norm*) treatment.

Norm group. As detailed in Appendix A, participants of both genders were incentivised to provide their best guess of a) what their real partner chose; b) what their randomly matched stranger chose; c) how many men in their session chose Career when paired with their real partner; d) how many men chose Career when paired with a stranger; e-f) as c-d) but about women.

For the analyses presented in this subsection, I use these predictions to calculate (i) the proportion of subjects who predicted that their partner chose *Career*, and (ii) subjects' predicted proportion of men (women) in their session who chose *Career*.[22] Comparing beliefs about the partner subjects are matched with to beliefs about others in the session serves two main purposes. First, in the case of strangers, subjects' beliefs about a randomly matched stranger and beliefs about the average behaviour of strangers in their session should be identical; the comparison of these two measures can thus attests to the quality of the data if results are, in fact, similar. Second, a comparison of beliefs about one's real partner and the average behaviour of individuals paired with their partner in the session could provide additional clues as to whether men's own *Career* choices might in part be explained by men thinking of their own partners as very different (more progressive) than the average woman paired with their partner.[23]

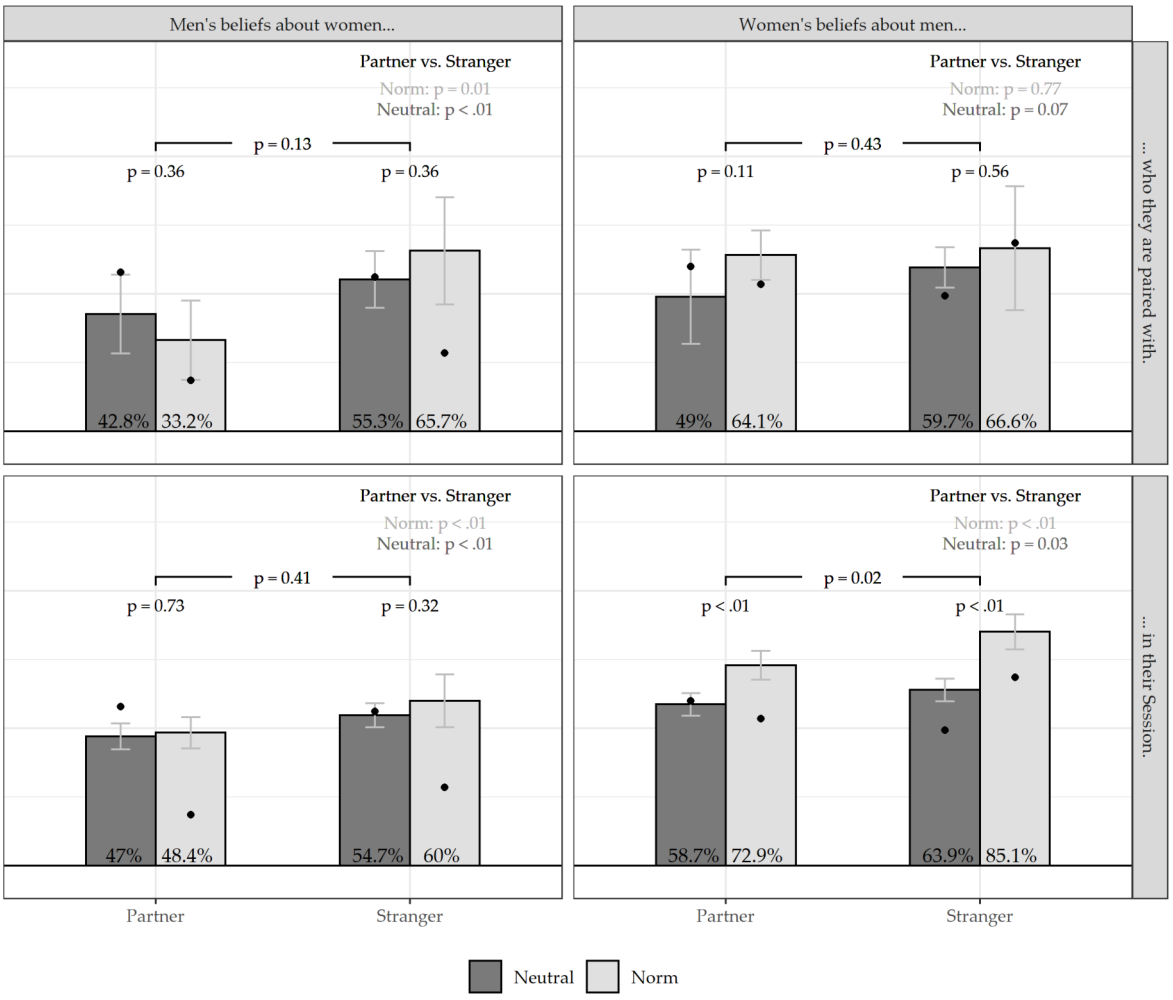
The empirical strategy used to analyse beliefs is very similar to the one used in the previous Section 4, i.e. I estimate linear multilevel models accounting for session-specific clustering to gauge the effects of the treatment indicators *Norm*, *Female*, *Partner* and their interactions. Estimated standard errors are Huber-White robust. Figure 4 summarises the results; the corresponding regression results are shown in Appendix-Table C.3. Men's beliefs about women are displayed in the panels in the first column, women's beliefs about men in the second column. The top two panels display the proportion of subjects thought to have chosen *Career* by their partner, the bottom two show average beliefs about the proportions of subjects in their session who chose *Career*. The figure is structured in the same manner as the previous one,

[22] Predicted proportions are obtained by dividing the absolute number of men (women) that the subject predicted to have chosen *Career* by the total number of male (female) players in their session. Note that, although subjects of both genders were asked to predict the number of men *and* women in their session, I only use cross-gender predictions, i.e. women's (men's) predictions about men (women), as those are the ones relevant for the strategic decision.

[23] In addition, Appendix-Section C.2 further explores the accuracy of beliefs and shows that both men's and women's beliefs are actually most likely to be accurate when they play in the *Norm* treatment and are asked to predict their real partner's choice.

with dark (light) gray bars displaying the averages in the *Neutral* (*Norm*) treatment and the first (second) groups of bars in each panel referring to partner (stranger) pairings. In addition, black dots indicate the actual *Career* choice rates of the group for whom beliefs are elicited, i.e. women's actual choices are displayed together with men's beliefs about women's choices and vice versa.[24]

Figure 4: Beliefs about *Career* choices across treatments



Note: Proportions, p-values, and 95% confidence intervals (shown by whiskers) are calculated from a multilevel linear model with Huber-White robust standard errors, presented in column 3 of Appendix-Table C.3, holding all other controls constant at their average. Black dots show actual behaviour in the group for which beliefs are displayed (as reported in Figure 3).

Looking at men's beliefs, we see no evidence that men anticipate different responses in terms of women's *Career* choices in *Neutral* vs. *Norms*. Neither when asked about all women in the session, nor about the partner they are paired with, do

[24] Actual choices of course do not differ across rows (i.e., women's actual rate of choosing *Career* when paired with their partner in the *Neutral* treatment is the same, regardless of whether we look at men's beliefs about all women in the session who played with their partner or at men's beliefs about the choices of their female partners).

men's predictions about women's *Career* choices differ between *Neutral* and *Norm*. As a result, men greatly overestimate women's rate of choosing *Career* in the *Norm* group. While at first glance this pattern is consistent with men's lack of response in their own *Career* choices across treatments, it cannot explain the observed heterogeneity in men's response to the salience of norms when paired with their real partner vs. a stranger. Specifically, wee see no evidence supporting the hypothesis that men expect their real partners to hold more progressive attitudes than a random female stranger, which would imply men expect higher *Career* rates among the women who are their partners. By contrast, we see that the rate of men in the *Norm* treatment who expect their partner to choose *Career* is significantly *lower* than that of the same men asked about the choice of their randomly matched stranger (33 vs. 66 percent, $p = .01$). A similar pattern can be seen in men's beliefs about all women in the session, which indicates men expect women playing with strangers to be *more* likely to choose *Career* than women playing with their partners.[25]

Women's beliefs appear more consistent with their own *Career* choices, which decrease significantly when gender norms are salient, they predict higher rates of *Career* in men's choices in the *Norm* than in the *Neutral* group. However, these differences are only statistically significant in women's beliefs about all men in their session ($p = .01$ for beliefs about men playing with partners, $p < .01$ strangers).[26] Women's beliefs about the partner they are matched with show a similar pattern, but no statistical significance ($p = .11$ and $p = .56$ for real partners and strangers, respectively). Note however, that confidence intervals are larger for the means obtained from the regression using the binary outcome variable (beliefs about *Career* choice of partner) compared to the continuous outcome (beliefs about proportion of subjects choosing *Career*).

Taken together, the evidence indicates that beliefs seem to explain *Career* choices for women, but do not resolve the puzzle of men's differential response to the salience of gender norms depending on whether they play with a stranger or their real partner. In sum, these results provide no evidence that men react more strongly to the

[25]Given that the difference between men's beliefs about women playing with their partners vs. playing with strangers is significant at the 1-percent level in both *Norm* and *Neutral* group, it might reflect a more general belief about women playing more *hawkish* when matched with a stranger as opposed to their partners.

[26]Here, the predicted rates of men choosing *Career* are also substantially higher than the true rates, except for men playing with their real partner in *Neutral*.

presence of gender norms when paired with a stranger compared to when paired with their partner because men believe that their real partners are likely to behave more progressively.

5.2 Men 'acting feminist'?

An alternative explanation for the heterogeneity in men's response to the salience of norms across partner and stranger pairings could be a marriage market motive. This subsection explores the possibility that men's behaviour may reflect signalling of progressive gender attitudes. The basic idea follows Bursztyn *et al.* (2017) and builds on the assumptions that a) men and women want to be successful in the marriage market, i.e. secure a long-term partner, b) women tend to value progressive gender attitudes in men, which is supported by several studies for the US (Pedulla & Thébaud, 2015), UK (Auspurg *et al.*, 2017) and Germany (Lück, 2015),[27] and c) men are aware of this and signal progressive attitudes when obsorved by a potential mate, 'acting feminist'.

Based on these assumptions, incentives and opportunity for men to signal progressiveness may arise in the *Norm* treatment. Given that women in *Norm* choose *Career* at lower rates compared to *Neutral*, men would maximise their income by choosing *Career* at higher rates. Yet, signalling progressiveness at the cost of lower expected earnings in the game could be rational for *some* men, whose relationship is *not yet committed*. As opposed to men who are already in committed relationships, men in non-committed relationships still compete for their partner in the marriage market and may thus benefit from signalling progressiveness. This may create an incentive for non-committed men to behave differently towards their real partner than towards a stranger, since they only care about their signal to the former, but not how their actions are perceived by a random female stranger.[28] Men who are in committed relationships should not act differently when their behaviour is observed by their real partner versus a stranger.

To test this hypothesis, I follow Bursztyn *et al.* (2017) in defining a relationship as committed when partners cohabitate, using information on participants' cohabita-

[27] The studies indicate that particularly college educated women, like the ones participating in the present study, tend to value more progressive gender attitudes and division of labour arrangements.

[28] Choosing *Family* instead of *Career* in a lab game with relatively low stakes is a particularly easy and cheap way for men to signal progressive gender attitudes. Whether or not women actually find this credible is a question the present study cannot answer.

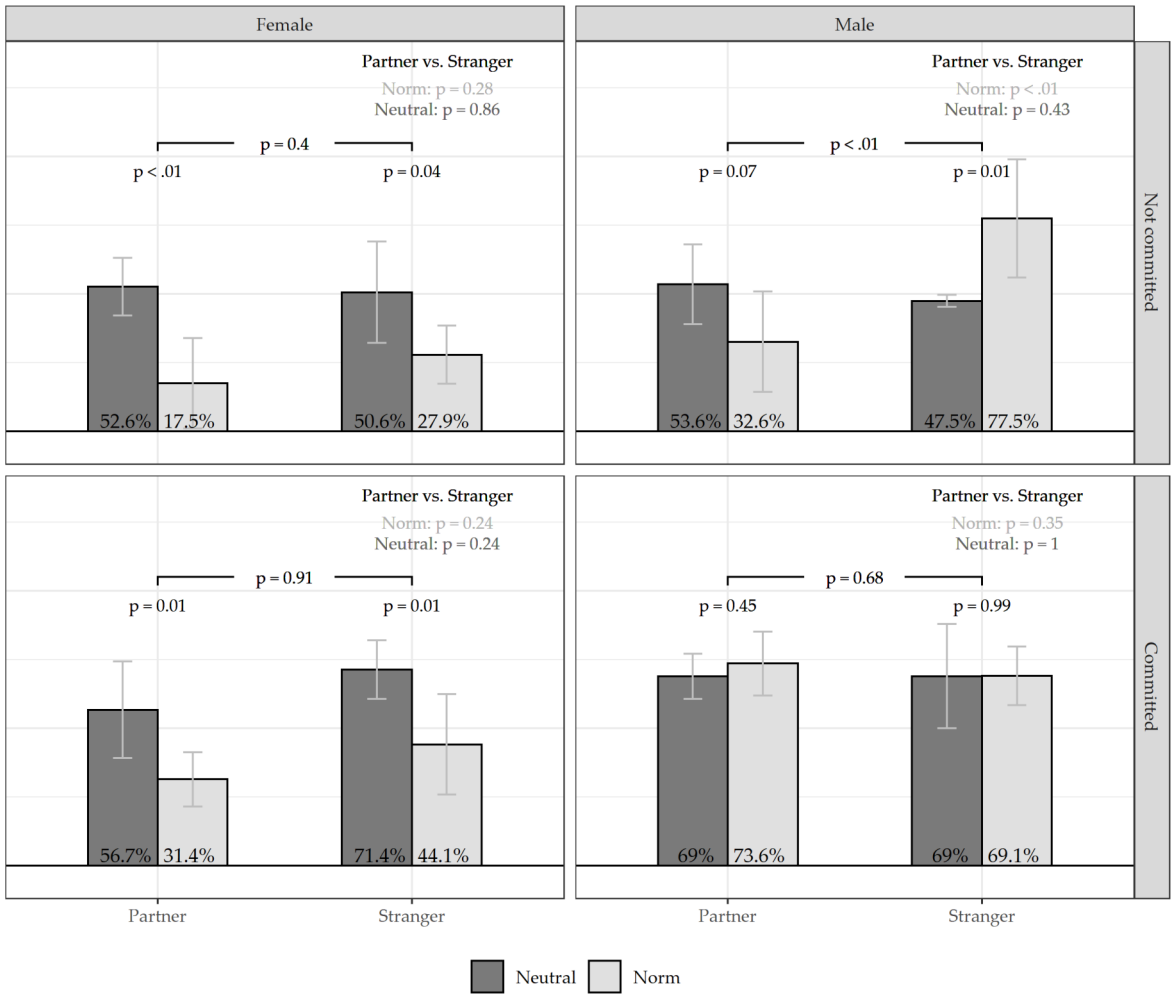
tion status from the post-experimental questionnaire. I estimate separate regressions for male and female subjects, using an otherwise similar model specification as in the preceding sections. That is, I estimate multi-level linear probability models and Huber-White robust standard errors. The indicator for choosing *Career* serves as the dependent variable and indicators for *Norm*, *Partner*, *Committed* and their interactions as main explanatory variables of interest. The usual set of controls are included alongside a control for beliefs about the relevant partner's choices examined in the previous subsection.

Figure 5 plots the predicted means obtained from the full models, holding other covariates fixed at their means (see Appendix-Table C.4 for the estimated coefficients of the models). Similar to the Figures in the preceeding sections, Figure 5 reports the share of subjects who chose *Career*, but separately for individuals in non-committed (committed) relationships in the top (bottom) panels. Differences in means across groups are tested for statistical significance using F-tests of (linear combinations of) coefficients from the full regression model; the resulting p-values are shown in the graph.

For the reasons outlined above, we suspect that men in non-committed relationships might stand to gain from signalling in the *Norm* treatment. Our primary interest therefor rests on men in non-committed relationships and the difference in their rate of choosing *Career* when playing with their real partner versus a stranger. Consistent with the signalling hypothesis, we see that *Career* rates of non-committed men paired with their partner are actually *lower* in *Norm* than in *Neutral* (33% vs. 54%), indicating there may be a signalling value of progressive attitudes to a potential long-term mate. Albeit only marginally significant ($p = .07$), the difference of about 21 percentage points is quantitatively large. With strangers, however, non-committed men *do* choose *Career* significantly more often in the *Norm* compared to the *Neutral* condition (78% vs. 48%, $p = .01$), consistent with the notion that the male-favouring equilibrium is indeed perceived as focal when gender norms are salient. As a result, non-committed men in the *Norm* treatment choose *Career* at a rate that is about 45 percentage points lower when matched with their real partner compared to when matched with a stranger ($p < .01$).

For groups that do not stand to gain from signalling progressiveness, we see no comparable differences in behaviour when paired with a stranger versus with the

Figure 5: *Career* choices by subjects in committed and uncommitted relationships across treatments



Note: Proportions, p-values, and 95% confidence intervals (shown by whiskers) are calculated from the multilevel linear model with Huber-White robust standard errors, presented in column 1 (Women) and 2 (Men) of Appendix-Table C.4, holding all other controls constant at their average.

real partner. First, we note that, in the *Neutral* treatment, which bears no benefits of signalling to anyone, there is no evidence of differences between choices in real partner vs. stranger pairings for any of the four subgroups. We further see that women behave similarly with partners and strangers, regardless of whether they are in a committed relationship or not; there is no evidence for group differences in either treatment and subgroup. The same holds true for committed men. In sum, we conclude that there is only one group for which *Career* choices differ between stranger and real partner pairings: non-committed men in the *Norm* treatment choose *Career* at a rate more than twice as high when paired with a stranger compared to when paired with their real partner.

A few caveats are worth noting. First, the subgroup of couples in committed relationships is rather small, with $N = 30$ (22) in the *Neutral* (*Norm*) condition. This increases the chance that unobserved differences between the participants in each subgroup may be driving any differences (or lack thereof) detected. Second, the experiment was not *designed* to test the signalling hypothesis. While the results presented here are consistent with that interpretation, the analyses merely offer an exploration of a potential mechanism driving the unanticipated differences in men's and women's response to the salience of gender norms. As such, they cannot provide conclusive answers to additional questions that might arise in light of the analyses presented here.

One such questions is why only men but not women signal to non-committed partners. A plausible reason could be that the structure of the game gives women no opportunity to signal. Previous research has shown that men tend to value lower career ambition (relative to themselves) in women (Fisman *et al.*, 2006) and that women, in fact, refrain from career-enhancing activities to signal lower ambition when observed by potential mates (Bursztyn *et al.*, 2017). In light of these findings, it seems that women would have no incentive to demonstrate progressiveness to a potential mate, as choosing *Career* rather than *Family* might be perceived as overly ambitious. It follows that, unlike in the setting studied by Bursztyn *et al.* (2017) where signalling lower ambition to potential mates is costly for women in terms of forgone future labour market earnings, women face no such trade-off in the *battle of sexes* studied here: conditional on the belief that men choose *Career*, women maximize expected

earnings *and* demonstrate lower ambition by choosing *Family*.[29]

A second, and perhaps more general question that arises is why men who value low ambition in women would want to signal progressiveness, and, vice versa, why women who value progressiveness in men would want to signal low ambition. To the extent that valuing progressiveness in men or low ambition in women relates to a person's personal gender norms, this suggests that there may be a mismatch in the personal norms that individuals uphold, their signal, and, eventually, the personal norms of the mate they attract. If men generally uphold less progressive gender norms than women do, and attracting a mate always generates higher utility than staying single, it could be rational for both genders to signal the trait desired by the other gender, despite it being at odds with their own personal norms. Alternatively, there may exist a *multiplicity of norms*, as recently documented by Fromell *et al.* (2019) in a different context, meaning that some individuals of both genders uphold rather traditional personal gender norms (men should be more ambitious than women, men should pursue their careers and women take care of families, etc.), while others uphold more progressive norms. In this case, signalling personal norms that are misaligned with those one truly upholds may or may not be beneficial, and depends on whether attracting a mate that is mismatched in terms of norms is preferred over staying single. While these are important questions, the present experiment is not suited to answer them; they must be left to future work.

6 Conclusion

This paper presented results from a lab experiment designed to investigate how gender norms affect the division of labour within households. To this end, 192 subjects, real heterosexual couples, played a classic *battle of the sexes*, i.e., a symmetric coordination game where the two pure strategy Nash equilibria result in unequal payoffs that favour either the male or female partner. The salience of gender roles was varied exogenously: The strategies were framed neutrally in the *Neutral* group (option *A* vs. *B*) and as a family specialisation decision in the *Norm* group (option *Career* vs. *Family*). Subjects played the game once with their partner and once with

[29] Another possible interpretation is that non-committed women know that their partners will attempt to signal progressiveness by choosing *Family* but deliberately forgo the earnings that would arise from matching their partner's choice (by choosing *Career*) to signal low ambition (by also choosing *Family*). If this were the case, non-committed women would have different incentives (signalling) than committed women (income maximisation) to choose *Career* at lower rates in *Norm* compared to *Neutral*, but we would be unable to tell these motives apart with the data at hand.

a randomly matched stranger. The results suggest that gender norms affect coordination outcomes: the traditional gender role equilibrium is reached at a significantly higher rate in the *Norm* group, increasing payoff inequality to the benefit of male players. Notably, two sources of compensation frequently cited to diffuse concerns about women's welfare losses from the gendered division of labour are absent by design: women are not compensated through higher levels of non-monetary utility from spending time with children or through intra-household redistribution. From a policy maker's perspective, this implies that the trade-off between efficiency and equality in the family is a real concern that deserves consideration, although the experiment cannot provide answers as to which should be prioritised.

Despite the large changes in the rates at which the male- and female-favouring equilibrium are reached, overall coordination rates in the experiment improve only by a small and statistically insignificant margin in the *Norm* relative to the *Neutral* group. This is due to remarkable gender differences in the individual response to the salience of norms: compared to the *Neutral* group, women's rate of choosing *Career* falls by more than half in the *Norm* group, and the difference is significant regardless of familiarity with their partner. Men are generally less responsive to the salience of norms than women, but their response differs significantly across stranger and real partner pairings. Specifically, men show no increase in their propensity to choose *Career* in *Norms* relative to *Neutral* in pairings with the real partner, but a quantatively sizeable (albeit not statistically significant) increase in stranger matches.

These surprisingly heterogeneous patterns in men's and women's response to the salience of gender norms suggest that the underlying mechanisms through which norms operate might be more complex than previously considered, especially in young couples who likely perceive a multiplicity of norms (traditional vs. progressive). As with any lab experiment, we must use caution in extrapolating from a small, highly selected sample and a stylized decision environment to the specialisation choices of the general population. Such limitations notwithstanding, the results highlight that the effects of gender norms on household specialisation deserve further investigation. They suggest that gaining a deeper understanding of traditional gender norms and how they continue to influence division of labour choices even in young couples who aspire to more egalitarian or even progressive divisions (Bühlmann *et al.*, 2010; Pedulla & Thébaud, 2015; Auspurg *et al.*, 2017) can be crucial

for effective policy strategies that target gender gaps in economic outcomes.

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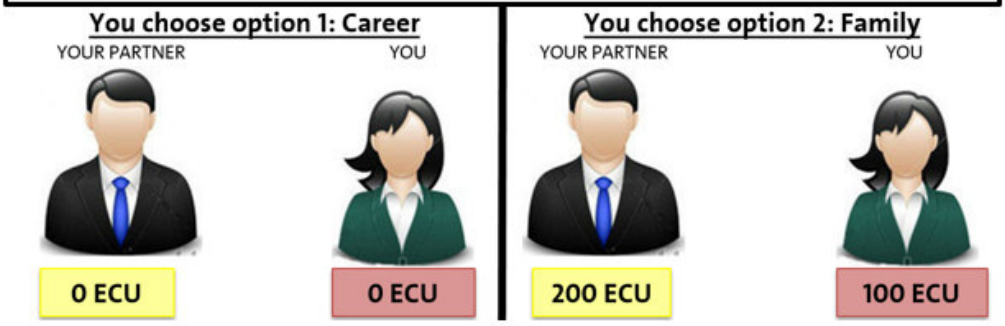
A Appendix A: Experimental instructions

A.1 Printed instructions, translated from German

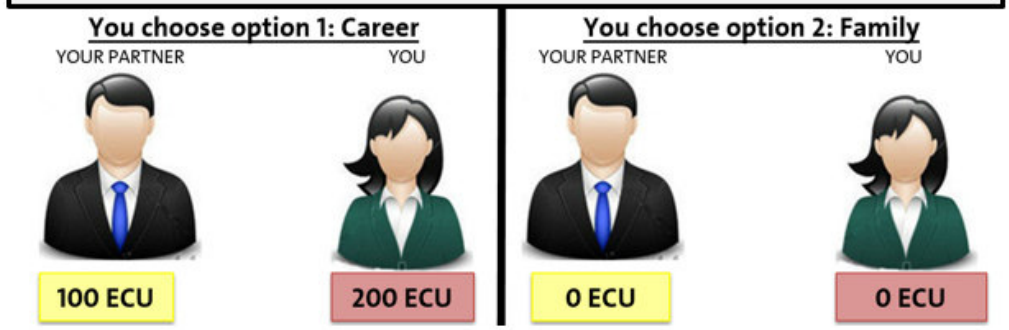
In this part of the experiment you will choose one of two options: Option 1 („career") or option 2 („family"). Your partner makes the same decision. At the time when you are making your choice, you do not know the choice of your partner. Similarly, your partner does not have any information on your choice either. Your payout , however, depends on the choices both of you make. The result of your decisions will be payed out at the end of this part, i.e. you will find out about each other's choice at that point.

Scenario 1: Your partner chooses "Carreer".



- If both of you choose „Career", each person receives 0 ECU.
- If your partner chooses „Career" and you choose „Family", you receive 100 ECU and your partner 200 ECU.

Scenario 2: Your partner chooses "Family".



- If your partner chooses „Family" and you choose „Career", you receive 200 ECU and your partner 100 ECU.
- If both of you choose „Family", each person receives 0 ECU.

A.2 On-screen instructions, translated from German

Example instructions for a male subject in the Neutral treatment playing order Partner/Stranger.

Screen 1

Please read the instructions and raise your hand if you have any questions.

Click "Continue" only once you are ready, i.e., have read and understood the instructions.

The experiment will continue once all participants in this session are ready.

Screen 2

You are interacting with your partner. She is currently facing the same decision, but you do not know which option she chooses.

Please choose either option A or B: A B

Screen 3

Guess your partner's choice: You will receive 50 ECU for a correct guess, if this question is drawn for payment.

Which option do you think she chose? A B

Screen 4

You are interacting with your randomly matched partner. She is currently facing the same decision, but you do not know which option she chooses.

Please choose either option A or B: A B

Screen 5

Guess your randomly matched partner's choice: You will receive 50 ECU for a correct guess, if this question is drawn for payment.

Which option do you think she chose? A B

Screen 6

There are four final questions before we inform you of your payout. You will receive 100 ECU for a correct guess in any of the four questions, if drawn for payment.

Yourself included, there are X men and X women participating in this experiment. What do you think?

When paired with their own partner, how many women chose A?

When paired with their randomly matched partner, how many women chose A?

When paired with their own partner, how many men chose A?

When paired with their randomly matched partner, how many men chose A?

B Appendix B: Couple consistency check

To alleviate concerns about "fake couples" contaminating the analyses presented in this study, I use a battery of questions from the post-experimental questionnaire to cross-check partners' answers for consistency. This allows identifying couples in which partners give inconsistent answers frequently. The specific questions used for this exercise are summarised in Table B.1.

The first set consists of six questions that each subject answered both in reference to themselves and to their partner. To determine whether both partners in a couple answered consistently, a subject's answer in reference to her partner must be compared against her partner's answer in reference to himself, and vice versa. This set includes questions that ask for the birthday of the partner, whether the subject introduced her partner to her parents, how often the subject stays over at her partner's appartment, and each question vice versa.

The second set consists of five questions for which answers can be compared directly across partners; i.e., the benchmark is the partner's answer to the very same question. These questions ask for the date when the relationship began, how or where the partners met, whether they said "I love you" to the other, whether they have personal items in each other's apartments, and finally, if they have ever seriously discussed having children.

To account for the fact that the number of prespecified answers varied across questions affects the likelihood of a consistent answer (the probability of both partners choosing the same answer is higher for questions with fewer options to choose from) I calculate a "consistency score" for each couple in the following manner: partners receive points for each question they answer consistently and the number of points is equivalent to the number of prespecified answers. For example, if a subject chooses the same answer to the question "Have you and your partner told one another that you love him/her?", the couple receives 4 points because the question has 4 prespecified options (I told my partner; My partner told me; We both told each other; and No). For the start date of the union, answers count as consistent and receive 1 point if they do not differ by more than three months. For the open questions on the partner's birthday, couples receive 10 points each only when answered consistently.[30] Note that I do not use the question about the start date for cohabitation to

[30]There is no obvious choice for the number of points an open question like this should receive. I

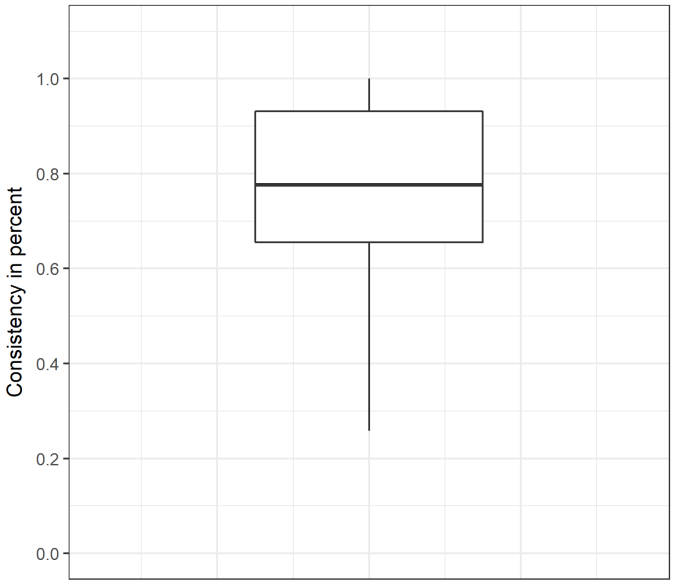
Table B.1: Questions used to check consistency

Set	Questions	Benchmark	Points
1	Since when (month and year) are you and your partner together?		10
	How did you meet your partner?		10
	Have you and your partner told one another one that you love him/her?		4
	Do you have personal items placed in your partner's appartment or vice versa?		3
	Have you and your partner ever seriously discussed having children?		2
2	Please state your partner's date of birth.	Please state your date of birth.	1
	Please state your date of birth. (+/- 100 days)	Please state your partner's date of birth.	10
	Have you introduced your partner to your parents?	Has your partner introduced you to her parents?	2
	Has your partner introduced you to her parents?	Have you introduced your partner to your parents?	2
	How often does your partner stay over at your appartment?	How often do you stay over at your partner's appartment?	7
	How often do you stay over at your partner's appartment?	How often does your partner stay over at your appartment?	7

avoid overweighting the many "consistent" missing answers by partners who do not cohabitate. Thus, the maximum consistency score is 58.

The boxplot below shows that the vast majority of couples achieve high consistency rates (obtained by normalising the consistency score). In fact, three quarters of the couples achieve at least 65.5% of the maximum score. The median couple achieves 77.6%. Only 8 couples (fewer than 9%), achieve less than 50% of the score. All analyses presented in the paper are unaffected if these couples are excluded.

Figure B.1: Couple's normalised consistency score



Note: The boxplot shows the distribution of couples over the normalised consistency score. It is calculated by dividing the number of points a couple scored in answering the questions documented in Table B.1 over the maximum number of points.

chose to assign the maximum number that can be scored in a closed question.

C Appendix C: Additional results

C.1 The impact of gender norms on earnings

Table C.2 presents average incomes by gender in *Norm* and in *Neutral*. Average payoffs are highest for men in *Norm* lowest for women in *Norm*. Payoffs of men and women in *Neutral* are roughly equal and substantially lower than men's payoffs in *Norm*, reflecting the higher chances of zero earnings due to miscoordination.

Table C.2: Mean incomes by gender and treatment

	Men	Women	N
Norm	112.50 (93.29)	75.00 (66.56)	80
Neutral	80.36 (82.57)	83.04 (84.78)	112

Note: Standard deviations are reported in parantheses.

C.2 Beliefs, obtaining Figure 4

Table C.3: Beliefs regarding *Career* choices, generating Figure 4

	Predict_partner		*Predict_all*	(2)
Norm	0.104	(0.11)	0.053	(0.05)
Female	0.044	(0.04)	0.092***	(0.03)
Partner	-0.125***	(0.04)	-0.077***	(0.02)
Female × *Norm*	-0.035	(0.11)	0.158*	(0.08)
Norm × *Partner*	-0.200	(0.13)	-0.039	(0.05)
Female × *Partner*	0.018	(0.04)	0.025***	(0.01)
Female × *NormxPartner*	0.282**	(0.12)	-0.030	(0.05)
Intercept	0.537***	(0.16)	0.575***	(0.11)
N	384		384	
Controls	Yes		Yes	

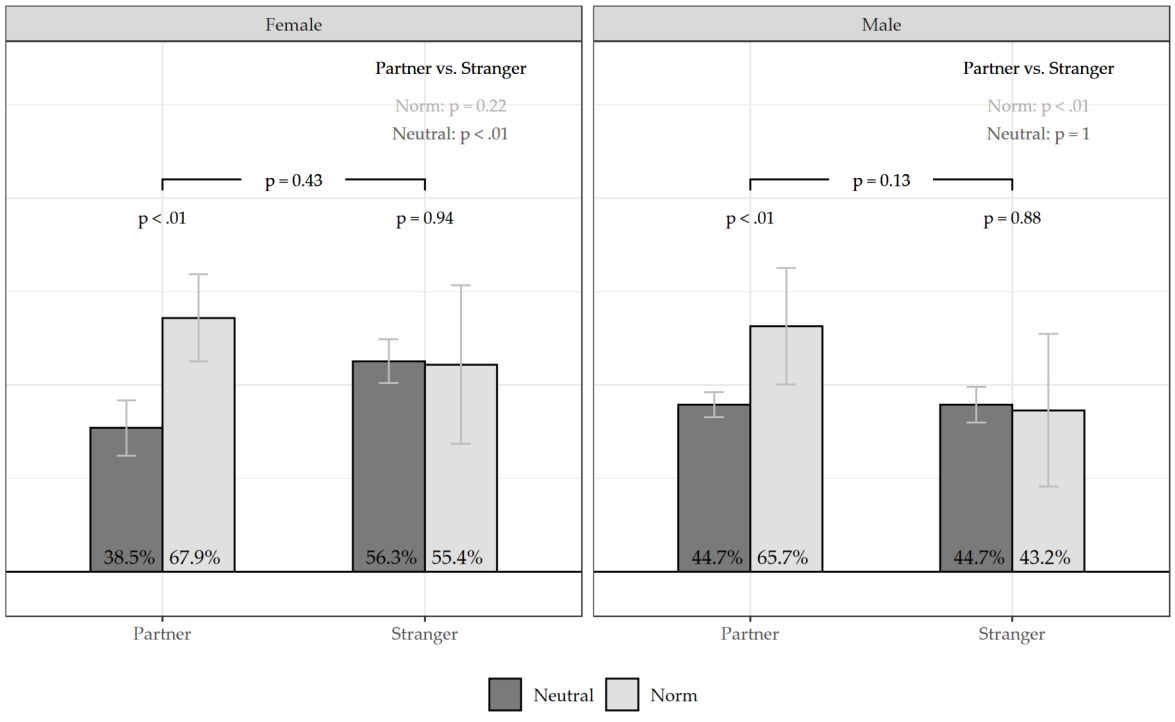
Note: Results obtained from a multilevel linear model including session-level random intercepts to account for clustering. Huber-White robust standard errors are reported in parentheses; stars indicate significance *p<0.1; **p<0.05; ***p<0.01. The full set of controls includes: *Age*, *Unionduration*, *Married*, *Riskaversion*, *Everstudiedecon*, *Everinlab*. Estimated group means are shown in Figure 4.

Table C.3 shows the results from the multilevel linear probability models used to generate Figure 4. Column (1) shows results on subjects' beliefs about *Career* choices

of the partner they are paired with, i.e. the dependent variable is an indicator that equals one when a subject predicted that their partner chose *Career* and zero otherwise. Explanatory variables refer to the subject who is making predictions, i.e. the indicator *Female* is one if the subject is female (i.e., predicting the *Career* choice of her male partner), *Partner* is one if she predicting the behaviour of her real partner, etc.

Column (2) shows results on subjects' beliefs about other players in their session, i.e. the dependent variable is a continuous and ranges from zero to one and measures the predicted fraction of subjects of the opposite gender in the session that chose *Career*. Again, the indicator *Female* is equal to one for women who were predicting the fraction of *men* (paired with strangers) choosing *Career*. *Partner* is equal one for predictions referring to session participants playing with their real partner, etc. Estimated group means from these models are visualised in Figure 4 in Section 5.1, which provides a detailed discussion of the results.

Figure C.2: Proportion of subjects with correct beliefs about their partner's *Career* choice



Note: Proportions, p-values, and 95% confidence intervals (shown by whiskers) are calculated from a multilevel linear model with Huber-White robust standard errors, holding all other controls (*Age*, *Unionduration*, *Married*, *Riskaversion*, *Everstudiedecon*, *Everinlab*) constant at their average.

Another interesting question regarding subjects' beliefs is the extent to which they are accurate. To assess this, Figure C.2 shows the predicted proportions of subjects who correctly predicted their partner's *Career* choice, by gender and treatment. Es-

timated group means and p-values are obtained from a multilevel linear probability model similar to the one shown in column (1) of Table C.3 but with an indicator variable equal to one if a guess of partner's *Career* choice was correct and zero otherwise.

The results show that beliefs about stranger's *Career* choices are equally inaccurate in the *Norm* and *Neutral* group. Beliefs about the real partner's choice tend to be more accurate in the *Norm* treatment compared to *Neutral*. and the difference is significant for both genders ($p < .01$). Furthermore, when norms are salient, beliefs about the partner tend to be more accurate than about the stranger, although the difference is only significant for statistically for men ($p < .01$) but not women ($p = .22$).

C.3 Marriage market signalling, obtaining Figure 5

Table C.4: *Career* choices by commitment status

	(1)		(2)	
Norm	-0.227**	(0.11)	0.300***	(0.11)
Partner	0.020	(0.11)	0.061	(0.08)
Norm × *Partner*	-0.123	(0.15)	-0.510***	(0.05)
Committed	0.207*	(0.11)	0.215**	(0.10)
Committed × *Norm*	-0.045	(0.16)	-0.300**	(0.13)
Committed × *Partner*	-0.166	(0.14)	-0.061	(0.13)
Committed × *Norm* × *Partner*	0.142	(0.19)	0.555***	(0.13)
Intercept	0.634***	(0.14)	0.863***	(0.11)
N	192		192	
Controls	Yes		Yes	
Sample	Women		Men	

Note: Results obtained from a multilevel linear model including session-level random intercepts to account for clustering. Huber-White robust standard errors are reported in parentheses; stars indicate significance at *p<0.1; **p<0.05; ***p<0.01. The full set of controls includes: *Age*, *Unionduration*, *Married*, *Riskaversion*, *Everstudiedecon*, *Everinlab*, *Beliefs* about partner's *Career* choice. Estimated group means are shown in Figure 5.

Table C.4 shows the multilevel linear probability used to test whether being in a committed relationship is associated with differences in *Career* choices. Again, the dependent variable *Career* takes on the value 1 if a subject chose *Career* and zero otherwise. The indicators of interest are the usual treatment indicators, *Norm* and *Partner*, as well as an indicator that indicates whether a subject is in a *Committed*

relationship. Column (1) shows the estimation results for the female, column (2) for the male sample. The estimated group means resulting from these regression are summarised in Figure 5 and discussed in detail in Section 5.2.

C.4 Robustness

Table C.5 presents a collection of robustness checks for the main outcome variable, the indicator for choosing *Career*.[31] The first column simply reproduces the results from full model presented in column 3 of Table 4. In column (2) a control for beliefs about partner's *Career* choice is added. This does not alter the results qualitatively, but coefficients gain precision.[32] The coefficient on the variable $Belief$, which is not shown in the table, shows the expected sign and is statistically significant: The likelihood likelihood that a subject chooses *Career* decreases by almost 44 percentage points if they believe that their partner chose *Career* ($p < .001$).

Column (3) shows the same regression but using a multilevel logit instead of a multilevel linear probability model. Again, this does not affect the results.[33] Additional checks confirmed that predicted group-level probabilities obtained from the model are also very similar (results available upon request). The fourth model shown in columns (4) controls for possible order effects by including an indicator variable for the second round. Again, this barely effects the results. In addition, the coefficient on the *Round*2 dummy, not shown in the table, is insignificant ($p = .24$).

Finally, column (5) shows the results for the restricted sample of first-time participants. The regression includes the same set of controls as those shown in the preceding column (4), except for the indicator variable *Everinlab*, which is zero for everyone in the restricted sample and hence is dropped. While the results remain qualitatively similar, some lose precision. This is not surprising given that the over-

[31] Results for the multinomial logistic regressions on the coordination *Outcome* are similarly robust to different specifications, inclusion of additional controls, alternative sample restrictions. Results are available upon request.

[32] One notable exception is the coefficient on *Partner*, which in Column (1) indicated that there is a significant difference in (men's) *Career* choices when paired with their partner vs. when paired with a stranger even in the *Neutral* treatment. This effect reassuringly loses magnitude and significance after controlling for beliefs. Importantly, the main result discussed in the text—the difference in men's response to the salience of *Norms* when matched with a partner vs. a stranger, captured by the interaction on *Norm* × *Partner* actually increases both in magnitude and significance when controlling for beliefs. Similarly, the coefficent on *Norm* becomes (marginally) significant, too, indicating that men paired with strangers do actually respond to the salience of *Norms* as predicted, by choosing *Career* at a higher rate.

[33] The table reports coefficients, as the transformation to marginal effects is not feasible for models involving interactions of factor variables.

all sample is diminished by over 50%. Perhaps even more problematic, this reduced sample contains only 23 (11 male, 12 female) individuals from the *Norm* and 60 (35 male, 25 female) from the *Neutral* treatment, and many individuals whose partner is not included. Given these caveats, one may conclude that it is reassuring to see that results are at least qualitatively stable.

Table C.5: Robustness Checks: *Career* Choices

	(1)		(2)		(3)		(4)		(5)	
Norm	0.192	(0.17)	0.241*	(0.13)	1.260*	(0.73)	1.408*	(0.81)	1.202**	(0.51)
fem	0.068	(0.08)	0.086	(0.08)	0.428	(0.46)	0.432	(0.46)	0.242	(0.59)
Partner	0.107***	(0.04)	0.052	(0.06)	0.249	(0.29)	0.438	(0.31)	0.618*	(0.37)
FemalexNorm	-0.467**	(0.22)	-0.481**	(0.19)	-2.523**	(1.11)	-2.509**	(1.11)	-1.133	(0.91)
NormxPartner	-0.257**	(0.12)	-0.346***	(0.07)	-1.832***	(0.41)	-2.137***	(0.61)	-2.199***	(0.60)
femxPartner	-0.089	(0.14)	-0.081	(0.13)	-0.399	(0.66)	-0.401	(0.67)	0.882	(1.16)
femxNormxPartner	0.139	(0.23)	0.264	(0.19)	1.259	(1.07)	1.240	(1.07)	-0.996	(1.69)
Intercept	0.423**	(0.17)	0.679***	(0.11)	0.906	(0.56)	0.938	(0.57)	0.811	(0.92)
N	384		384		384		384		166	
Controls	Yes		Yes+		Yes+		Yes+*		Yes+*-	
Sample	All		All		All		All		NoLab	
Model	Multi-Linear		Multi-Linear		Multi-Logit		Multi-Logit		Multi-Logit	

Note: Results obtained from multilevel probability models including session-level random intercepts to account for clustering. Huber-White robust standard errors are reported in parentheses; stars indicate significance *p<0.1; **p<0.05; ***p<0.01. **Sample:** (i) All: all subjects; (ii) no lab: only subjects with no prior lab experience. **Controls:** (i) Yes: *Age*, *Unionduration*, *Married*, *Riskaversion*, *Everstudiedecon*, *Everinlab*; (ii) Yes^{+}: plus *Beliefs* about partner's *Career* choice (iii) Yes*: plus *Round*; (iii) Yes^{-}: (ii) minus *Everinlab*. **Model:** Multi-Linear: Multilevel linear probability model; Multi-Logit: Multilevel logit model.

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