Who ya gonna call?: Gender inequality in demand for parental involvement

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December 31, 2022
Introduction
Despite convergence of men’s & women’s roles in the labor market, a persistent earnings gap remains.
Motivation

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- Important contributor is women’s tendency to concentrate in more flexible jobs (Price & Wasserman, 2022; Goldin, 2014; Flabbi & Moro, 2012).
Motivation

▶ Despite convergence of men’s & women’s roles in the labor market, a persistent earnings gap remains

▶ Important contributor is women’s tendency to concentrate in more flexible jobs (Price & Wasserman, 2022; Goldin, 2014; Flabbi & Moro, 2012)
  ▶ Especially true for mothers (Price & Wasserman, 2022; Wiswall & Zafar, 2018; Mas & Palais, 2017; Goldin & Katz, 2011)
Motivation

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  - Married mothers employed full time spend 50% more time caring for children than analogous fathers (BLS ATUS, 2021).

- 35% of mothers experience a HH interruption during workday vs. only 20% of fathers
  - Associated with 9% decline in wages (Cubas et al., 2021)

- Substantial implications for labor market, human-capital, and health outcomes (Erosa et al., 2022; Duchini & Van Effenterre, 2021; Kuziemko et al., 2018; Kleven et al., 2019; Angelov et al., 2016)

- Some of this time inequality may be externally driven
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- **Descriptive**: Are mothers more likely to be contacted about child-related tasks?

- **Mechanisms**: Do inequalities stem from beliefs that mothers are more responsive/available or other deterrents (taste, gender norms, etc)?

- **Solutions**: Does the gender gap vary by
  1. signaling a parent's willingness to do these tasks?
  2. who sends the email?
  3. attributes of the external decision-maker contacting the parent?

- Develop a theoretical model to inform our field experiment
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Theory Sketch
Decision Maker’s Utility

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- call female first ($j = f$), male first ($j = m$), OR neither parent ($j = n$)

\[
U_{ij} = \mathbb{E}(r_{ij}) - c_i - \delta_{ij}
\]

- Utility of $i$ from action $j$
- Expectation of benefit of response from parent $j$
- Cost of calling
- Other deterrents

We assume no benefit or cost when calling neither parent, so $U_{in} = 0$
If utility from calling both parents < 0 ($U_{in} = 0$), principal calls neither parent

- $U_{if} < 0$ and $U_{im} < 0$
- $E(r_{if}) - \delta_{if} - c_i < 0$ and $E(r_{im}) - \delta_{im} - c_i < 0$
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Otherwise, decision-maker calls

- Female parent when $U_{if} \geq U_{im}$
  - $\mathbb{E}(r_{if}) - \delta_{if} \geq \mathbb{E}(r_{im}) - \delta_{im}$
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- female parent when \(U_{if} \geq U_{im}\)
  - \(\mathbb{E}(r_{if}) - \delta_{if} \geq \mathbb{E}(r_{im}) - \delta_{im}\)
- male parent when \(U_{if} < U_{im}\)
  - \(\mathbb{E}(r_{if}) - \delta_{if} < \mathbb{E}(r_{im}) - \delta_{im}\)
Signals & Updating

▶ Signal to DM \( i \) about responsiveness of *either* female \( (r_{if}) \) or male parent \( (r_{im}) \)

▶ DM \( i \)'s posterior mean \( \tilde{r}_{ij} \) for the responsiveness of \( j \) is

\[
\tilde{r}_{ij} = \lambda_j \bar{r}_j + (1 - \lambda_j) x_{ij},
\]

\[
\lambda_j = \frac{1/\omega_j^2}{1/\omega_j^2 + 1/\sigma^2}
\]

- Posterior
- \( \lambda_j \) *Expectation of benefit of response from parent \( j \)
- \( (1 - \lambda_j) \) *signal about parent type \( j \)
- Weighting

Assumptions

Risk neutrality ⇒ only marginal means impact decisions

All priors and signals are normally distributed

\( \bar{r}_j \sim N(\bar{r}_j, \omega_j^2) \),
\( x_{ij} \sim N(\bar{r}_j, \sigma^2) \),
\( j \in \{f, m\} \)

- Priors for \( r_{if} \) and \( r_{im} \) are independent of each other & cost & distaste distributions
- A signal about one belief shifts only that belief (this can be relaxed)
- Signals do not impact \( \delta_{if} \), \( \delta_{im} \) or \( c_i \)
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$$\tilde{r}_{ij} = \lambda_j \bar{r}_j + (1 - \lambda_j) x_{ij},$$

where

- $\lambda_j$ = weighting
- $\bar{r}_j$ = expectation of benefit of response from parent $j$
- $x_{ij}$ = signal about parent type $j$

$$\lambda_j = \frac{1}{\omega_j^2 + 1/\sigma^2}$$

Assumptions

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  - A signal about one belief shifts only that belief (this can be relaxed)
  - Signals do not impact $\delta_{if}, \delta_{im}$ or $c_i$
Updating Utility After A Signal

\[ U_{ij} = \mathbb{E}(r_{ij}) - \delta_{ij} - c_i \]

becomes

\[
\begin{align*}
U_{ij} &= \bar{r}_j - (1 - \lambda_j) \bar{r}_j w_{ij} + (1 - \lambda_j) w_{ij} x_{ij} - \delta_{ij} - c_i \\
&= \text{Updated utility} - \text{Avg. beliefs of responsiveness of parent type } j - \text{\Delta in beliefs from any signal being sent about parent type } j - \text{\Delta in beliefs from specific signal (high/low) about parent type } j - \text{other deterrents (e.g., tastes, gender norms etc.)} - \text{cost of call} \\
&= \text{discrimination due to beliefs about responsiveness} - \text{other deterrents} - \text{cost of call}
\end{align*}
\]

- \( w_{ij} \) is indicator for sending \( i \) a signal about parent \( j \in \{f, m\} \)
- Recall \( U_{in} = 0 \) (no response, no distaste, no cost of calling)
Field Experiment
Experimental Design

- Emails to school principals from a fictitious family ask to contact one parent
  - 40% US households (∼ 50 million) have school-aged children (NCES, 2021)
  - Gender gap in school-related time mirrors overall inequality in time with children (BLS ATUS, 2021)
Experimental Design

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- Lower bound: If inequality in school/phone call task, likely other tasks in school (e.g. sick child, volunteering) and other settings (e.g. doctor’s visits, summer planning)
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- Main Treatments:
  - Baseline: no signal
  - Treatment 1: Male high availability signal
  - Treatment 2: Male low availability signal
  - Treatment 3: Female high availability signal
  - Treatment 4: Female low availability signal

Each principal is sent 1 email (between-subjects design)

About 2 weeks later, send “no longer need to speak” email
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School Inquiry

roy@miller-family.net <roy@miller-family.net>
To: laura.k.gee@gmail.com
Cc: erica@miller-family.net

Dear Principal Gee,

We are searching for schools for our child. Can you call one of us to discuss?

Roy (727) 361-8474 or Erica (727) 380-2761.

School Inquiry

erica@miller-family.net <erica@miller-family.net>
To: laura.k.gee@gmail.com
Cc: roy@miller-family.net

Dear Principal Gee,

We are searching for schools for our child. Can you call one of us to discuss?

I have [a lot of limited] availability to chat, but you can call either me or Roy.

Erica (727) 855-3125 or Roy (727) 855-3157.
Results
May - August 2022 Data Collection (N=80,071)

Main Variation

- Sent approximately equal number of emails from 5 "Main" treatments; $N = 30,471$
- Random sample of all US
- 21% of principals called at least 1 parent
  - Focusing on 1st call; this is the person who fields most external demands

Variation 1 "Equal Decision" ($N = 30,320$): Shut down expertise
- "This is the type of decision we both want to be involved in equally."

Variation 2 "Full-time" ($N = 9,472$): Shut down labor force participation
- "We both work full time"
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  "We both work full time"
- Variation 3 "Male domain" (\( N = 9,808 \):
  "We are especially interested in discussing school fees and other expenses."
Descriptive: H1 Is there an external demand gender gap? YES

\[ \Pr[f|b] = 12\% > \Pr[m|b] = 8\% \]

\[ N = 5,612 \text{ emails sent in Main Baseline} \]

\[ Pr(T > t) = 0.00 \]
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\( N = 5,612 \) emails sent in Main Baseline

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Conditional on calling, female is called 59\% vs. male 41\%

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Can signals improve gender gap in external demands? YES

- Messages change who is called
- All stat. sign. different from baseline

![Bar chart showing proportion of female and male calls across different conditions.](chart.png)
Can signals improve gender gap in external demands? YES

- Messages change who is called
  - All stat. sign. different from baseline
- Female still called 26% when male “very available”
  (Male called only 10% when female “very available”)

Conditional on Calling

- High Male Availability
- Low Female Availability
- Baseline
- Low Male Availability
- High Female Availability

Proportion

Called Female (Mom) Called Male (Dad)
Can signals improve gender gap in external demands? YES

- Messages change who is called
  - All stat. sign. different from baseline

- Female still called 26% when male “very available”
  (Male called only 10% when female “very available”)

- Across all treatments, women are called 58% vs. men 42%
Can signals improve gender gap in external demands? YES

Messages generally change who is called as expected ($N = 30,471$ emails sent)

- NoCall rate not statistically different treatments vs. Baseline
Mechanisms: H2 & H3 What drives decision makers to call mom in Baseline?

Using info from figure & model, more calls to female parent in Baseline because:

- Decision-makers believe women are marginally more responsive than men:
  \[ \bar{r}_f = -0.34 \] and \[ \bar{r}_m = -0.42 \]
  \[ \text{Prob} > \chi^2 = 0.64 \]

- Decision-makers have different “deltas” for male/female parent:
  \[ \bar{\delta}_m - \bar{\delta}_f = 0.33 \]
  \[ \text{Prob} > \chi^2 = 0.02 \]
Solutions: Who emails & who calls mom?

- Sending emails from men increases calls to men vs. women by 10 ppt (pooling across 5 treatments)
Solutions: Who emails & who calls mom?

- Sending emails from men increases calls to men vs. women by 10 ppt (pooling across 5 treatments)
- Sending emails from men does not change “No Call” (pooling across 5 treatments)
Solutions: Attributes of decision makers & who calls mom?

▶ Female decision-makers call mom 59% vs. male decision-makers 57% across all 5 treatments

▶ Later: link to attributes of school, geographic area (gender norms, labor force participation, etc.)
Alternative Mechanisms
"Equal Decision" Variation

- "We are searching for schools for our child. Can you call one of us to discuss?"
- "This is the type of decision we both want to be involved in equally."

If mother’s implied expertise is driving results, expect fewer calls to mothers in “Equal Decision” variation

Find small opposite expected diff 58% Main vs. 60% Equal Decision
"Full-time" Variation

- “We are searching for schools for our child. Can you call one of us to discuss?”
- “We both work full-time.”

If mother’s implied labor force participation is driving results, expect fewer calls to mothers in “FT Work” variation.

Find opposite 58% Main vs. 62% Full-time $p = 0.05$
Male Domain

- "Payments" Variation
  - “We are searching for schools for our child.”
  - “and we are especially interested in discussing school fees and other expenses.”

- Survey of $\approx 140$ educators indicated "Payments" as more male domain

- Find same calls to mom in Main 58.1% vs. 58.0% in Payments
Gender norms

- We find suggestive evidence for gender norms as an important mechanism for the behavior we observe

In our own survey, administrators call mothers more because “mothers are more caring and nurturing,” “more polite,” and “more excited to participate.”

We link our data to the state-level GSS-based sexism index (Kerwin et al., 2022)

We find that areas with higher sexism have higher inequality in demand for parental involvement

Baseline call-back rates for religious/public+private (non religious) schools: 23% /11-14% calls to moms vs. 7% /7-8% to dads

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Discussion
Document a novel form of gender inequality: mothers field disproportionately more child-related external demands

- Likely a lower bound on total external demand gap
- Mental load & Compounding effects
- Efficiency Implications
- External decision makers
  - Competing short and long-run objectives
- Parents
  - Our survey: mothers wish to be contacted less
  - Social barriers to fathers wanting a more egalitarian split
- Children
  - Benefit from having both parents involved (Peck, 2007).
- Parents’ employers & Economic efficiency
  - Most efficient for the parent who signals availability to be contacted
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  - Parents’ employers & Economic efficiency
    - Most efficient for the parent who signals availability to be contacted
We decompose this inequality into discrimination due to beliefs about responsiveness vs. other deterrents and explore several mechanisms:

- Beliefs about relative expertise
- Beliefs about full time employment
- Gender norms
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- Solutions:
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Solutions:
- Signaling parents’ availability
  - Striking asymmetry in the effect of information on reducing discrimination
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- Sending the email from the father’s account
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    - Striking asymmetry in the effect of information on reducing discrimination
  - Sending the email from the father’s account

- Robustness across domains
Thank you!

olga.stoddard@byu.edu
Appendix
Details of Email Design

- Names from top 200 names social security admin. 1980s
  - School age child 5 to 18, avg = 11.5, born 2009
  - Avg. age parent 29.4
  - 2009-29.4 = 1979.6
  - Chose names with Erica, Roy for May 2022 (Audrey & Curtis later) no strong signal of a specific race/ethnicity
  - Last name Miller May 2022 (Johnson later) from list of most popular last names

- Survey of Educators
  - 238 Educators in April 2022
  - Three-fourths being emailed by parent very common (at least once a week) or somewhat common (at least once a month)
  - 42% being emailed by 1 parent & CC other very common (at least once a week) or somewhat common (at least once a month)
Callback Rate

- Studies which email schools and receive emails back
  - 40% to 63% (Bergman and McFarlin Jr, 2018; Ahmed et al., 2020; Oberfield and Incantalupo, 2021)
  - Expect phone calls less than emails

- Principals response to other emailed tasks
  - 14% of principals respond in the first month after an email request to take a survey (Neal et. al., 2020)

- Traditional job audit studies
  - Combined email/phone response rates between 8% to 11% (see Agan and Starr, 2018 for a summary)
Baseline: no signal

All versions mostly balanced on being sent from male or female parent (results similar if re-weighted for balance on email sender)
## Robustness

<table>
<thead>
<tr>
<th>Variation &amp; Treatment</th>
<th>Body Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Baseline (Used In Study)</td>
<td>We are searching for schools for our child. Can you call one of us to discuss?</td>
</tr>
<tr>
<td>Main Baseline (Longer Alternative)</td>
<td>I’m Curtis[Audrey] Johnson. I’m writing to request information about your school because we are searching for schools for our child, Riley. Riley is a well behaved student, and loves most subjects. We’re not totally sure when we will be needing to enroll, but we are looking forward to hearing more from you at your earliest convenience. Could you call one of us to discuss? Thank you very much,</td>
</tr>
<tr>
<td>Equal Decision (Used In Study)</td>
<td>We are searching for schools for our child. Can you call one of us to discuss? This is the type of decision we both want to be involved in equally.</td>
</tr>
<tr>
<td>Equal Decision (Longer Alternative)</td>
<td>We are searching for schools for our child. Could you call one of us to discuss? You can call either me or my wife, Audrey [husband, Curtis]. Since we make these kinds of decisions together, whoever you call will convey the information to the other parent. Thank you very much,</td>
</tr>
</tbody>
</table>
Treatments 1 & 2: Male high vs. low availability signals

All versions mostly balanced on being sent from male or female parent (results similar if re-weighted for balance on email sender)
Treatments 3 & 4: Female high vs. low availability signals

All versions mostly balanced on being sent from male or female parent (results similar if re-weighted for balance on email sender)

<table>
<thead>
<tr>
<th>School Inquiry</th>
<th>School Inquiry</th>
</tr>
</thead>
</table>
| **roe@millen-family.net <roe@millen-family.net>**  
To: laura.k.see@gmail.com  
Cc: erica@millen-family.net  

Dear Principal Gee,

We are searching for schools for our child. Can you call one of us to discuss?  

**Erica has a lot of availability to chat, but you can call either me or Erica.**  
Roy (727) 855-3147 or Erica (727) 855-3137.  |
| **roe@millen-family.net <roe@millen-family.net>**  
To: laura.k.see@gmail.com  
Cc: roy@millen-family.net  

Dear Principal Gee,

We are searching for schools for our child. Can you call one of us to discuss?  

**I have limited availability to chat, but you can call either me or Roy**  
Erica (727) 855-3125 or Roy (727) 855-3157.  |