

# Women in physics: Bound by the ropes of motherhood expectations and the gendered labor market

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•The Nobel Prize in Physics 2020

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# THE TRACK

**What happen to female physicists graduate students along their academic track ?**



*Monte Rosa rises above Lago delle Locce, a short side trip off the main track near Macugnaga, Italy.*

*Photo by clickalps SRLS/AGEFOTOSTOCK*

# PHYSICIST AND SOCIOLOGIST PARTNERSHIP



## **Prof. Yossi Nir**

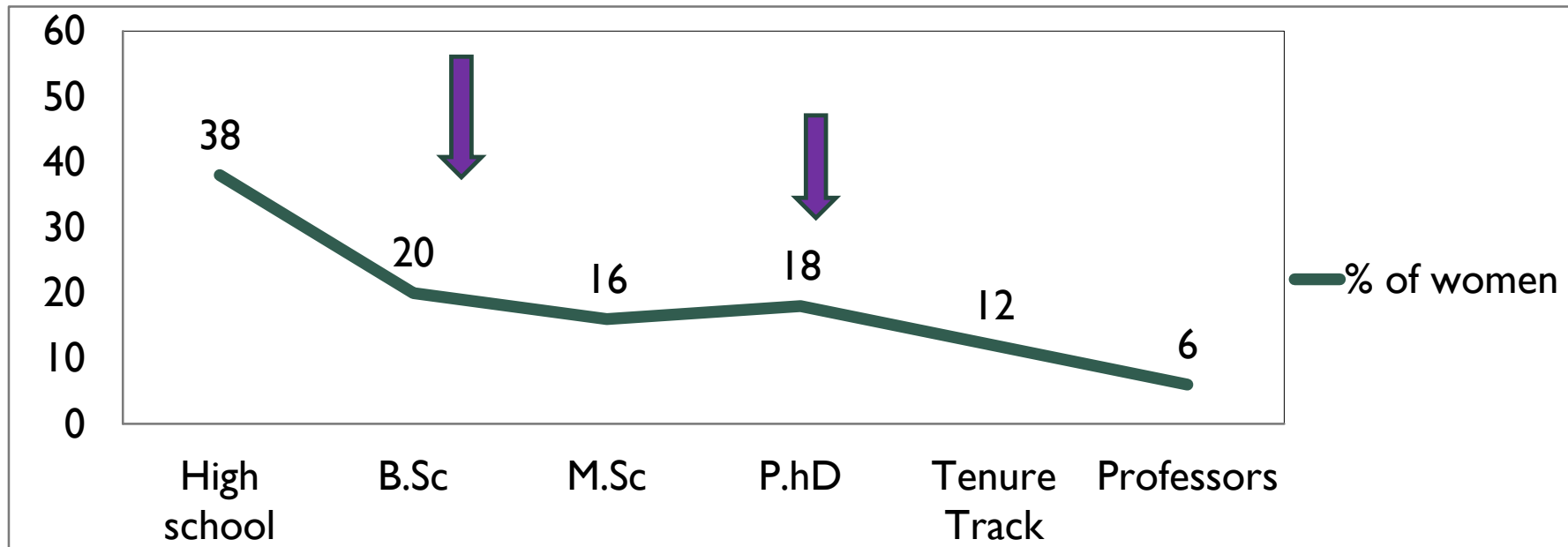
Head of Particle Physics and Astrophysics  
Department

## **Dr. Meytal Eran Jona**

Gender Diversity and Development Advisor

# WOMEN PHYSICS TRACK

- Physics as an academic field is characterized by gender imbalance, that persists in most western democracies. Women in physics in Israel:

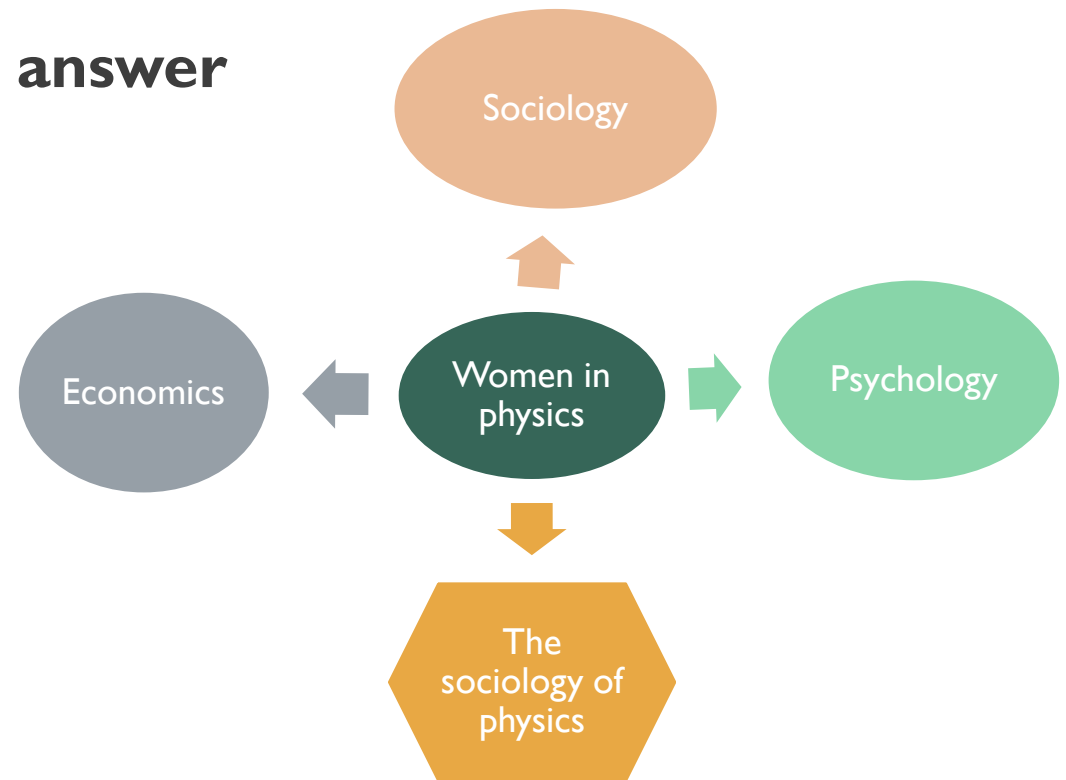


# THE THEORETICAL FRAMEWORK

We need an inter disciplinary approach to answer complex research questions.

Studying the intersection between:

- The individual level
- The organizational level
- The labor market level



# RESEARCH QUESTIONS

1. What are the pros and cons of an academic career in the eyes of graduate students (PhD and postdoc)?
2. What is the most significant decision junction for choosing an academic career?
3. What are the women key considerations for going on a postdoc & in what way are they influenced by gender?



Sabrina Pasterski, 22, Harvard:  
“the Next Einstein”

# METHODOLOGY

## Mixed methods

### PhD and Post Doc interviews:

- Population: n=25 female PhD students, age 26-36, married (21), mothers (12).
- Post Docs: n=13 female postdocs, age 30-46, almost all in relationship, only 2 without children.
- Face to face in depth interviews, recorded (1-2.5 hours).
- Analysis :Atlas.it software, grounded theory.

### PhD students survey- nationwide

- Population: all physics students in Israel- N=404; n= 267 (66%) n=60 Women, n=207 Men.
- Self administered survey, 105 questions (Dec. 2018 - Feb. 2019).
- Sample errors: total population:  $\pm 3.6\%$ . W:  $\pm 3.2\%$ . M:  $\pm 4.3\%$ .

## THE POSTDOC JUNCTION – THE GENDERED “DEAL”

Women decisions are shaped within **a gendered structure** in a reality that **reduces** their **freedom of choice** and raises the perceived **economic price** of pursuing a post doctoral training abroad.

The organizational level

Unequal  
competition  
in a  
gendered  
workplace

Post as a  
disruption of  
the gender  
order

The socio-cultural level

The individual level

Prioritizing  
the  
husband's  
career

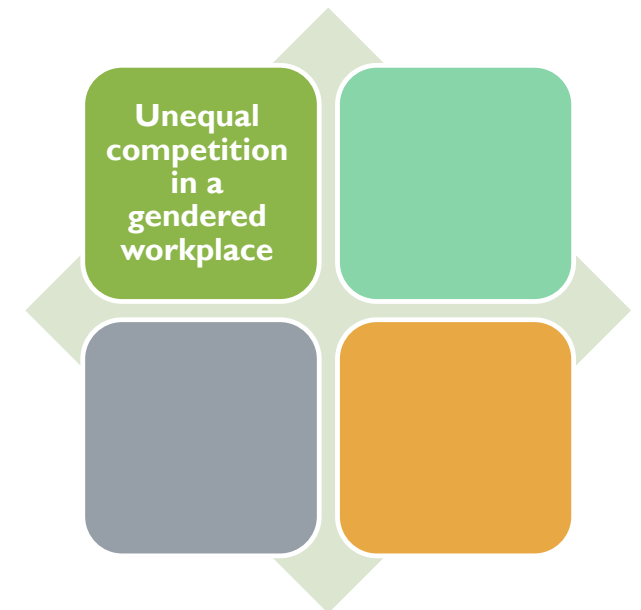
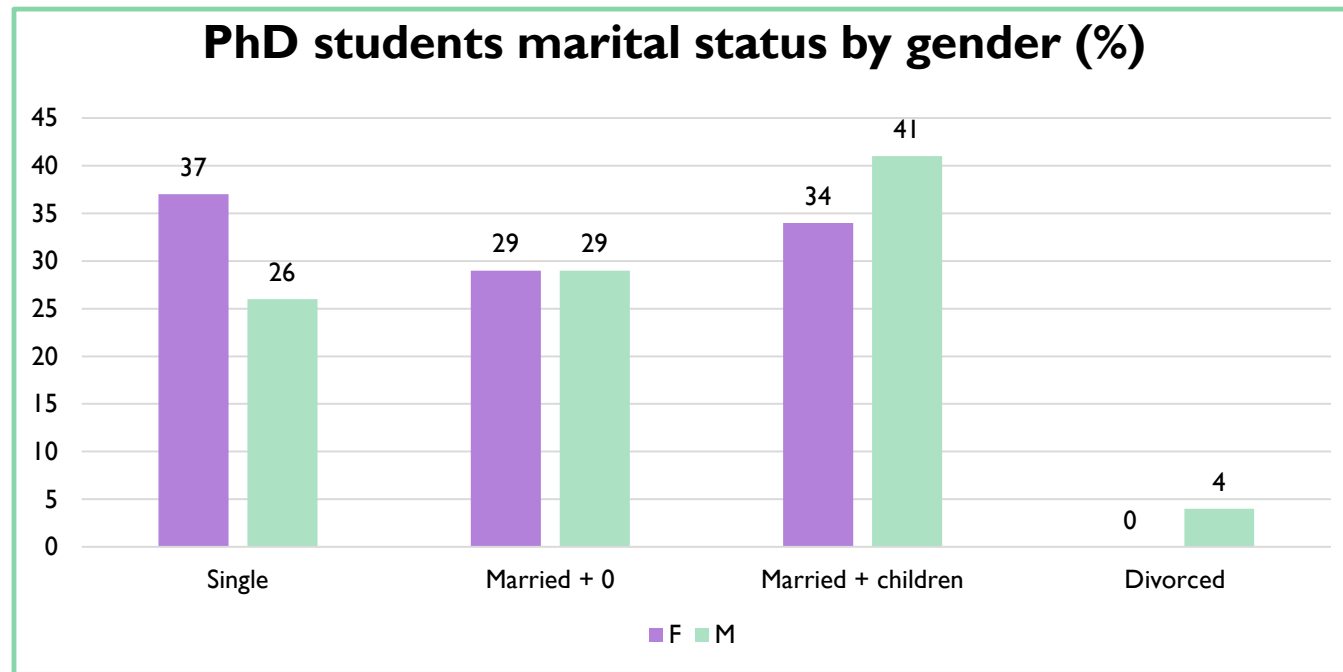
Less  
profitable  
economic  
deal

The labor market level



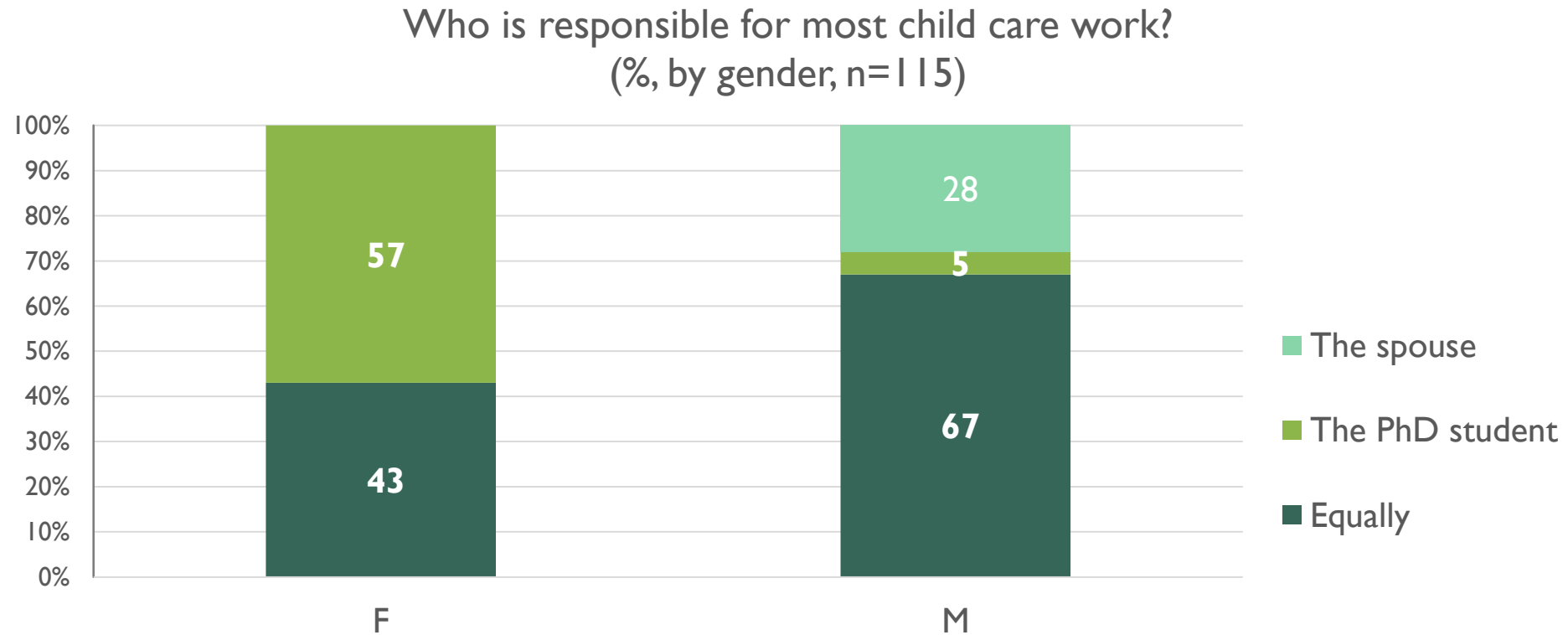
# UNEQUAL COMPETITION IN A GENDERED WORKPLACE .I

➤ Israel as a familial society. Most students are married, 40% have children



# I. UNEQUAL COMPETITION IN A GENDERED WORKPLACE

## WHO IS RESPONSIBLE FOR CHILD CARE?

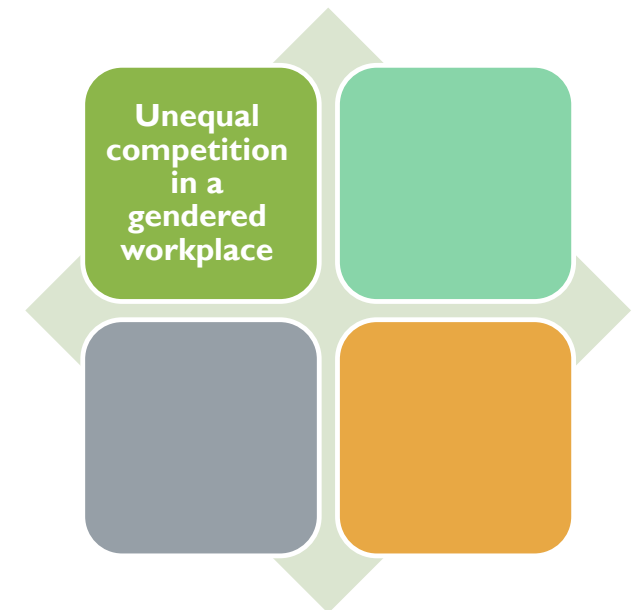


**57% of female, but only 5% of male students are the primary child care giver**

## I. UNEQUAL COMPETITION IN A GENDERED WORKPLACE

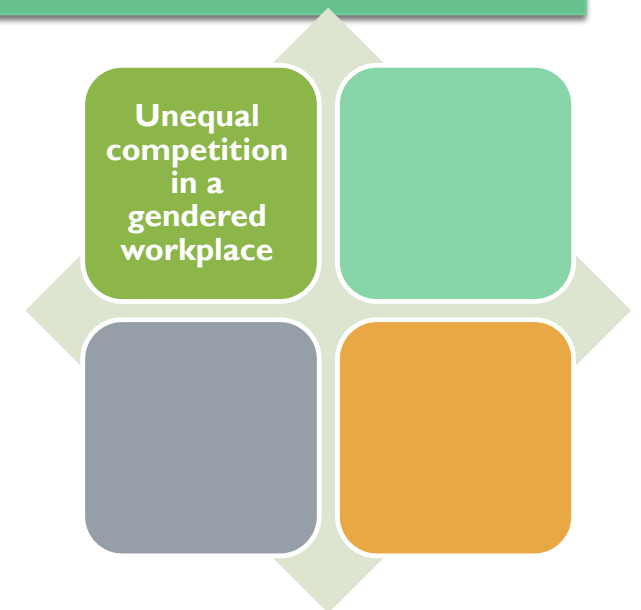
"I feel the gender difference mainly from **having far fewer hours to work than my friends from the lab** and it becomes a **tough gap** .. **You are competing against** them and the comparison is always between you and a **man** who does not have **this "problem."** (child care)

(T.married+ I + pregnant).



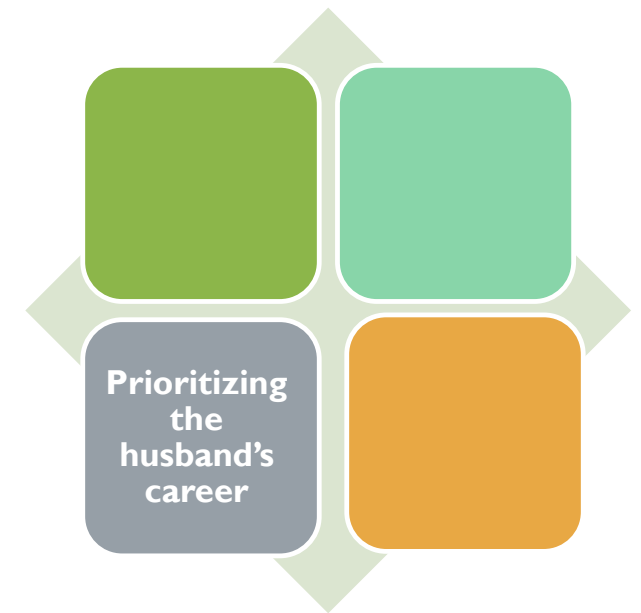
## I. UNEQUAL COMPETITION IN A GENDERED WORKPLACE

- The “family work” places double burden on female students.
- In the competition against their male colleagues, being a mother is a disadvantage. **Motherhood moves women away from the “ideal worker” model** and labels them as less career committed (“The motherhood penalty”).



## 2. PRIORITIZING THE HUSBAND'S CAREER

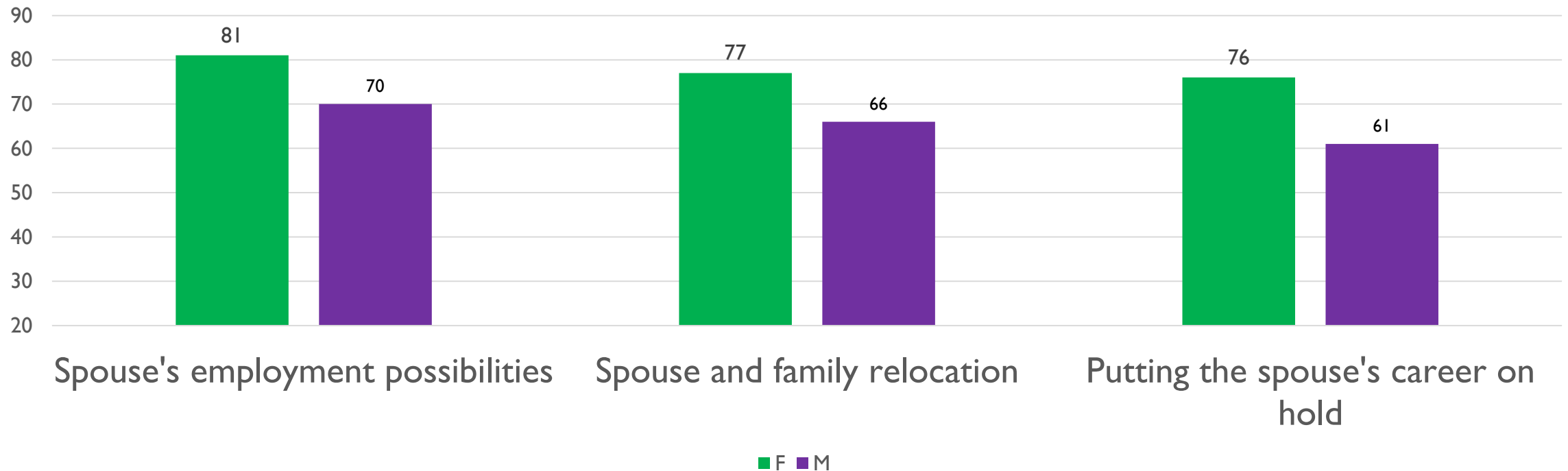
- Internalizing the rules of the gendered labor market creates a reality in which **women give priority and preference** to their husband's career.
- The career sacrifices of the spouse **play a more prominent role** in women-postdocs considerations.



## 2. PRIORITIZING THE HUSBAND'S CAREER

### FAMILY & ECONOMIC CONSIDERATIONS FOR POSTDOC ABROAD

If you are considering going abroad for a postdoc, how central is this consideration in your decision? (% central consideration, by gender)



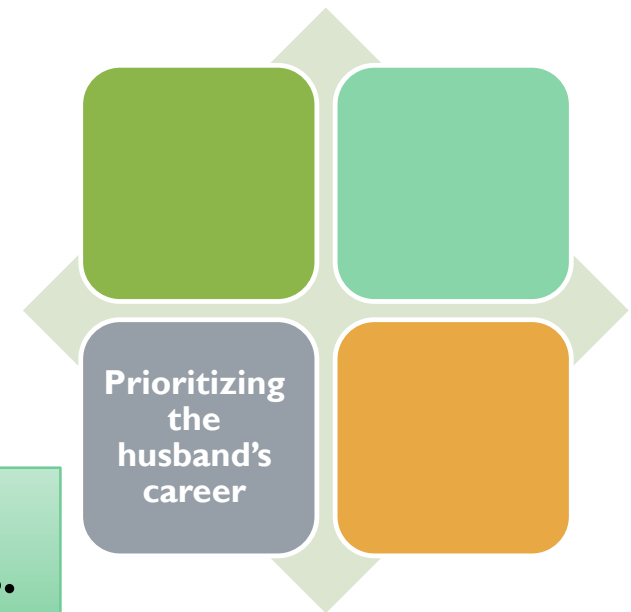
**Women give greater weight to the considerations of their spouse's career**

## 2. PRIORITIZING THE HUSBAND'S CAREER

“After giving birth there is a **shuffle of emotions and insights about life**. As much as I was a career woman, **I want to be a mom** too.. so if you are not a career women anymore, and your career is not considered anymore as the leading,.. it's **easier to cross to the other way and say: I will follow the husband**, the husband is the leader. ”

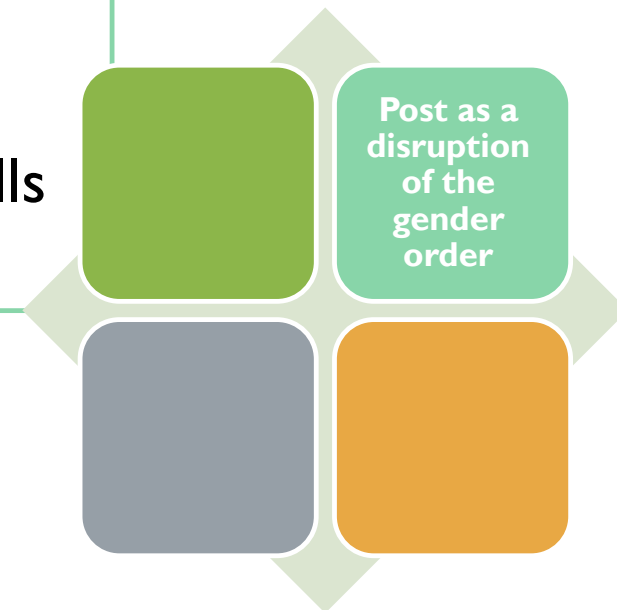
(M, Married + 2)

- **Prioritizing the husband's career is constraining women options and pushes women out of the race towards an academic career in physics.**



### 3. POSTDOC AS A DISRUPTION OF THE GENDER ORDER

- **The academic career path is highly demanding and competitive.**
- Although coming from a **high socio-economic background**, the social and family environment perceives postdoc abroad as a **non-normative path for women**.
- **The women doubt themselves:** Am I worthy? Do I have the skills to succeed?

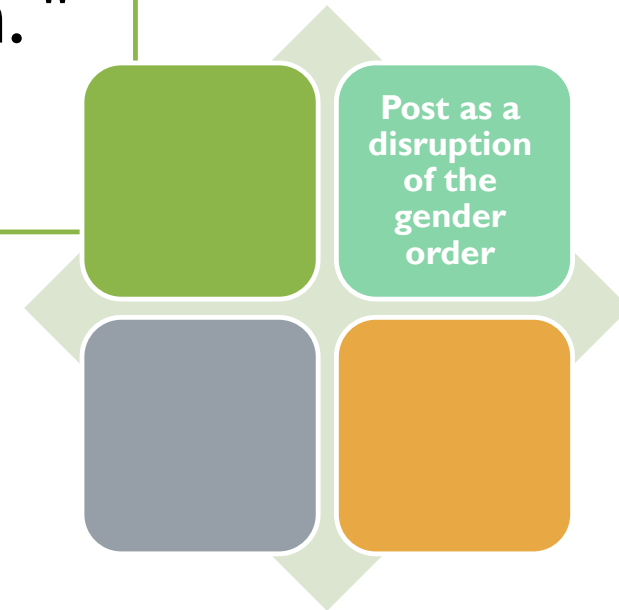




### 3. POSTDOC AS A DISRUPTION OF THE GENDER ORDER

“Even if the husband supports, **the extended family wrists the nose and puts pressure on me** (not to go on a postdoc abroad). If a post-doc could be done in Israel, it would have been much easier for women.”

(T, Married, no children)



### 3. POSTDOC AS A DISRUPTION OF THE GENDER ORDER

“Women are also **affected by their partners**, not that men are not, but when a man thinks of pursuing a postdoc, the women is usually enthusiastic to follow him ... It's an adventure! Women (on the other hand) are more **looking at the partner**, and if he says **no**, then you need a really good reason (to go on a post), for example, when your thesis is brilliant and the advisor wants you to go... really pushes you to do so, then people would say: it's worth it, then, maybe then.. ”

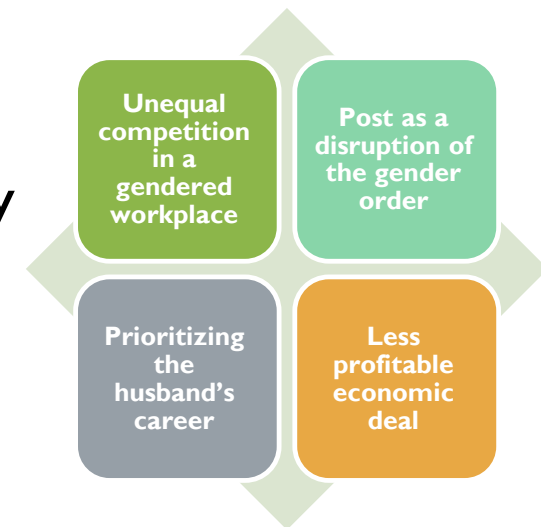
(C, Married + pregnant, leaving for industry).

#### The justification regime: excellence

Women feel that they have to be **excellent students**, with high probability of success, to justify the choice of a non-normative career trajectory. If you are not excellent you will leave the race.

## SUMMARY AND DISCUSSION

- The women stories reveal the multiple and hidden ways in which gender operates as a **power structure, within the family, in physics as a male-dominated field and within the labor market.** This power structure shapes women's decisions and behavior.
- **We better understand the problem,** there is no single simple answer but a complex fabric of factors and considerations.
- **Next step** best practice: how to bring more women to physics, policy recommendations.





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