

Factors influencing womens career paths in mathematics

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Women still underrepresented in (leading positions in) mathematics

MATH+ as a Research Object aims to:

- identify causes and mechanisms of the underrepresentation of women in mathematics and its presence in MATH+

Focus on:

- possibilities and conditions for successful status transitions (e.g., career knowledge)
- interrelations between leaving academia and disciplinary/organizational exclusion (e.g., gatekeeping)
- structures and cultures of the cluster (as an excellent, interdisciplinary, application-oriented research environment)

Data Collection:

45 semi-structured interviews with scientists in leadership position (January – June 2020)

Gender	Career level		
	Professorship	Senior researcher	
Men	29	24	5
Women	16	9	7
Diverse	0	0	0
Total	45	33	11

20 semi-structured interviews with PhD students and postdoctoral researchers (May – October 2022)

Gender	Career level		
	PhD	Postdoc/Professorship	
Men	13	2	11
Women	7	2	5
Diverse	0	0	0
Total	20	4	16

Table 1: Description of the sample (n=65) by gender and career level

Results from the Cluster

Interrelated factors that may influence womens career paths in mathematics in the Cluster.

On side of the scientists in leadership position

- Gender stereotypes regarding PhD students and postdocs** (e.g., differences in career motivation, care responsibility and personality traits) ^{[1] [2]}
- Gendered (masculine) attributions implicitly linked to potential for success in science** (e.g., motivation, life circumstances, personality) ^[2]
- Gendered gatekeeping in informal practices such as informal hiring and supervision practices susceptible to gatekeeping based on gender stereotypes** ^{[1] [2]}

On the side of PhD students and postdocs

Enthusiastic about mathematics/research but

a) Perception of difficult career paths

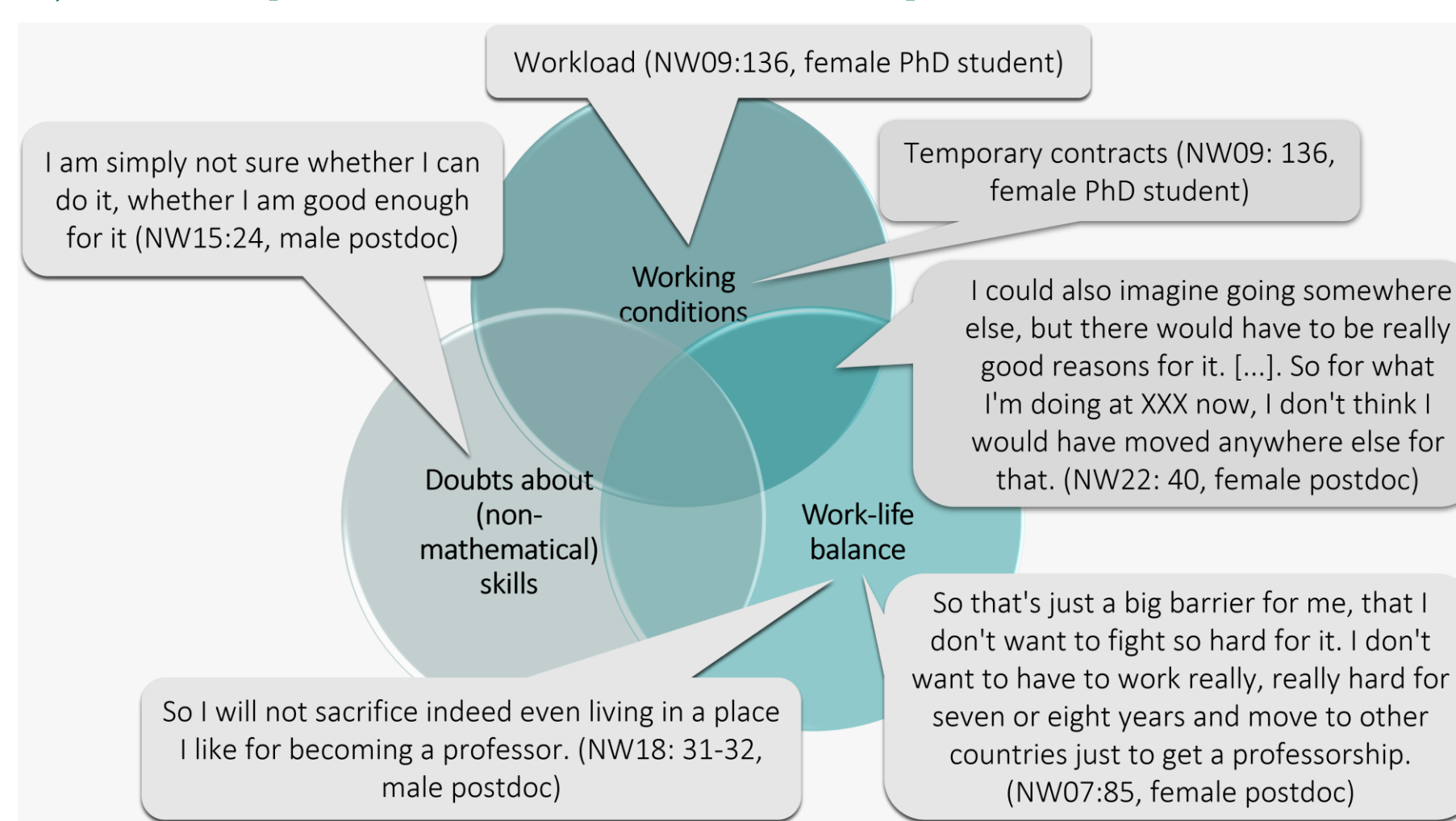


Figure 1: Perspectives of female and male PhD students and postdocs on their career paths

b) Professorship is not attractive

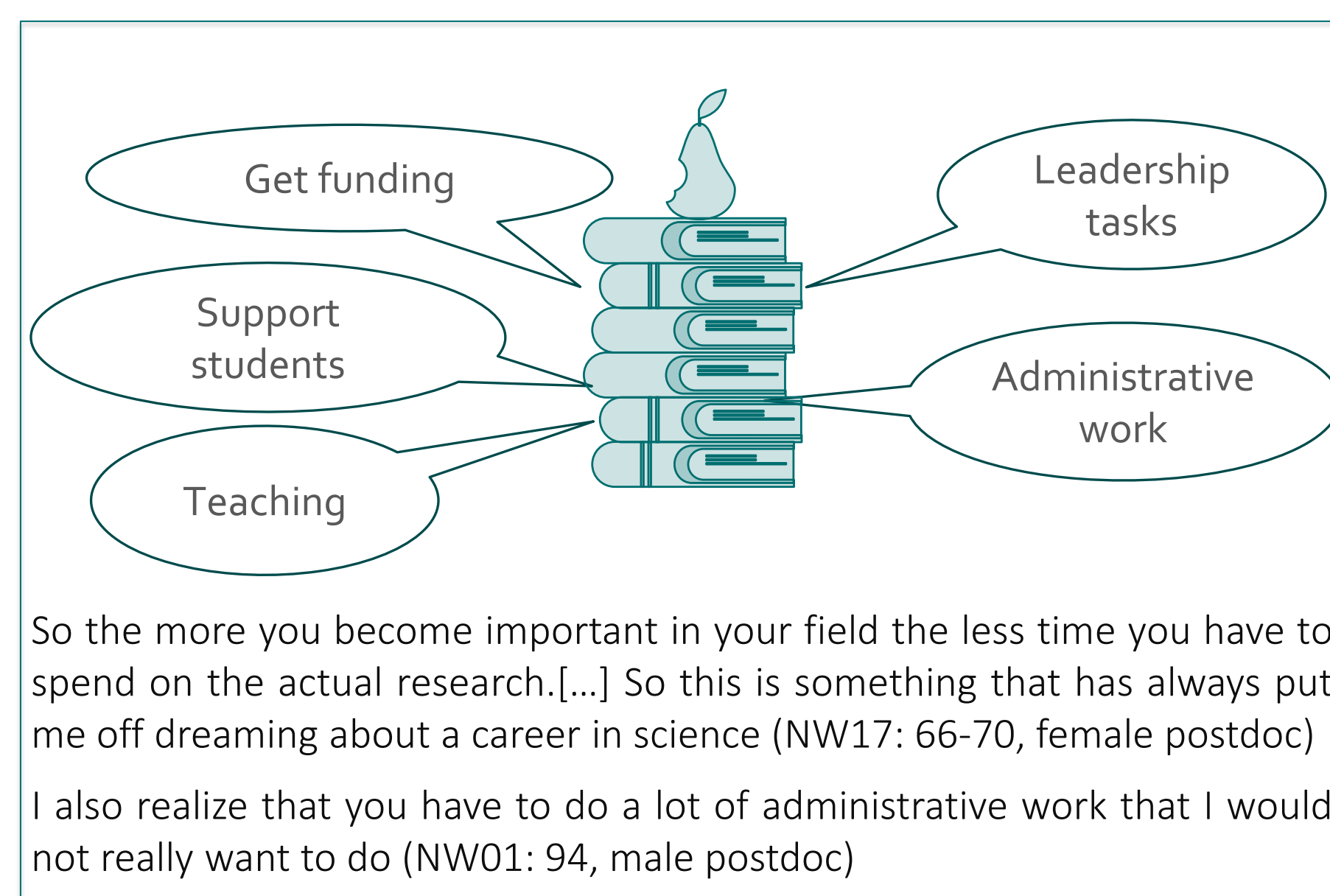


Figure 2: Perspectives of female and male PhD students and postdocs on the professorship

but: also relevant factors for male PhD students and postdocs

Additional factor: Perspectives on equal opportunity

a) Some prevailing perspectives on equal opportunity (EO) (measures) may create barriers for women ^[3]

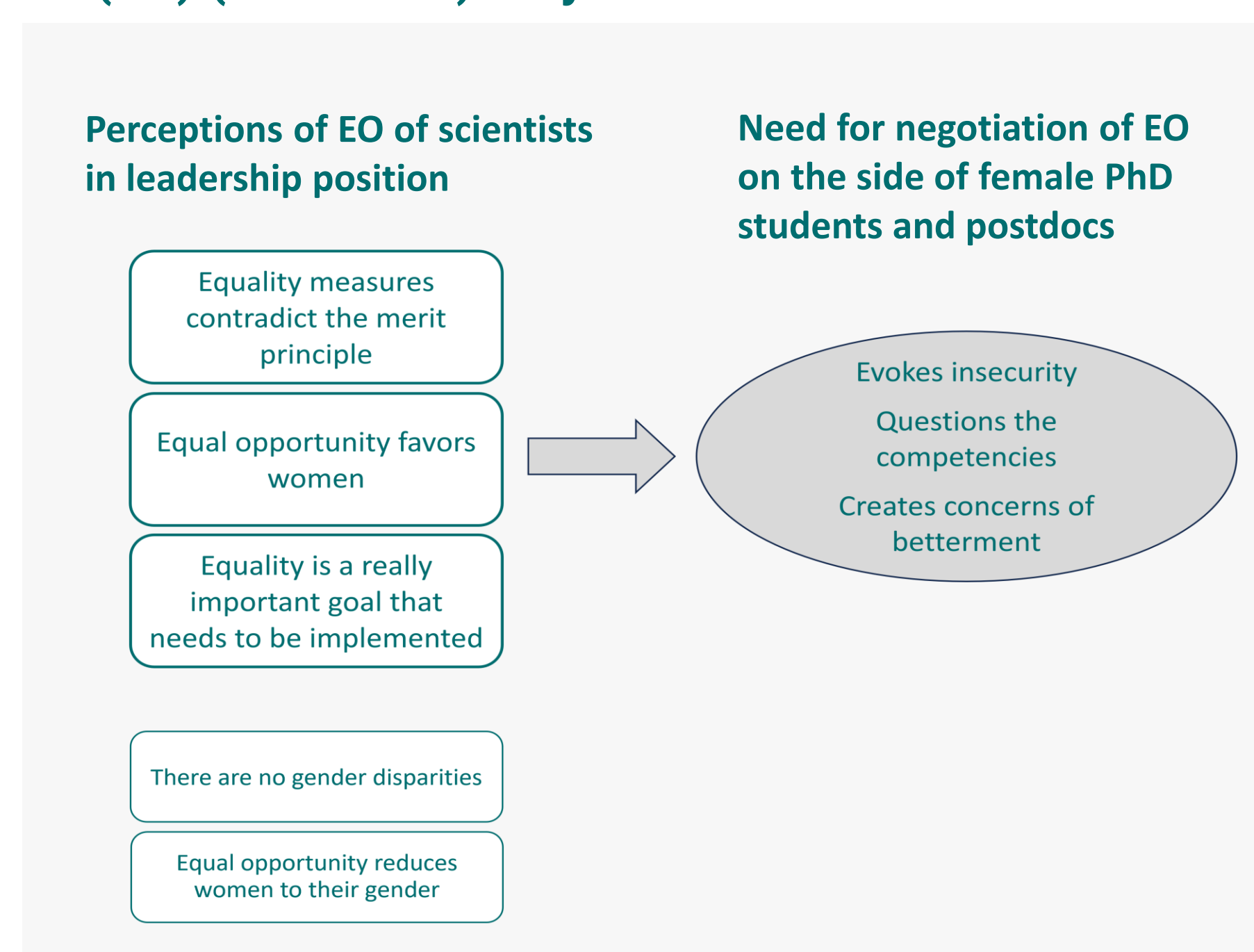


Figure 3: Perspectives of scientists in leadership position and female PhD students and postdocs on equal opportunity (measures)

- Implication that women are less qualified
- Women are reduced to their gender ≠ mathematician
- No thematization of mathematics as (historically) male connoted

Conclusion

Factors that create potential barriers for women in the cluster and may contribute to their general underrepresentation:

- prevailing gendered stereotypes not fitting image of a successful scientist
- gendered gatekeeping
- career paths: perceptions of difficulties in structure and scientific culture
- career goal: lack of attractiveness of leading positions (esp. professorships)
- marginalizing perspectives on equal opportunity (may lead to women not making use of the offers)

Next Step

Transforming gender relations through applied-mathematics?

- Studies indicate: women are ascribed the skills and interest required for interdisciplinary, application-oriented research environments
- Has the research orientation of MATH+ an influence on gender relations?

Hypothesis 1: women are more likely to be interested in working in this research context → may lead to a higher amount of women and/or more female professors

Hypothesis 2: women are perceived as particularly qualified for the research context → may lead to a higher amount of women and/or more female professors

References

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