Toward Awareness Creation of Common Challenges Women are Facing in Academia: A Case Study from a German Perspective

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Who are we?

- Software Engineers & Architects

- Different cultural background
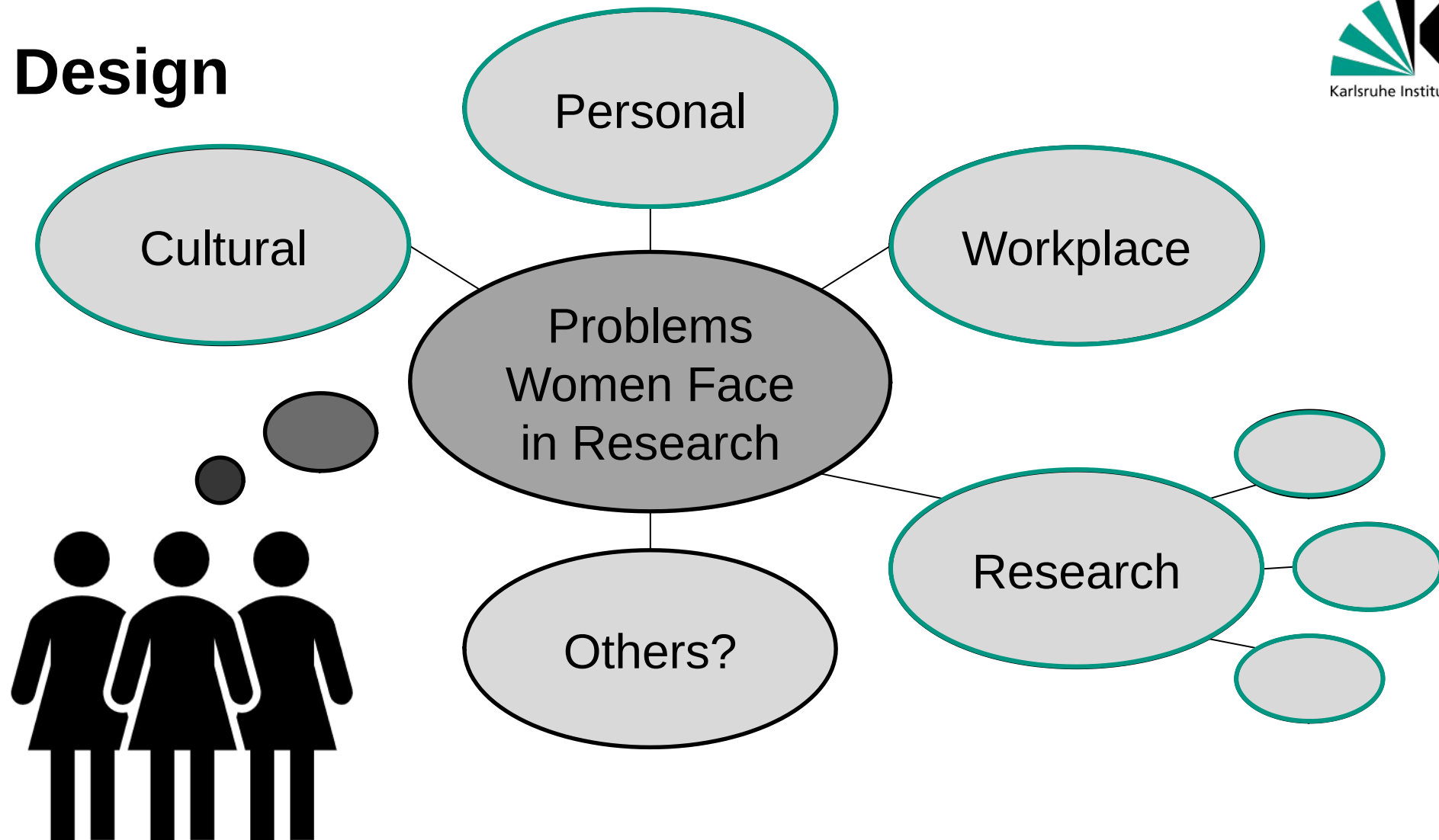- Different „stage of life"

- Women

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Motivation

- RQ1: What problems do women face in research?

- RQ2: What solutions do women find for their problems?

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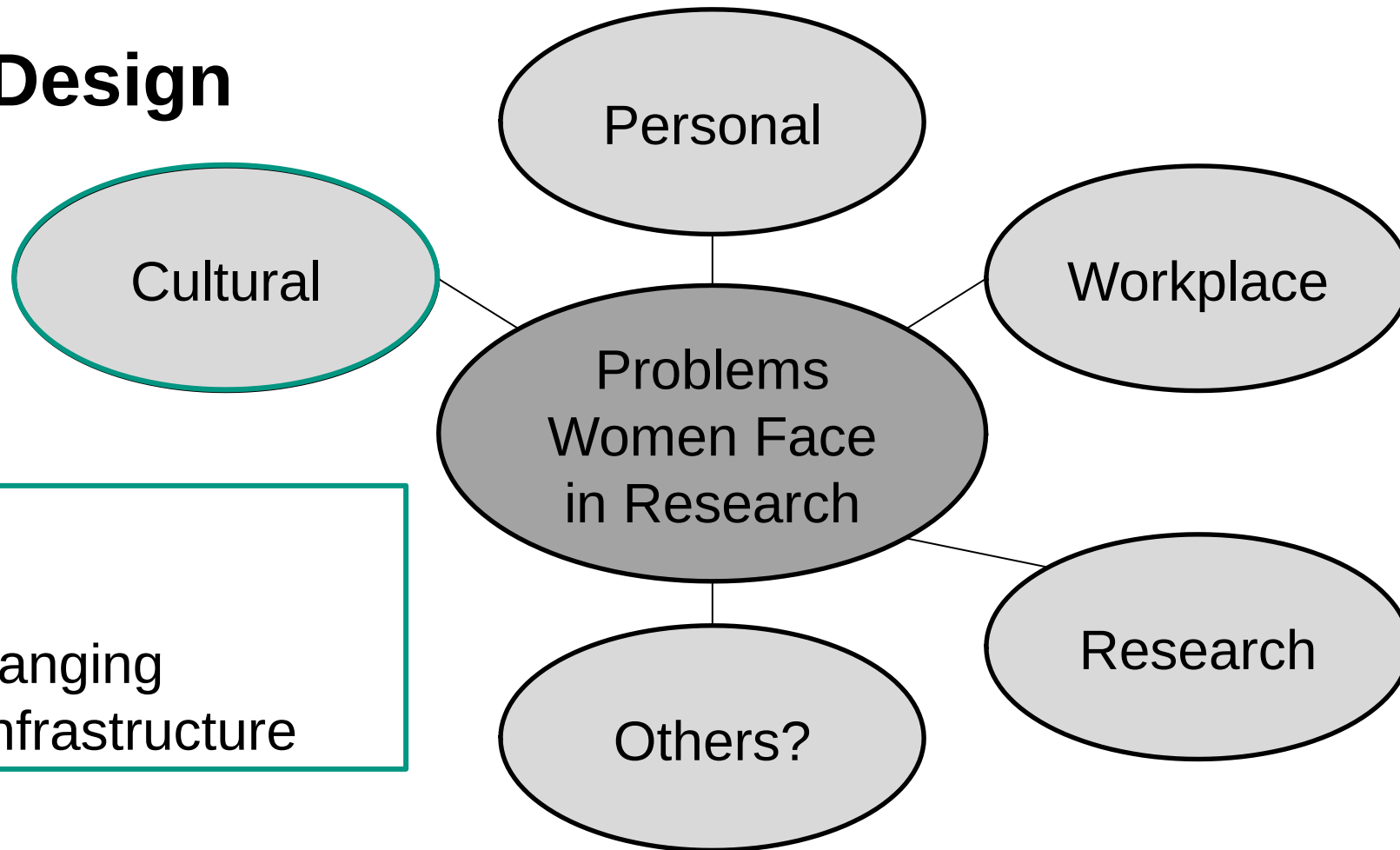KIT Department of Informatics

Idea

- Conduct Survey

- Restrictions
  - Technical universities
  - Germany
  - Participants identify themself as women

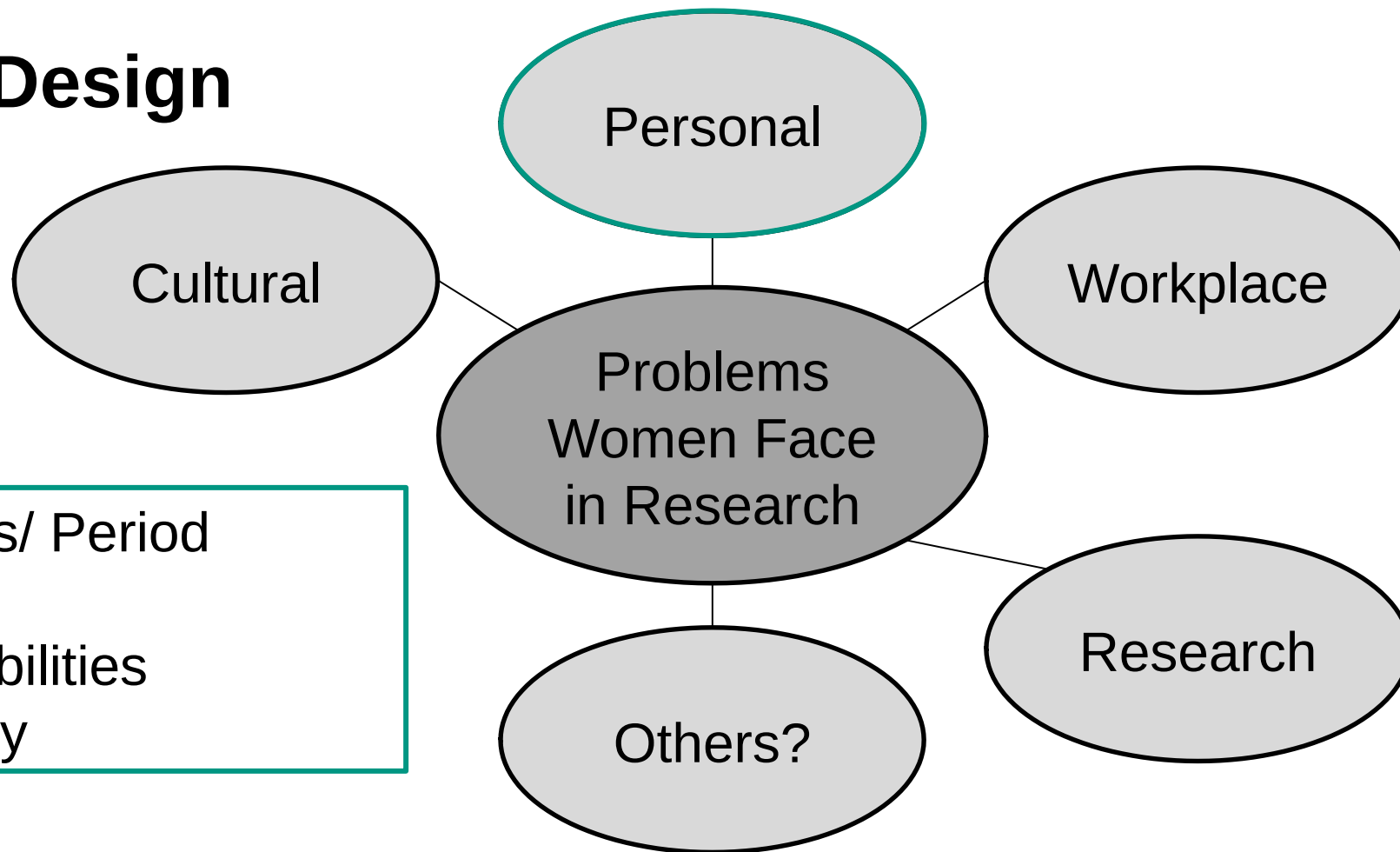- Groups
  - Computer scientists
  - Not computer scientists

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Survey Design

Survey Design

- Religion
- Clothing
- Name Changing
- Cultural Infrastructure

Cultural

Personal

Workplace

Problems Women Face in Research

Others?

Research

Survey Design

- Hormones/ Period
- Life plan
- Responsibilities
- Pregnancy

Personal

Cultural

Problems Women Face in Research

Workplace

Research

Others?
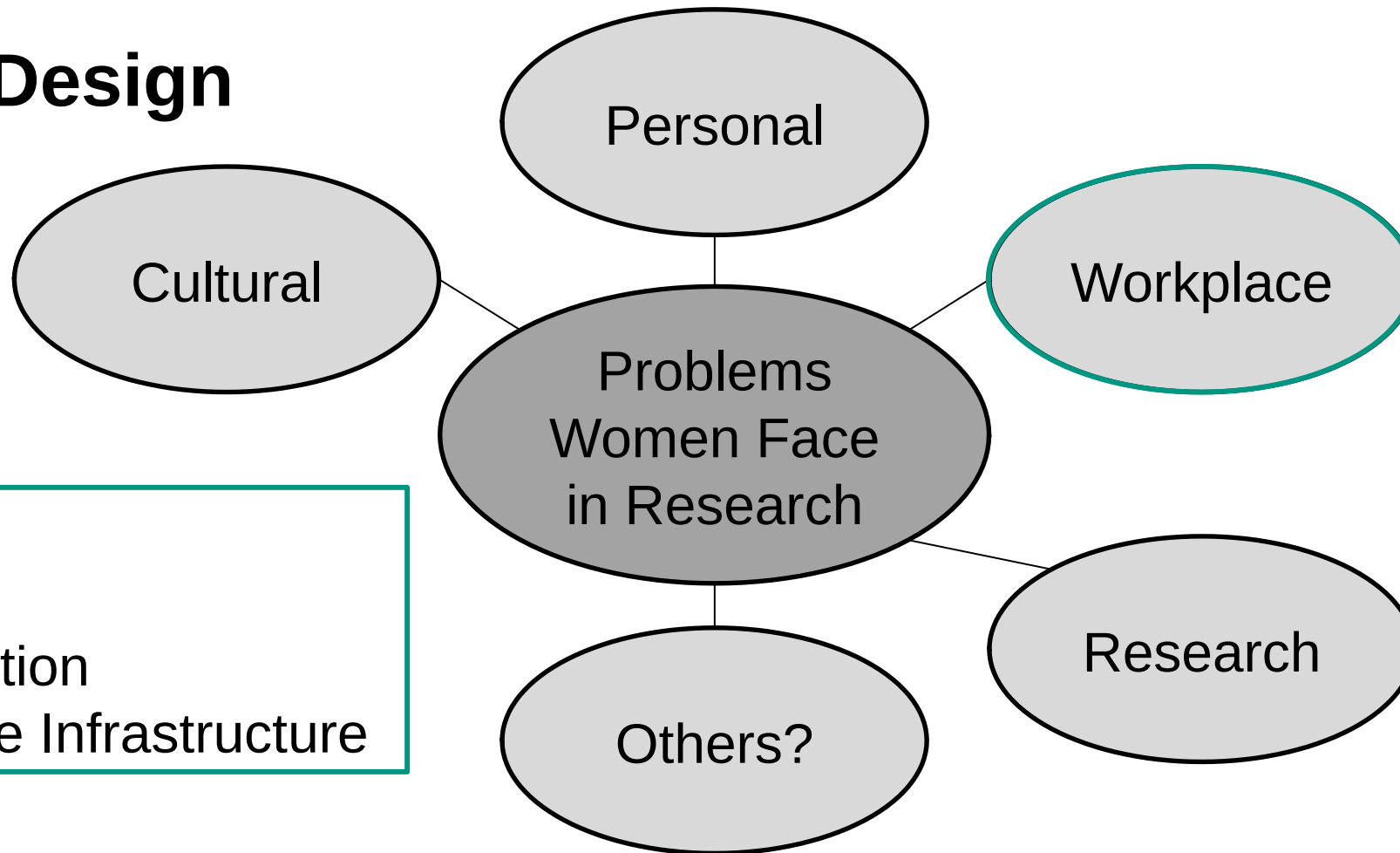
Survey Design

- Equality
- Support
- Collaboration
- Workplace Infrastructure

Personal

Cultural

Workplace

Problems Women Face in Research

Others?

Research

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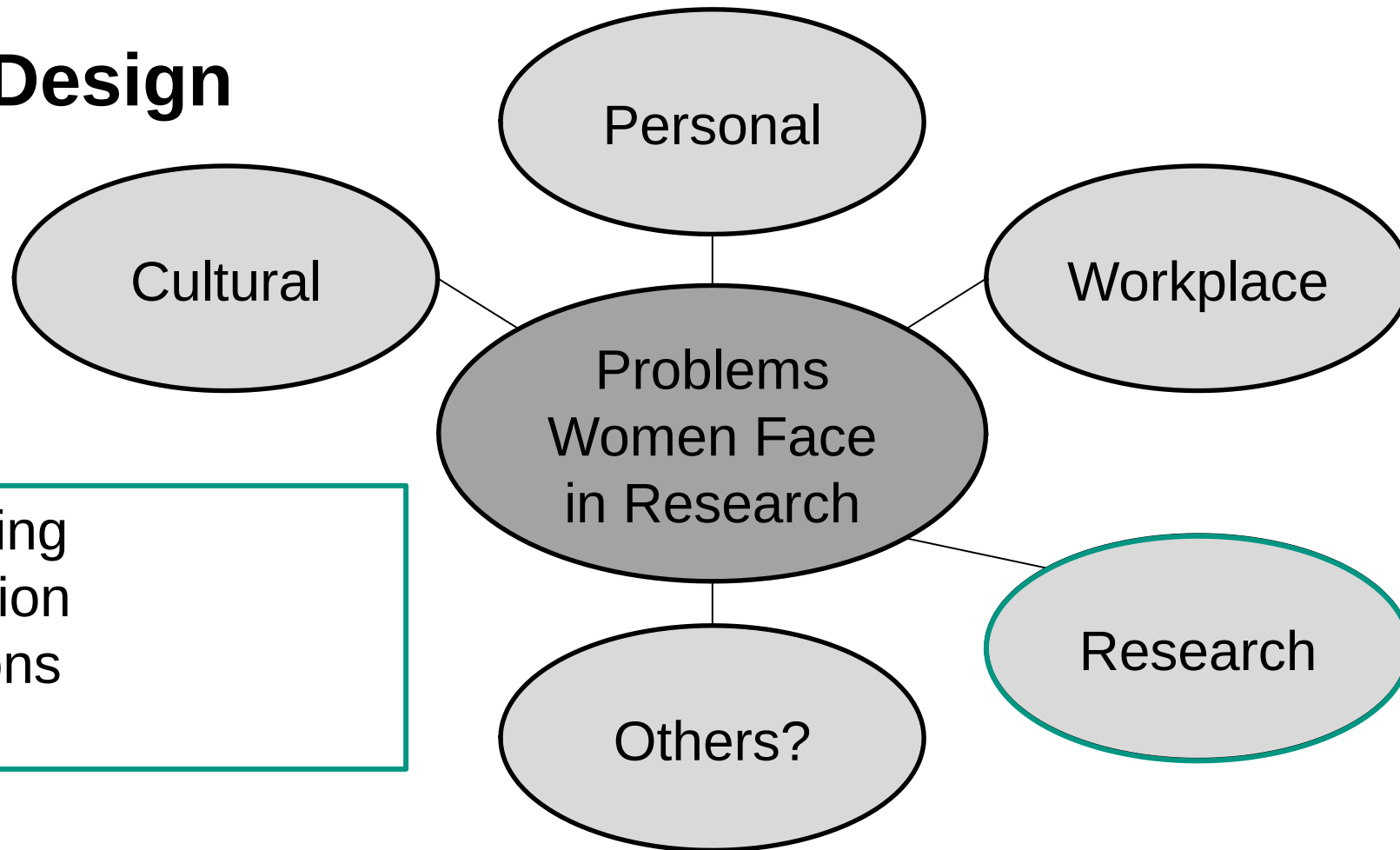
Survey Design

- Idea sharing
- Appreciation
- Publications
- Priority

Personal

Cultural

Workplace

Problems Women Face in Research

Research

Others?

Survey Design

- Area
  - Topic
    - Has the participant experienced the problem addressed by the topic during her research career?
      - [yes]
      - Detailed description (optional)
      - Solved?
        - [yes]
        - Solution description (optional)
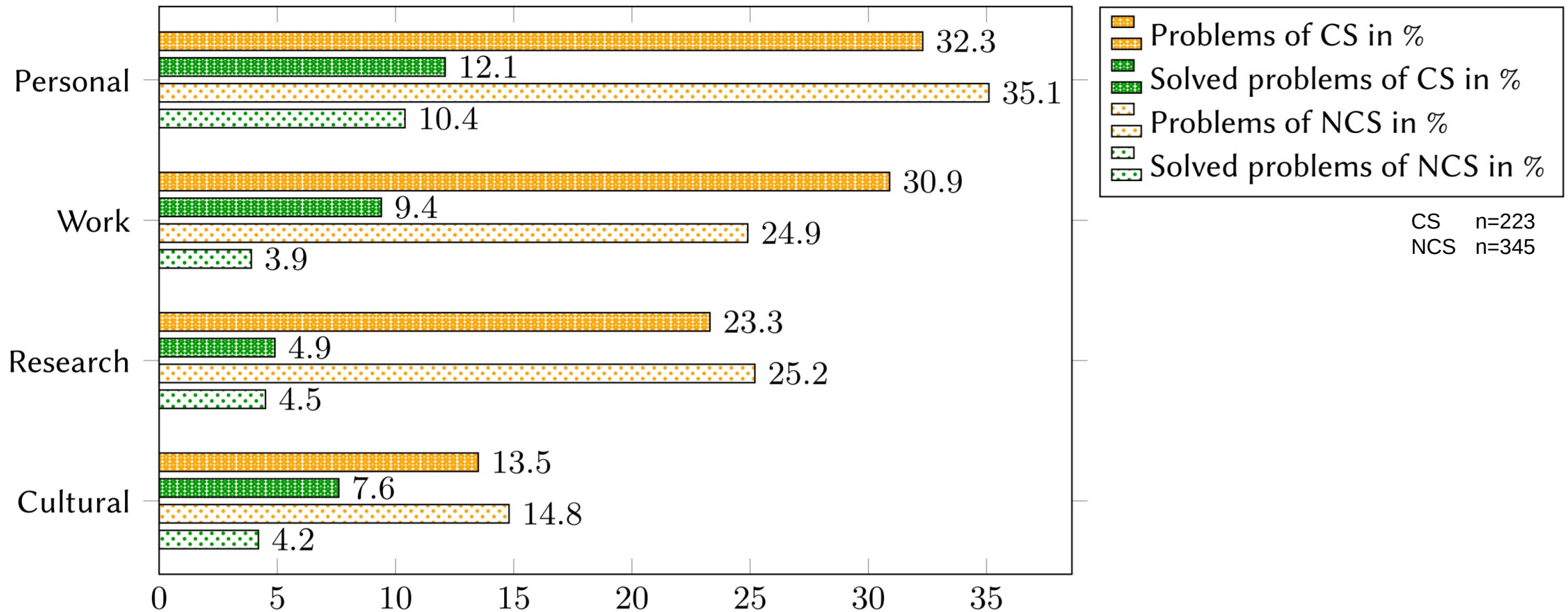
  - Topic
    - …

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Data analysis

132 fully answered surveys from women who did/ do research in Germany

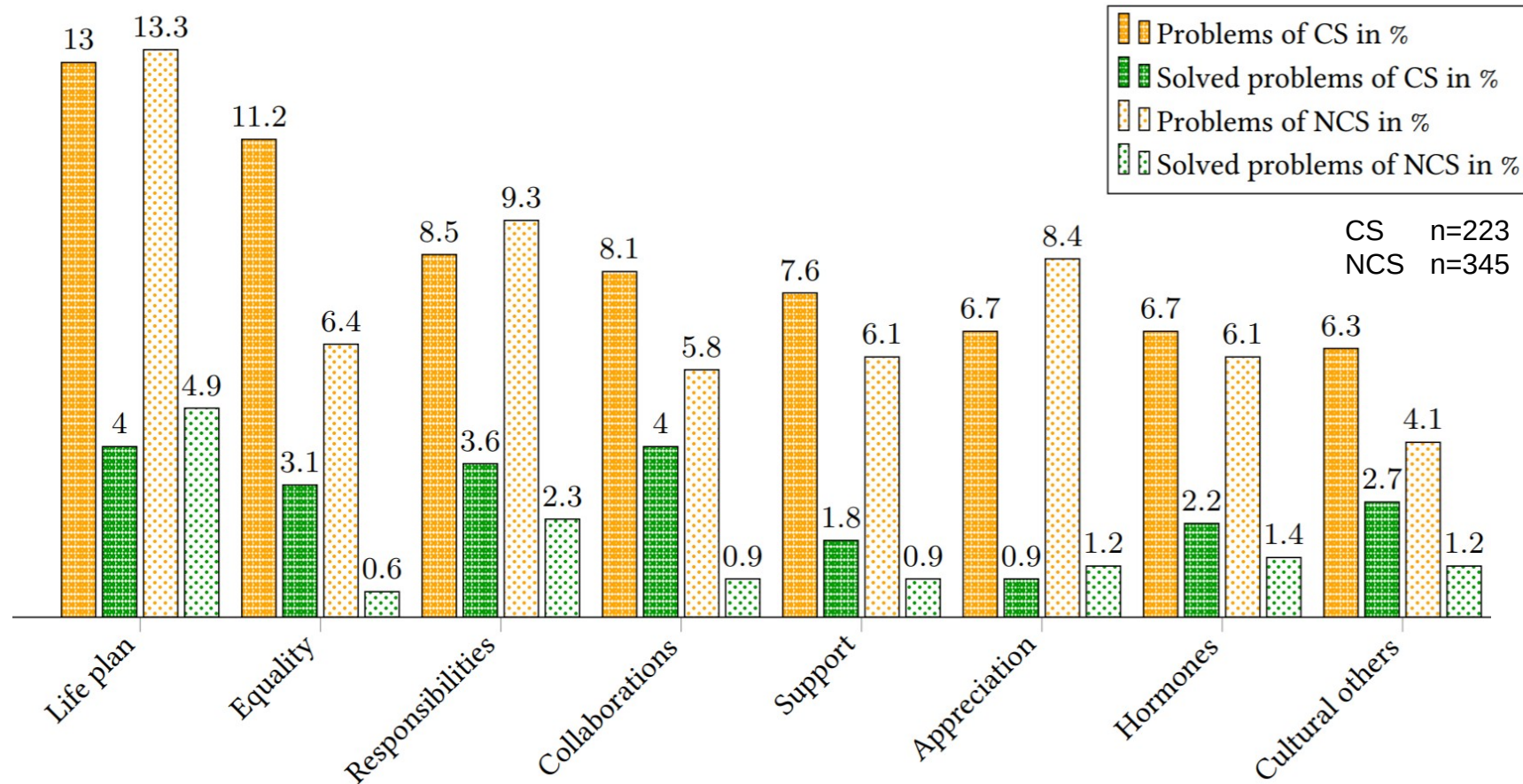| Computer Scientists (CS)	Not Computer Scientists (NCS)
52	80

Research Questions

- RQ1: What problems do women face in research?
  - RQ1a: In which area did most problems occur?
  - RQ1b: Which topics have most problems?
  - RQ1c: What are the most frequently described problems?

- RQ2: What solutions do women find for their problems?
  - RQ2a: … (analogue)
  - RQ2b: …
  - RQ2c: …

Problems & Solutions per Area

Problems of CS in %
Solved problems of CS in %
Problems of NCS in %
Solved problems of NCS in %

CS   n=223
NCS   n=345

Area	Problems of CS	Solved problems of CS	Problems of NCS	Solved problems of NCS
Personal	32.3	12.1	35.1	10.4
Work	30.9	9.4	24.9	3.9
Research	23.3	4.9	25.2	4.5
Cultural	13.5	7.6	14.8	4.2

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Problems & Solutions per Topic

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Most described problems

Bar chart titled with categories and values (n=235):
- Parenting: 10.64
- Family planning: 9.79
- Male communication: 7.66
- Undermining: 6.38
- Promotion: 5.96
- PMS: 5.53
- Equipment: 5.11
- Self confidence: 4.68
- Expertise perception: 3.83
- Visibility: 3.83

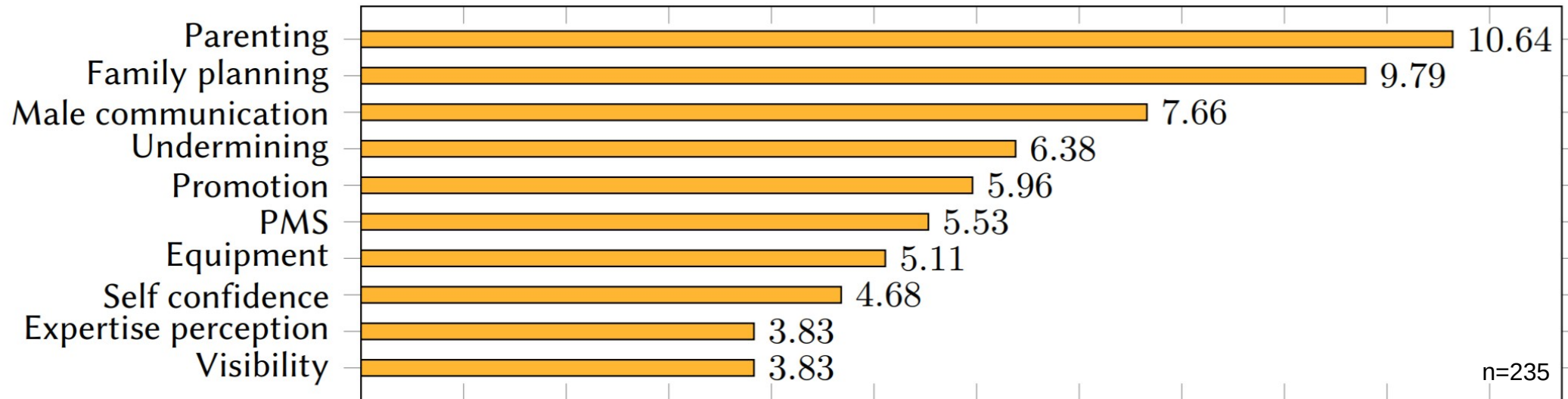"As a single mother, my colleagues considered my time with my child equivalent to their hobbies. [...] They expected me to "organize away" my child, but I wanted to have some hours per day with my child."
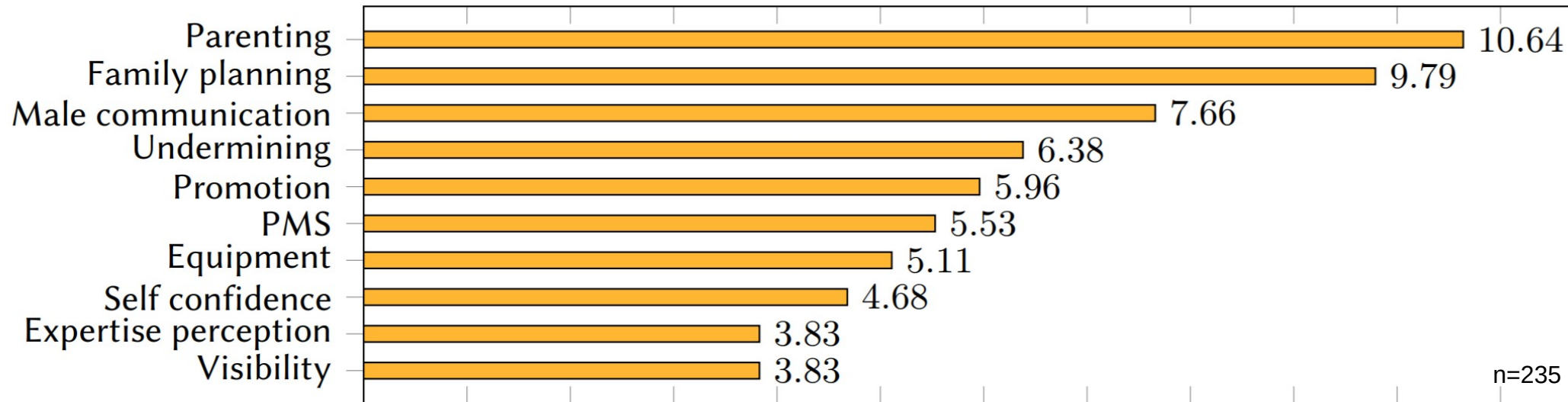
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Most described problems

"*Family planning is complicated since there is so little job security*"

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Most described problems

Problem	Value
Parenting	10.64
Family planning	9.79
Male communication	7.66
Undermining	6.38
Promotion	5.96
PMS	5.53
Equipment	5.11
Self confidence	4.68
Expertise perception	3.83
Visibility	3.83

n=235

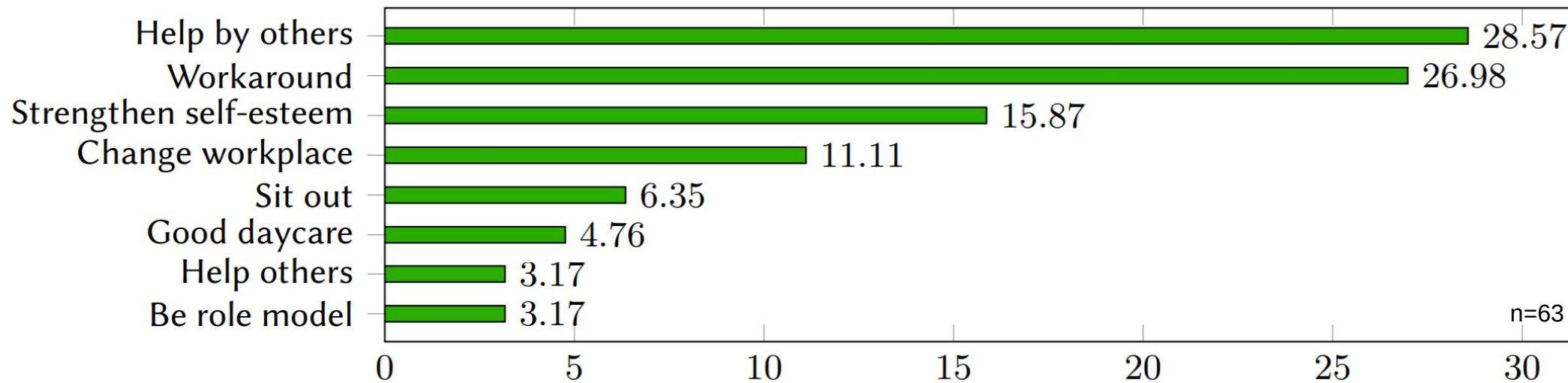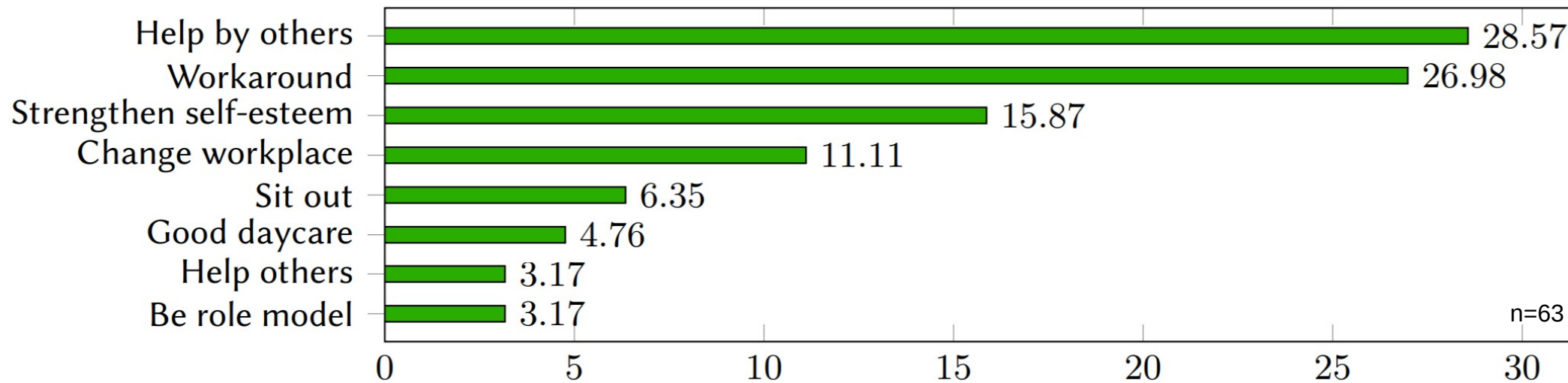„*Wheras [sic] men are supportet [sic] and invited, for example to publish with the boss and getting great recommendation letters […] my female colleagues and I are doing the ground work, teaching for example*"

Most described solutions

„[...], meeting and exchanging with other women, building networks of women"

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Most described solutions

„Constant communication about who I am being the person that run under a different name before"

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Most described solutions
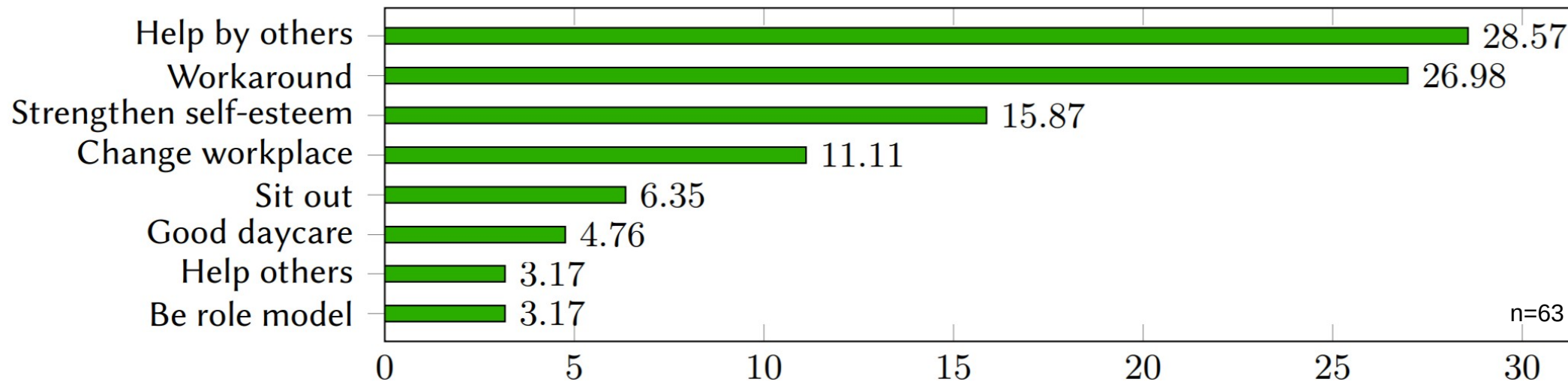
„I adapted some sort of communication of being more straight forward […] and communicating my needs directly but friendly"

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Threats to validity

- Internal validity
  - Not fully disjoint areas and topics
  - Association of a problem to a topic/ area depends on the subject

- External validity
  - Only technical universities → NCS group may not be comparable
  - Groups have different sizes (52 CS, 80NCS)

- Reproducability
  - Problem and solution labeling process

Conclusion

- Survey to collect problems and solutions of women in research in Germany

- Between the groups
  - Distribution of problems across the area are similar
  - CS solved 34% of their problems (NCS only 23%)
  - CS report more equality issues (CS 11.2%, NCS 6.4%)

- Most described:
  - Problems: Parenting and Family plans
  - Solutions: Help from others, workaround, strengthen self-esteem

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