Gender, Professional Networks, and Subjective Career Success Within Early Academic Science Careers

The Role of Gender Composition in Inside and Outside Departmental Support Networks

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"Je mehr Frauen in einem Netzwerk sind, umso schlechter"

Wenn Frauen Netzwerke bilden, bleiben sie dabei häufig unter sich.
Das ist ein Fehler, sagt die Arbeitspsychologin Simone Kauffeld.

Interview in the German newspaper ZEIT:

The more women are in a network, the worse
When women form networks, they often stay among themselves.
This is a mistake, says industrial psychologist Simone Kauffeld.

➡️ **What does this mean for women in HEP?**

Goals of the study

- analyze gender differences in the gender composition (i.e., the proportion of male to female contacts) of professional support networks in early career stages

- investigate how these differences in gender composition relate to subjective career success (i.e., perceived career success and perceived external marketability)

Subjective career success
= self-evaluation of career progress or employment perspectives

- linked to level of career commitment
- negatively related to turnover intentions → impact on drop-out rate

Theoretical model
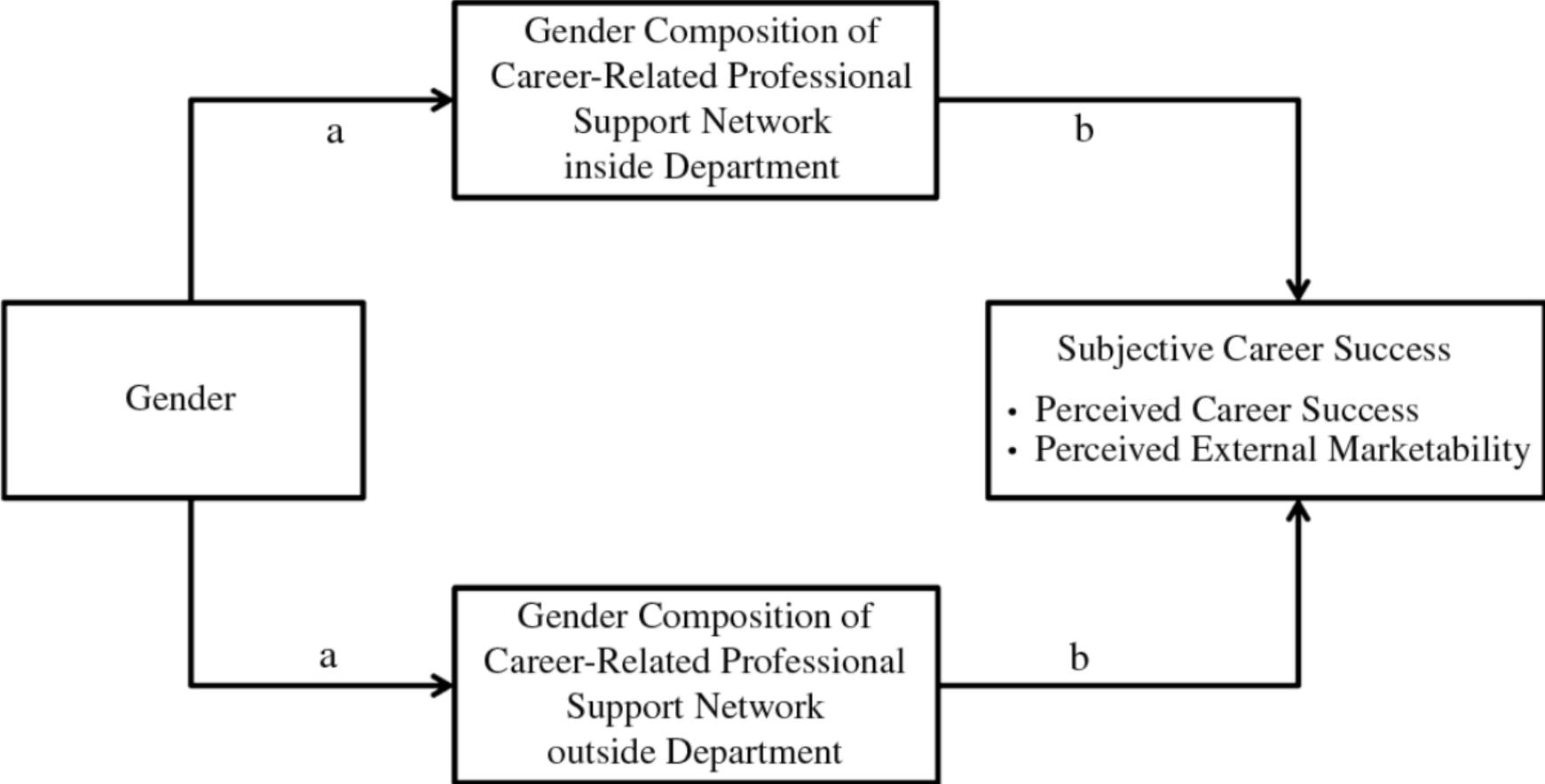
Gender and gender composition of networks

Hypothesis 1: The proportion of male to female professional supporters is higher in males' (a) inside and (b) outside departmental networks compared to females' inside and outside departmental networks.

Reasoning for this expectation
Attraction similarity: in social networks, people tend to have more same-gender contacts

Distinction between (a) inside and (b) outside department
(a) particularly important for young researchers' success – access to knowledge, collaborations etc.
(b) more relevant for future job opportunities

Gender composition of networks and subjective career success

Hypothesis 2: The proportion of male to female professional supporters within (a) inside departmental networks and (b) outside departmental networks is positively related to subjective career success.

Reasoning for this expectation

- Men usually occupy higher status and have more influence → better role models
- More male supporters signal a more stable and supported long-term career objective
  → potential impact on perception of career success

Indirect effect hypothesis

Integrating hypothesis 1 and 2 in one theoretical model leads to

Hypothesis 3: Men have a higher proportion of male to female professional supporters in (a) their inside departmental networks and (b) their outside departmental networks, which subsequently leads to higher subjective career success.

➡ **Test hypotheses!**

Method

Online survey among 82 doctoral researchers in STEM

- Recruited through promotional presentations and mailing lists

- 73% female participants

- No gender differences in average grades (master/Diplom), age, advancement in their doctoral studies, expected time to finishing PhD

  However: full-time (vs. part-time positions were held significantly more frequently by men → potential form of discrimination → impact on decision to pursue future scientific career?

Measured network structure

Absolute size of networks

- About 5 people in inside-department support network
- About 3 people in outside-department support network
- Size of inside- and outside-department networks are positively correlated
- No gender-specific differences

Proportion of male to female supporters:

Measured by gender composition index GCI = #men/#people in network

GCI = 1 → only men in network
GCI = 0 → only women in network

Measured gender composition

Inside-department networks' GCI
- 0.68(30) total - 0.61(31) female, 0.86(18) male
- Mainly composed by fellow PhD students, followed by postdocs and professors

Outside-department networks' GCI
- 0.64(34) total - 0.57(33) female, 0.81(32) male
- A bit more gender-balanced than inside-department networks

General findings
- men's networks reflect gender ratio in respective STEM field, women's networks are more gender-balanced
- No correlation between network size and gender-composition

→ **hypothesis 1a supported,
hypothesis 1b suggested by positive correlation**

Measured subjective career success

Perceived career success and perceived external marketability assessed with questionnaire, e.g. "Up to now my career is successful" and "I could easily obtain a comparable job with another employer"

Inside-department networks' GCI
- Significant positive correlation with perceived external marketability
- However no significant correlation with perceived career succes

Outside-department networks' GCI
- Significant positive correlations with both perceived career success and perceived external marketability

→ **hypothesis 2a partially supported, hypothesis 2b fully supported**

Indirect effects

Significant specific indirect effects of gender were found

- on perceived marketability via the gender composition of both inside- and outside-department networks

- on perceived career success via the gender composition of the outside-department network

> **→ hypothesis 3a partially supported, hypothesis 3b fully supported**

Empirical model: correlations
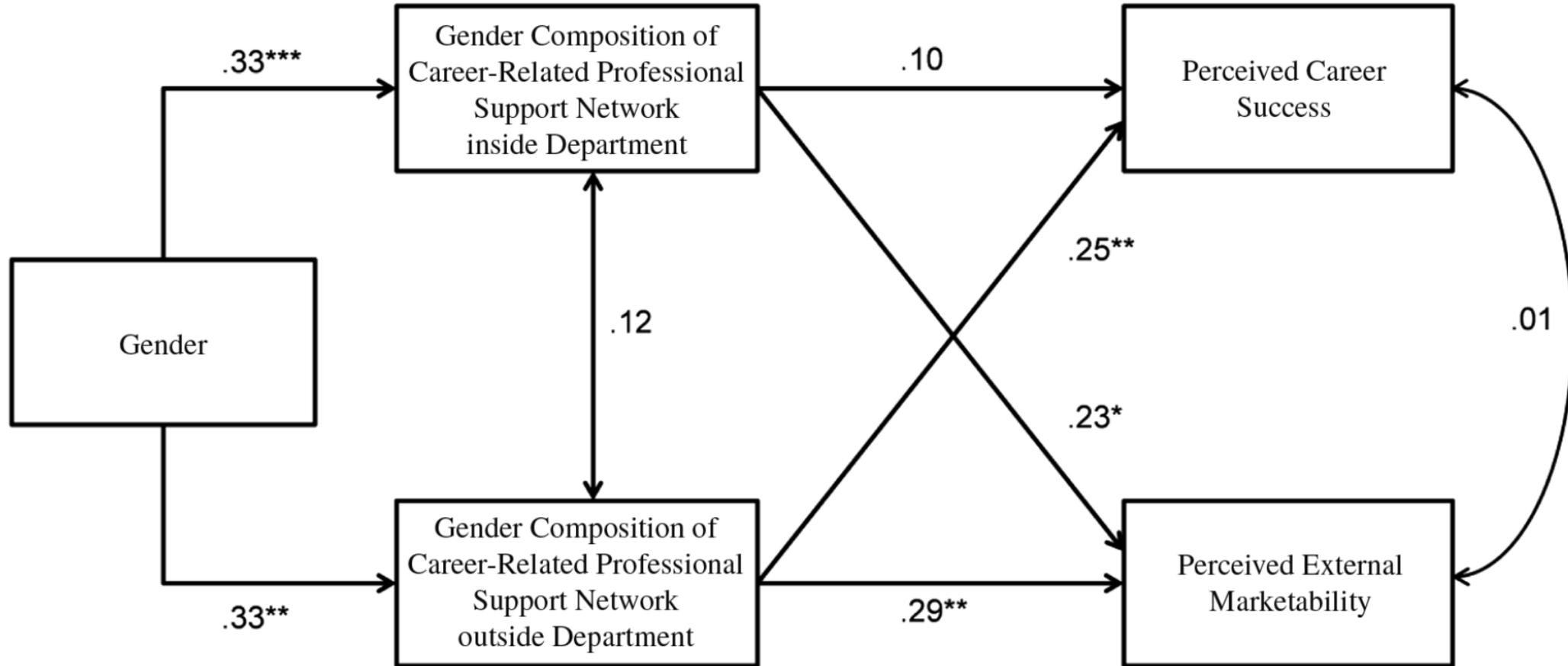
Additional findings

- Higher GCI for participants in technology and engineering, matches base rate in these fields
- Age and final university grade negatively linked to perceived career success
- Positive link between career ambition and perceived career success

- Positive relation between internal networking behaviour and perceived external marketability
- Positive correlation between internal and external networking behaviour

- Gender was found unrelated to internal and external networking behaviour as well as to career ambition and network size

Summary and discussion

> **Men** build career-related professional support **networks consisting of a higher proportion of male to female professional supporters** both inside and outside the studied department that subsequently (and indirectly) **relates to more subjective career success.**

- The gender composition of inside-department networks might be less relevant for subjective career success, as factors like number of publications, proceedings, or teaching evalutations might play a more prominent role.

- Academic careers are often global careers, so in particular outside-department networks play a central role within career planning and development.

- Perceived external marketability enhancement for women via gender-sensitive network-building might be a fruitful strategy to support the career development of women.

Practical implications & recommendations

- scientific career support programs should account for the fact that the gender composition of professional support networks is crucial for perceptions of success in the early career stage

- career counselors or coaches might account for the results presented herein by analyzing network structures of the client and by focusing on the gender composition of these networks

- specific strategies for gender-sensitive contact building could be developed.

- women especially should develop more diverse networks (including more men) within male-dominated academic science fields.

- programs that address or rely only on female mentors/supporters seem to be less promising in light of our data.

Provocative questions

- Are gender-specific mentoring programs (i.e. female mentors for female students or postdocs) counter-productive?

- Do women in physics networking activities do more harm than good?

- What can we do to help women avoid the pitfall of forming "too female" networks?