



# **Doctoral Students' Faculty and Peer Interaction Patterns: Relationships to Researcher Self-Efficacy and Skill Acquisition**

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# Background

- **Theoretical Framework: Doctoral Socialization**



is defined as “a process of internalizing the expectations, standards, and norms of a given society, which includes learning the relevant skills, knowledge, habits, attitudes, and values of the group that one is joining” (Austin & McDaniels, 2006, p. 400)

- **Faculty and peers** are important agents of the socialization process.

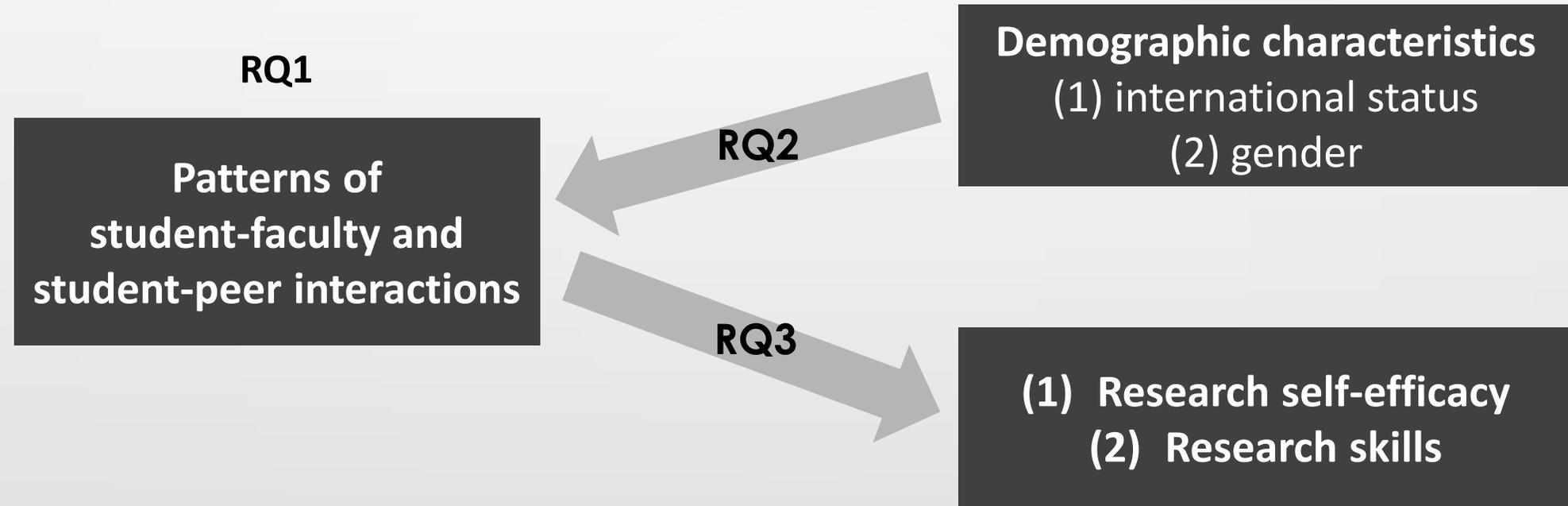


# Background

- **Doctoral students' interactions** with their faculty and peers are positively related to their **scholarly activities, motivation, and degree completion**.
- **Little is known about** how these interactions are established in the early stages of doctoral training, and how individual students differ in the ways in which they interact with their faculty and peers.

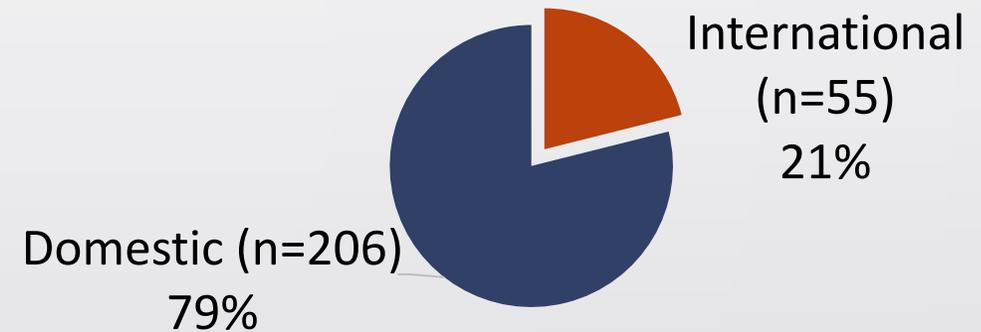
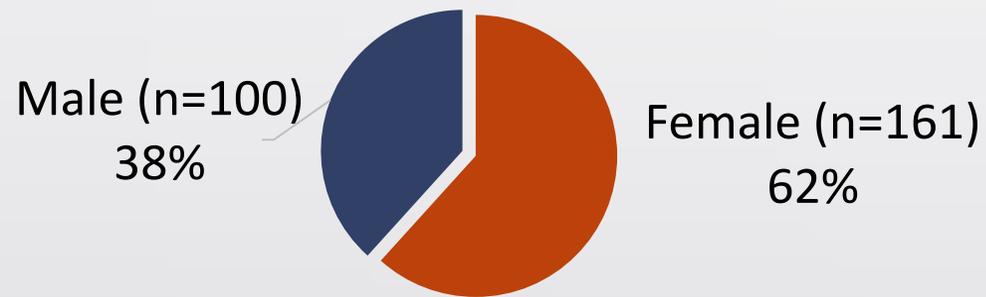


# Research questions



# Research methods

- **Participants** : **261** second-year doctoral biology students from **53** universities (**42 R1** institutions) in the U.S.





# Research methods

## ■ Measures:

### Interaction with faculty and peers (8 items)

Weidman & Stein (2003)

“Is there a professor (item1,2,3,4) or any student (item5,6,7,8) in your department with whom you...”

Item1,5. Sometimes engage in **social conversation**

Item2,6. Often discuss **topics in his/her field**

Item3,7. Often discuss **other topics of intellectual interest**

Item4,8. Ever talk about **personal matters**

### Research self-efficacy (10 items)

“**To what extent do you feel you can observe and collect data?**”

Kardash’s (2000) Research Experience Self-Rating Scale

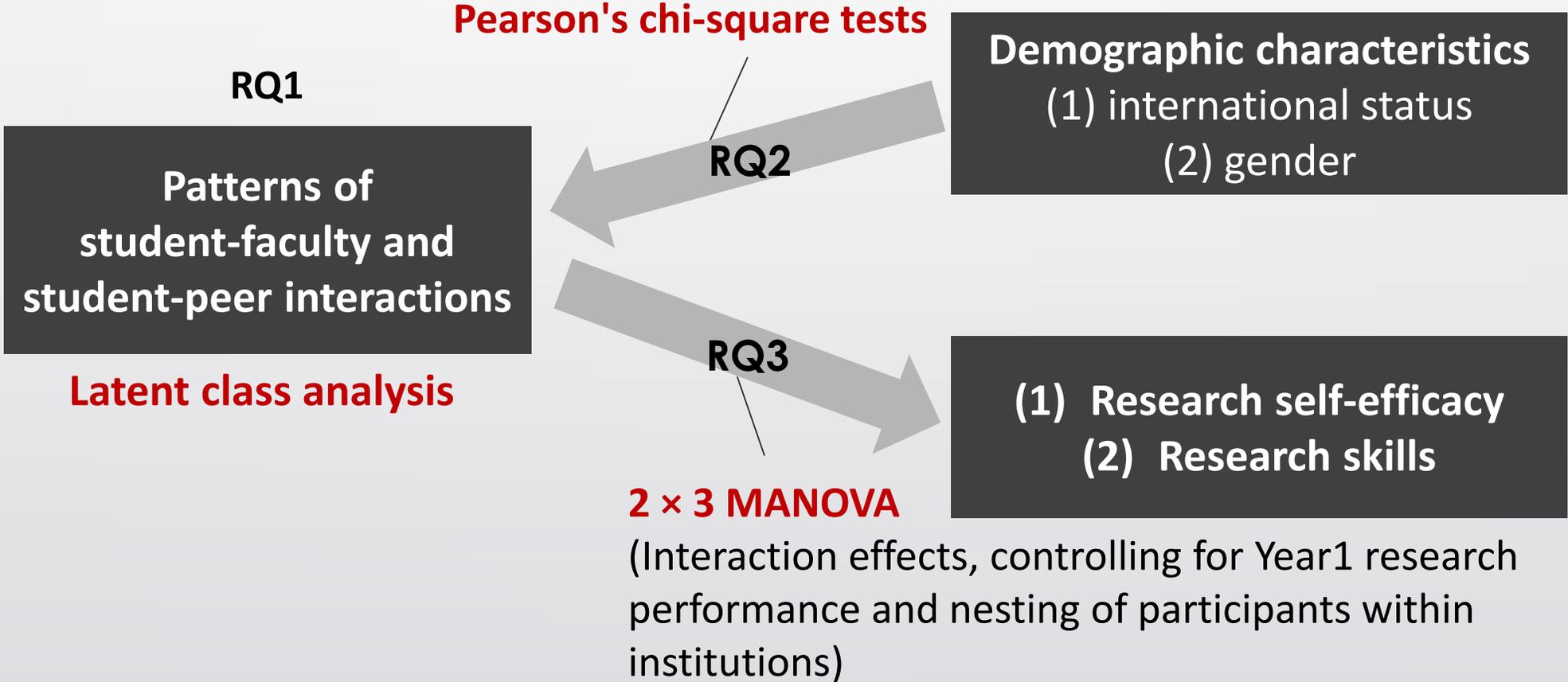
### Performance in research skills (13 skills)

Written **research proposals** or reports using a rubric

(Feldon et al., 2011)

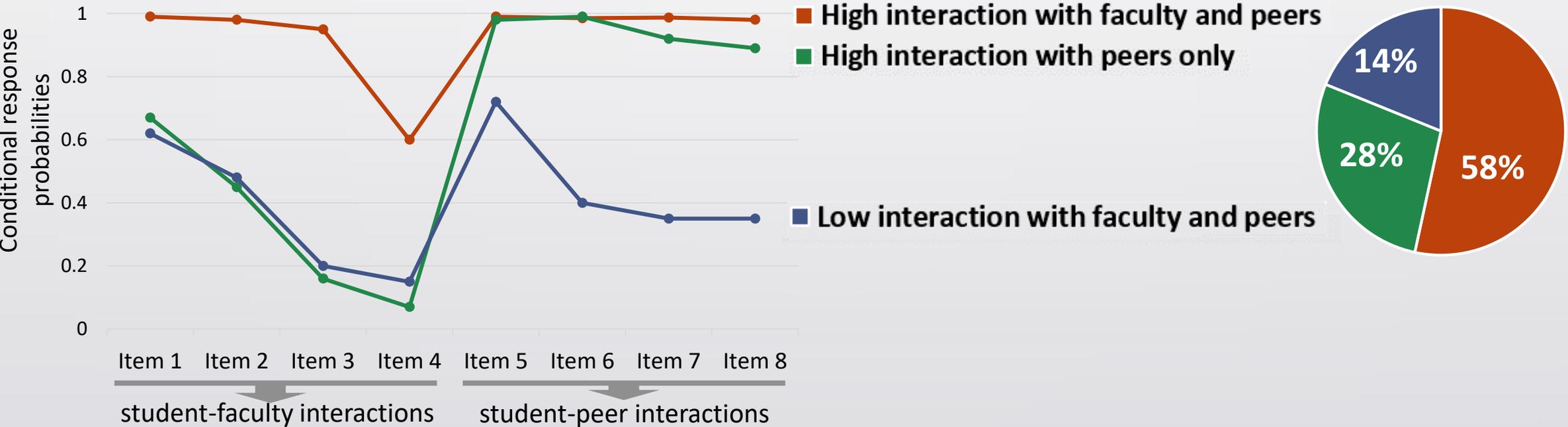


# Analyses



# Results

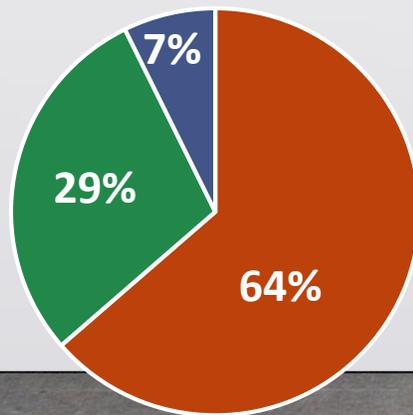
## ■ (RQ1) Three interaction patterns obtained by LCA



# Results

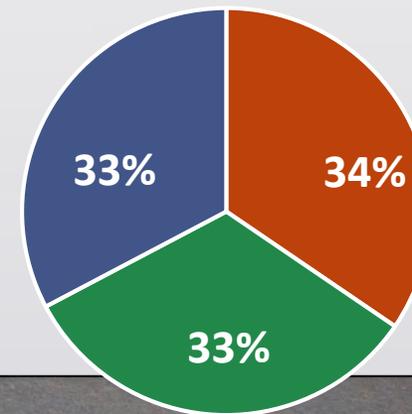
- (RQ2) Relations between interaction patterns and demographic characteristics
- No difference in interaction patterns by gender,  $\chi^2 (2, 261) = 0.89, p = 0.642$ .
- **Significant difference** in interaction patterns by international status,  $\chi^2 (2, 261) = 28.79, p < 0.001$ .

Domestic students (N=206)



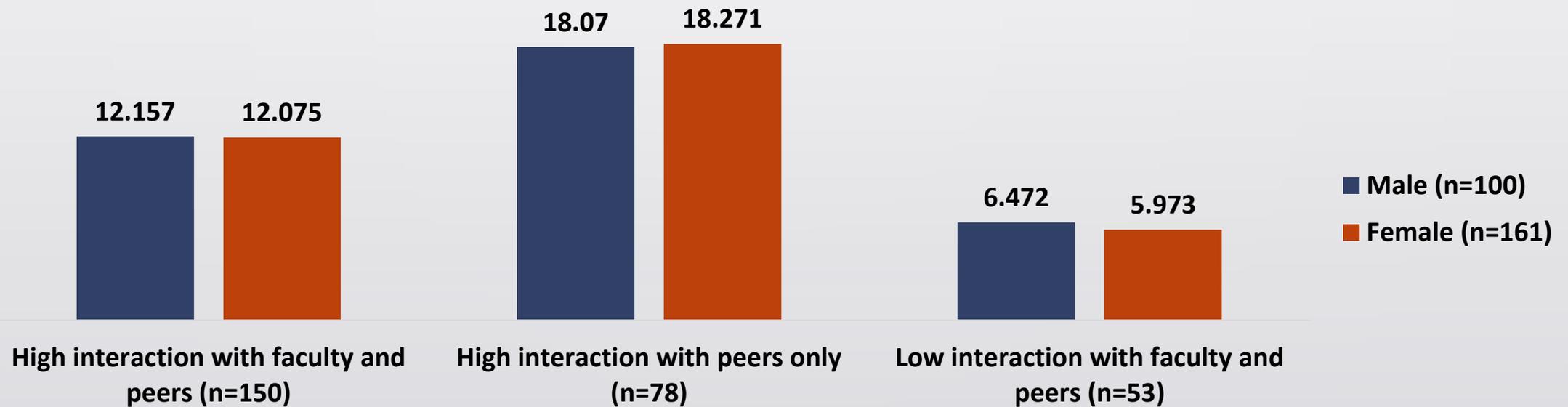
- High interaction with faculty and peers
- High interaction with peers only
- Low interaction with faculty and peers

International students (N=55)



# Results

- (RQ3) Effects of interaction patterns on research self-efficacy and research skills
- No main or interaction effect for international status and interaction patterns
- **Significant interaction effect of gender and interaction patterns on research skills**





## Discussion

- **International students** reported **low interaction** levels with both faculty and peers.
- Association of **greatest growth in research skills** from Y1 to Y2 with **high peer-only interaction**; **the importance of peers** in skill development, especially **female** students
- Further research should determine if this phenomenon is a reflection of changing norms in science knowledge production to **team-based science**.
- Future research should examine **how the interaction patterns change** over time (i.e., latent transition analysis).