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Teachers‘ stereotypes and gender differences in elementary school

Are stereotypes of teachers related to students‘ competencies in math and reading?

NEPS
National Educational Panel Study

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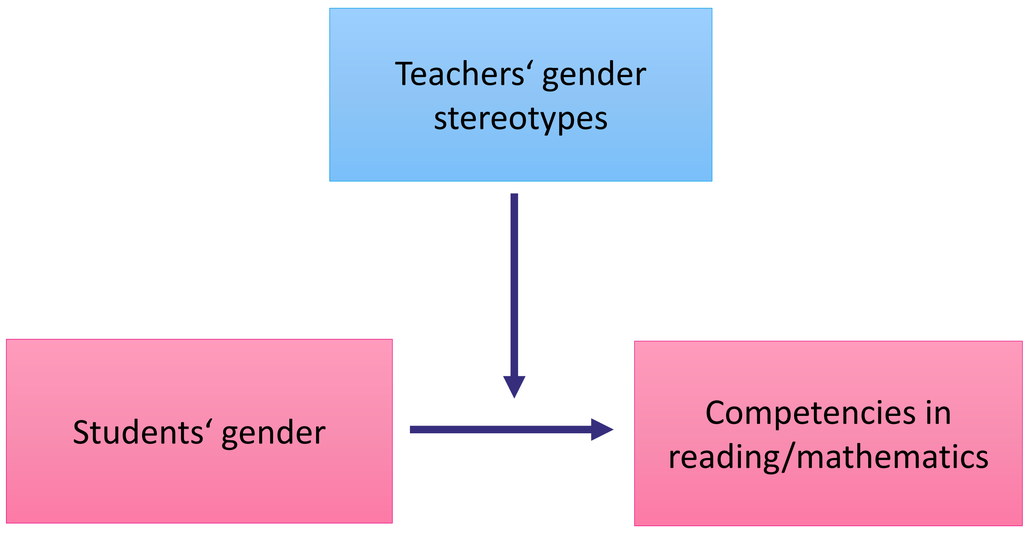
1. Introduction

Against the background of gender differences found in large scale assessments like PISA, PIRLS and TIMSS (Mullis et al., 2016,2017; OECD, 2019) in the domains of reading and mathematics, this study considers the influence of teachers‘ gender stereotypes regarding boys‘ and girls‘ abilities in mathematics and reading.

Teachers’ expectancies towards individual students but also gender stereotypes have been found to be related to children's achievement, as well as motivation and self-concept (Heyder et al, 2019; Lorenz et al., 2016; Retelsdorf et al, 2015, Wolter et al., 2015). These results however are not always consistent.

Interaction Model



2. Hypotheses

mathematics and reading

1) **Gender differences** in grade 4 in mathematics and reading
2) **Gender stereotypes** of teachers regarding
3) **Interaction effect** between students‘ gender and teachers‘ gender stereotypes. Higher stereotypes of teachers = higher gender differences

3. Data and Sample

- NEPS SC2 Wave 6, grade 4
  doi: *10.5157/NEPS:SC2:8.0.1*
- 3 669 **students**; 51.9% female; 9.75 years old; 20.3% migration background
- 591 **teachers**; 88% female; 22.5% between 55 and 65, 23% between 45 and 55, 26.6% between 35 and 45 and 22.7% younger than 35 years old

4. Methods

Research Instruments

- NEPS competence tests in reading and mathematics
- Teachers‘ gender stereotypes:
  “*What results do you think fourth grade students from the following groups (boys/girls) achieve overall in the competence field ‘Mathematics’ / ‘Reading’ compared to fourth grade students in Germany?*”
- Control variables: teachers‘ gender, teachers‘ age, students‘ migration background, books at home

Analysis

- Multilevel regression analyses with Mplus version 8 (Muthen & Muthen, 2017) for reading and mathematics separately
- ICC for reading: 0.119
- ICC for mathematics: 0.115

5. Results

1) **Gender differences** were found in mathematics, d = 0.10, and reading, d = 0.17
2) **Gender stereotypes** of teachers were found in reading, d = 1.89, but not in mathematics;
3) No significant cross-level **interaction effect** between students‘ gender and teachers‘ gender stereotypes on students‘ competencies in reading or mathematics

6. Discussion

The hypotheses were only partly confirmed. Gender stereotypes might have only been found in reading because awareness for stereotypes in mathematics could be higher in teachers.

The effect of teachers‘ stereotypes could be present over time, just not cross-sectionally. The effect could also be higher on motivational outcomes, instead of cognitive outcomes like competencies.

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