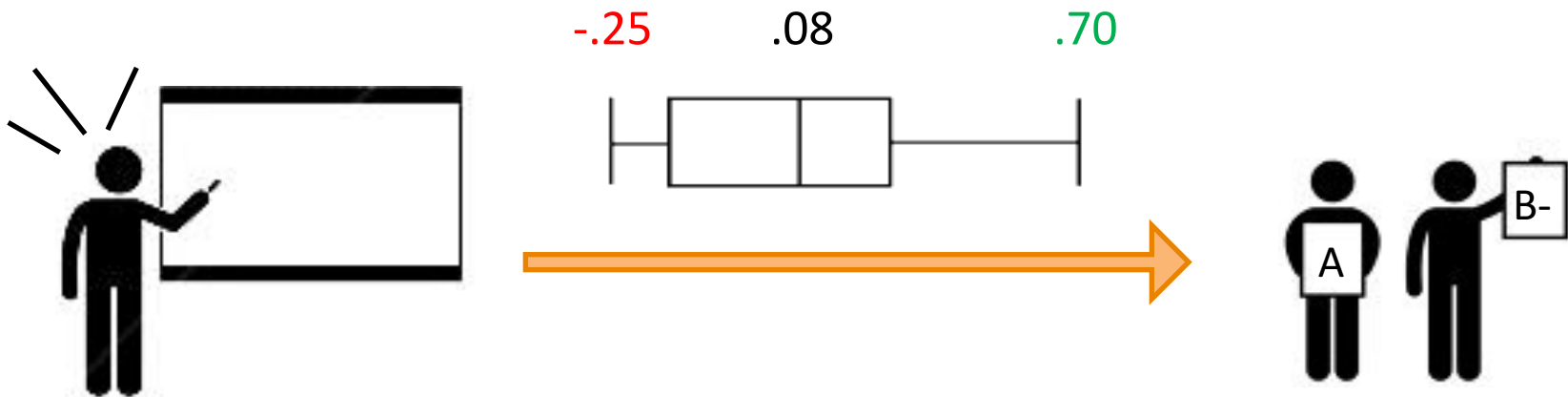**Marjolein Zee, Helma M. Y. Koomen, & Peter F. de Jong**
Research Institute of Child Development and Education, University of Amsterdam, the Netherlands

UNIVERSITY OF AMSTERDAM

How different forms of aggregation may affect the relationship between teacher self-efficacy and students' academic achievement

Teacher self-efficacy (TSE)

-.25   .08   .70

B-

A

e.g., Klassen & Tze, 2014; Zee & Koomen, 2016
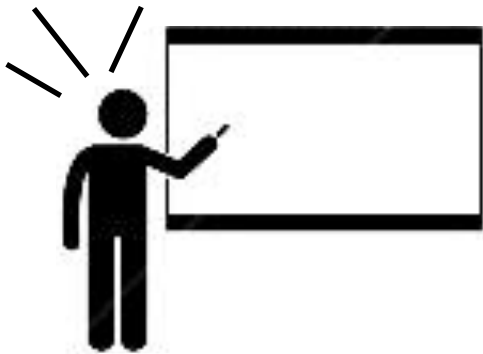
Issues at stake: Measurement level of TSE

"How well can you respond to difficult questions from your students?"

Teachers' Sense of Self-Efficacy Scale
(TSES; Tschannen-Moran & Woolfolk Hoy, 2001)

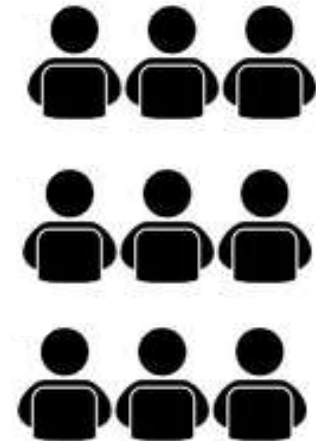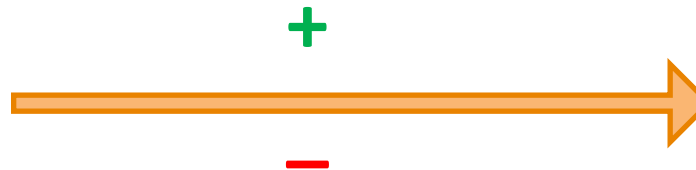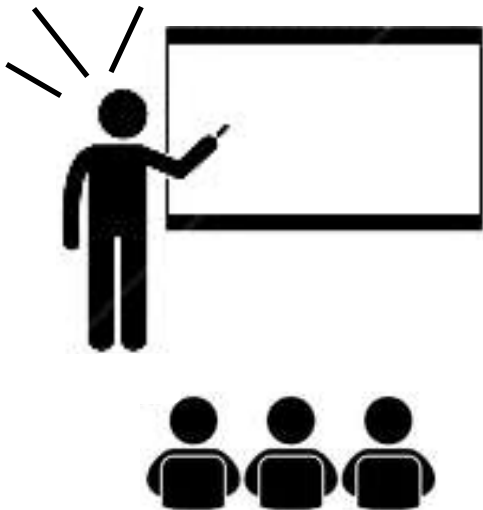# Issues at stake: Different levels of analysis

Classroom-level

Student-level

Issues at stake: Different levels of analysis

Classroom-level

Classroom-level

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Issues at stake: Different levels of analysis

Classroom-level

Classroom-level

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Issues at stake: Different levels of analysis

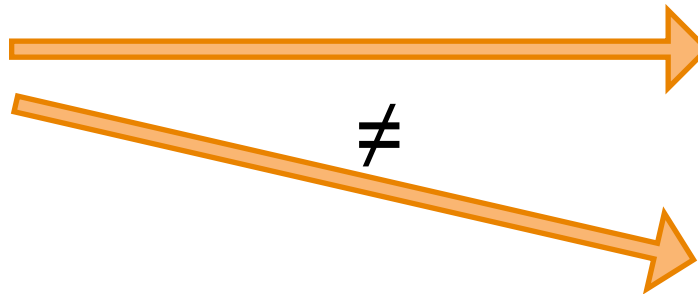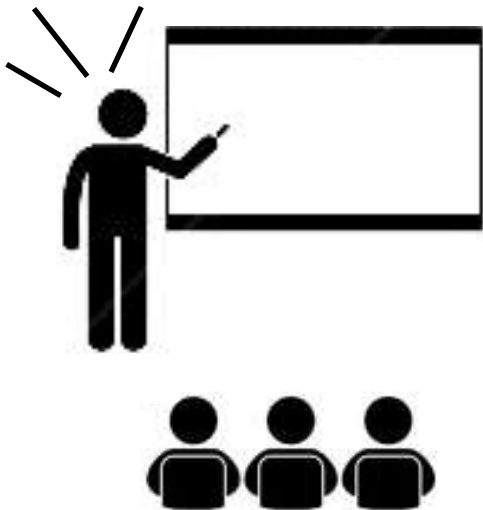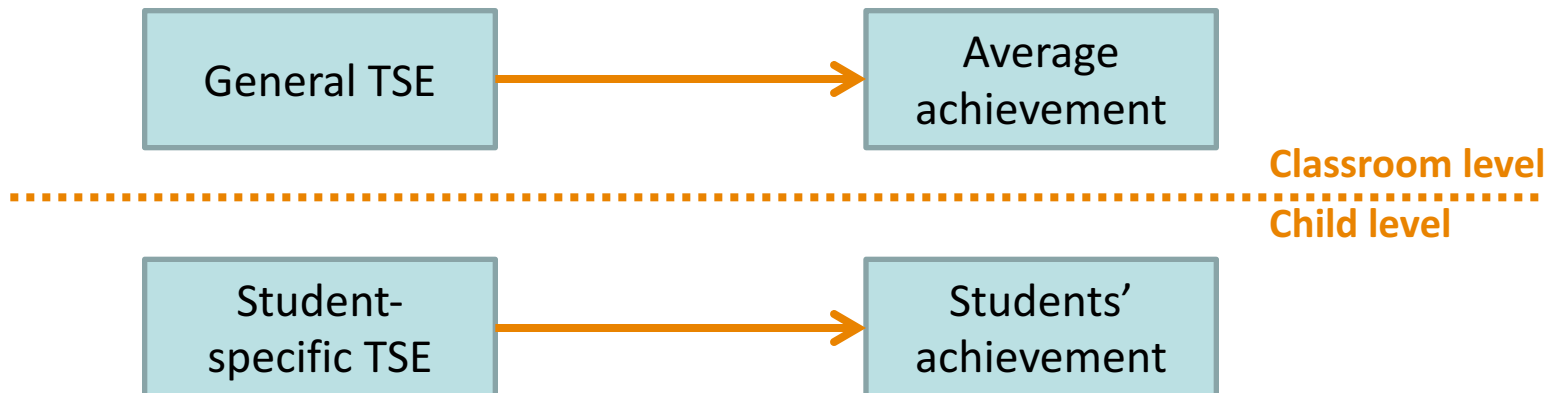Classroom-level   Classroom-level

≠

Present study: A full multilevel approach

Aim: clarify the association between TSE and children's achievement by investigating this link using

- o Doubly latent multilevel structural equation modeling (ML-SEM)
- o Scales to measure TSE at the classroom- as well as child-level

Participants

o 49 teachers (73.5% females)
  o Mean age: 41.20 (*SD* = 12.20).
  o Mean experience: 17.30 years (SD = 12.10).

o 360 third- to sixth-grade students (50% girls)
  o Mean age: 10.70 (*SD* = 0.57).
  o 90.3% Dutch, 9.7% non-Dutch.

Instruments

General TSES (Tschannen-Moran & Woolfolk Hoy, 2001)

"To what extent can you provide an alternative explanation or example when students are confused?"
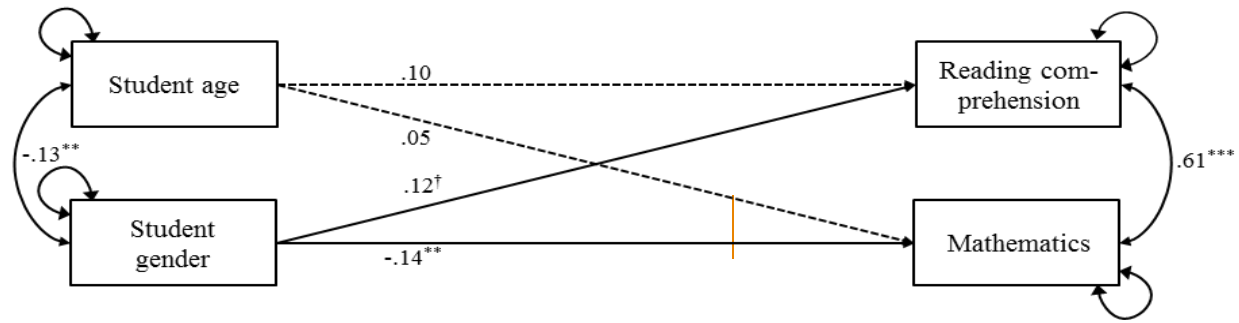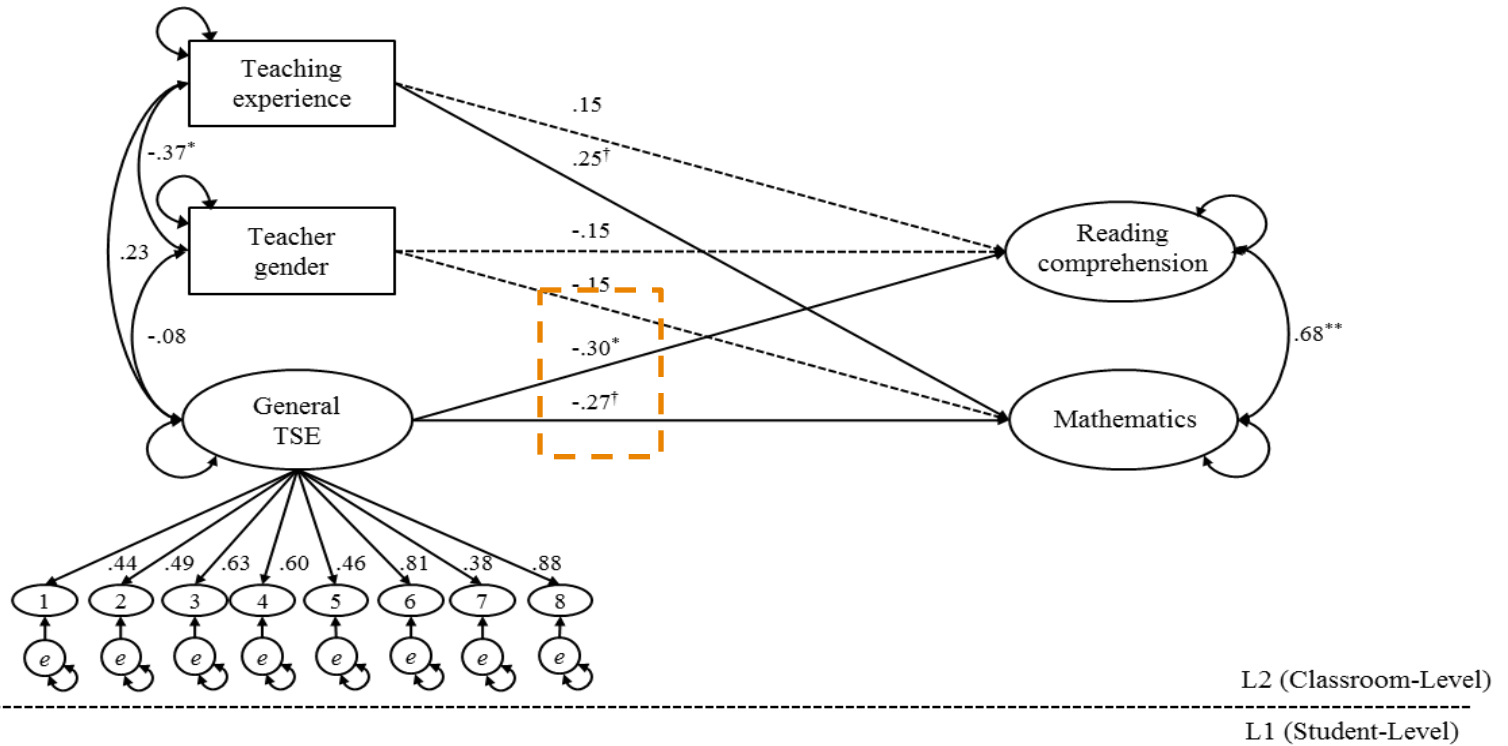
Student-specific TSES (Zee et al., 2016)

"To what extent can you provide an alternative explanation or example when this student is confused?"
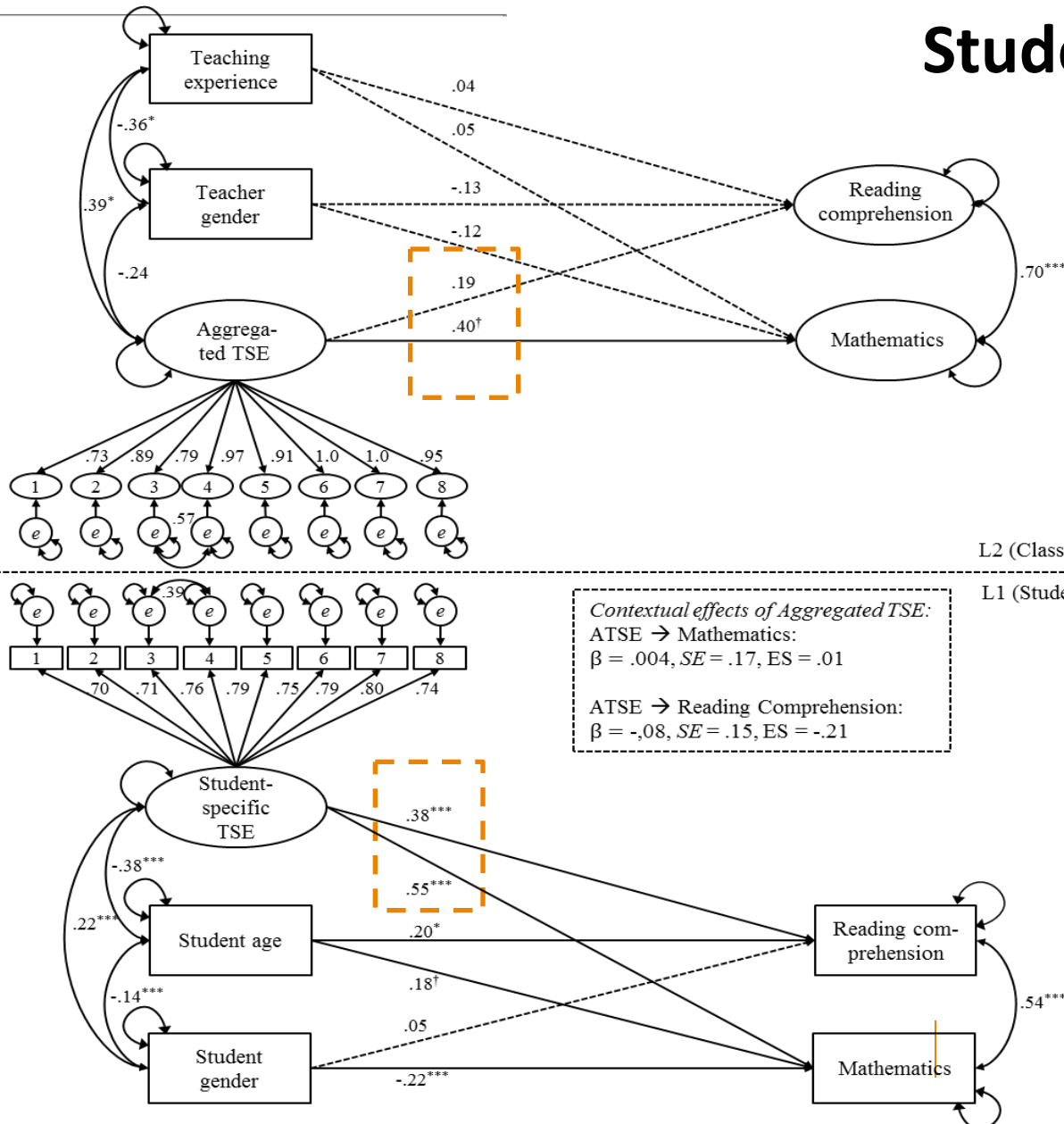
Academic achievement

Official results of national tests of reading comprehension and mathematics (CITO-LOVS)

General TSE

Student-specific TSE

Contextual effects of Aggregated TSE:
ATSE → Mathematics:
$\beta = .004$, $SE = .17$, $ES = .01$

ATSE → Reading Comprehension:
$\beta = -.08$, $SE = .15$, $ES = -.21$

L2 (Classroom-Level)

L1 (Student-Level)

Discussion

o The association between TSE and achievement depends on how the multilevel nature of this construct is addressed:
  o General TSE: negative associations
  o Student-specific TSE: positive associations
  o Aggregated TSE: no associations

o These differences may be due to:
  o The increased specificity of the student-specific measure
  o Substantial differences between classrooms
  o A lack of variation in the general TSE measure.

Conclusion

o Further specification of commonly used scales and addressing the appropriate unit of analysis can help to better explain variation in children's academic outcomes.

o Classroom-level TSE may be best suited to explain personality-related differences across teachers.

o To explain differences in children's learning outcomes, relying on teachers' student-specific beliefs may be the best option.

Thank you for your attention!

More information: M.Zee@uva.nl