



# CEMO

Centre for Educational Measurement  
at the University of Oslo



## The role of school climate for the relation between instructional quality and achievement motivation

Evidence from TIMSS 2011

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Theoretical Framework | Methodological Approach | Selected Findings | Conclusions

# The Core Concepts

## School climate

- Safety and order in schools
  - Positive relation to student achievement
- Academic climate (emphasis on learning and academic success)
  - Critical to school success
  - BUT: possible negative relation between SEAS and motivation (competitive environment)

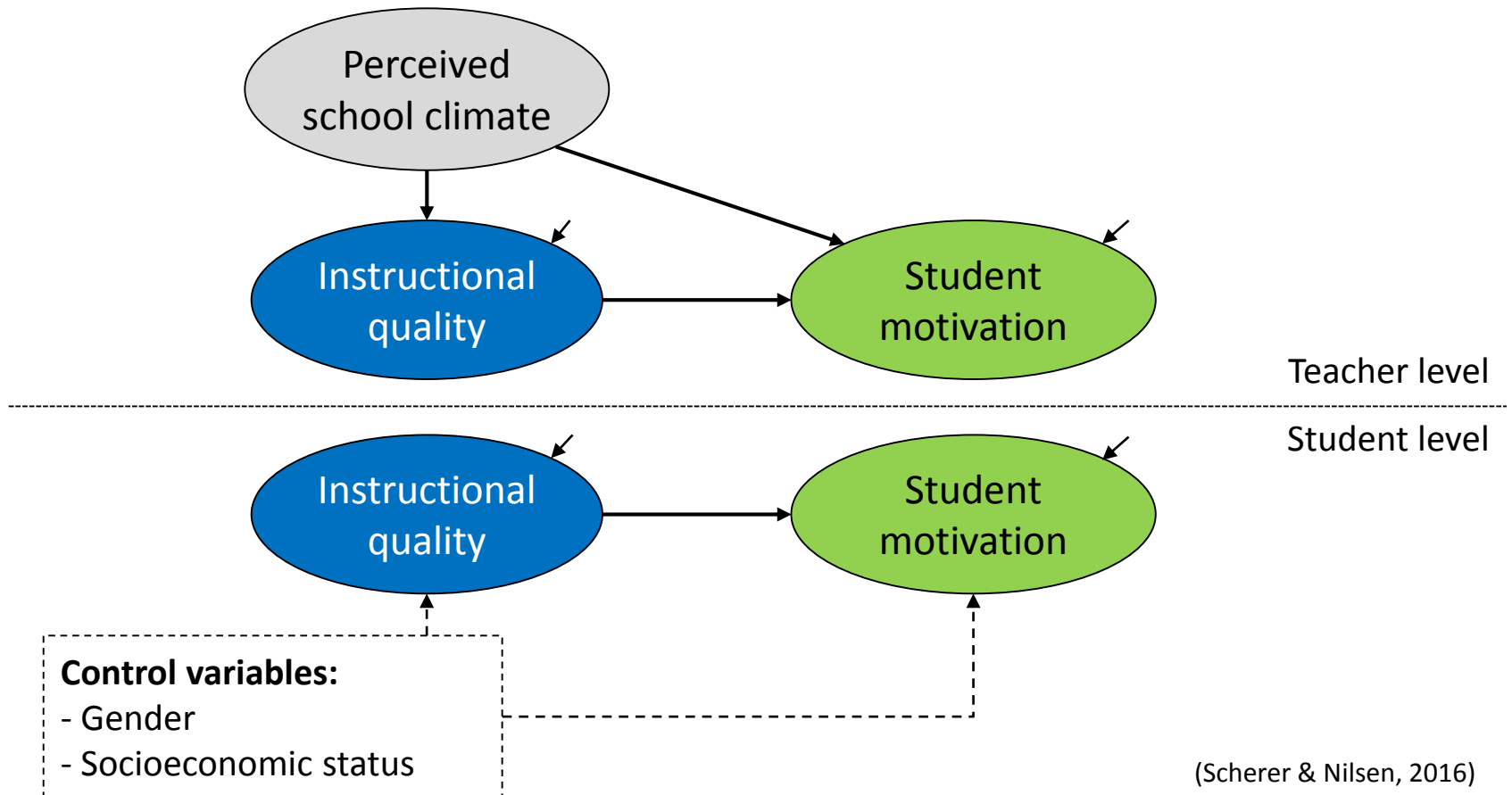
→ Environmental factor for instructional quality and educational outcomes

(Chen & Vazsonyi, 2013; Meece et al., 2006; Mitchell & Bradshaw, 2013; Nilsen & Gustafsson, 2014; Thapa et al., 2013; Wang & Degol, 2015)



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# Research Model





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## Sample

- TIMSS 2011 grade 8 student and teacher sample
- Subject domain: Mathematics
- $N = 284,899$  students in 12,950 classrooms
- 50 participating countries
- 5 benchmarking participants  
(e.g., Abu Dhabi, UAE; Quebec, CAN)

(Mullis et al., 2012)



# Measures

School climate	Student motivation	Instructional quality
<b>Teacher reports</b> <ul style="list-style-type: none"> <li>School emphasis on academic success (SEAS)</li> <li>Safety in schools</li> <li>Order in schools</li> </ul>	<b>Student reports</b> <ul style="list-style-type: none"> <li>Mathematics self-concept</li> <li>Intrinsic value</li> <li>Extrinsic value</li> </ul>	<b>Student reports</b> <ul style="list-style-type: none"> <li>Clarity of teaching (i.e., expectations, easy-to-understand)</li> <li>Instruction to engage students to learn</li> </ul>

- 4-point agreement scales (*0 = I disagree a lot, 3 = I agree a lot*)
- Control variables: students' socioeconomic status and gender (1 = girl)





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# Multilevel modeling

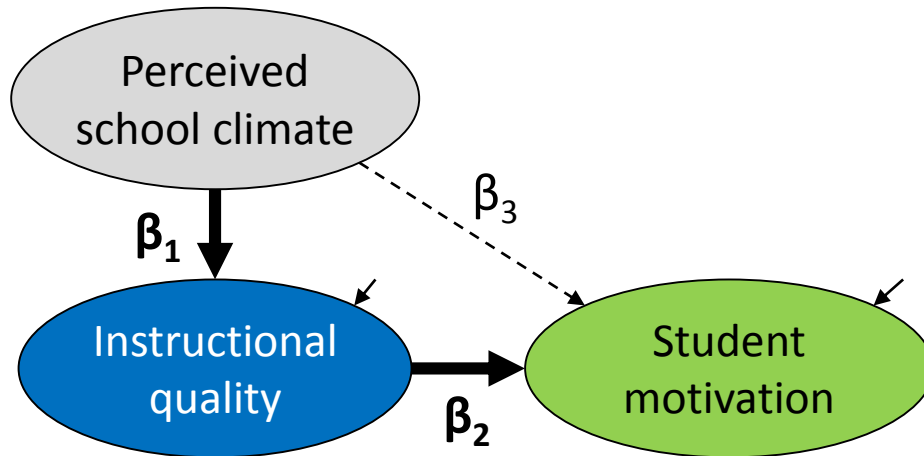
**Step 1.** Multilevel CFA for invariance testing across countries  
→ metric invariance across L1 and L2 given

**Step 2.** Multilevel structural equation modeling (MSEM)

(Muthén & Muthén, 1998-2015; Preacher et al., 2010; Ryu, 2014;  
Scherer & Gustafsson, 2015; Stancel-Piątak & Desa, 2014)



# Results

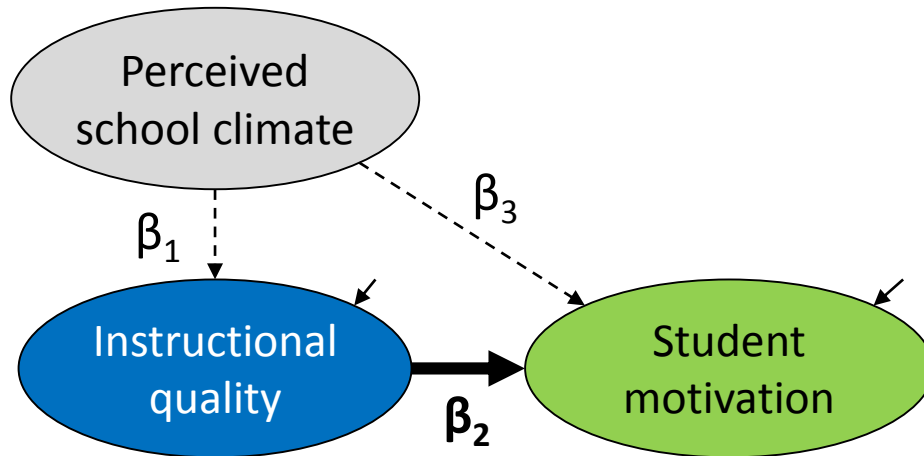


## Partial/full mediation (MED)

- SEAS-intrinsic value for 12 countries (indirect effect: *Mdn* = 0.19)
- Dominant for order in schools relations



# Results



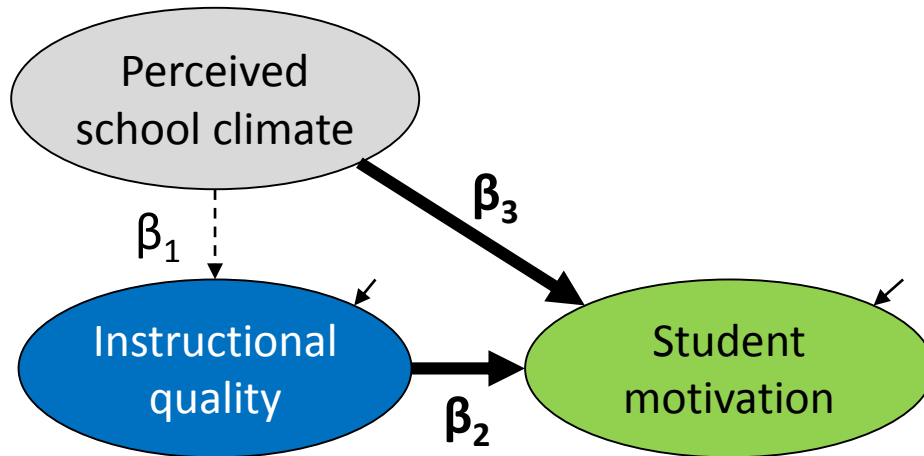
## Effect of instructional quality only (INQ)

- SEAS-intrinsic value for 26 countries (*Mdn*  $\beta_2 = 0.84$ )
- Dominant for SEAS and safety in schools





# Results

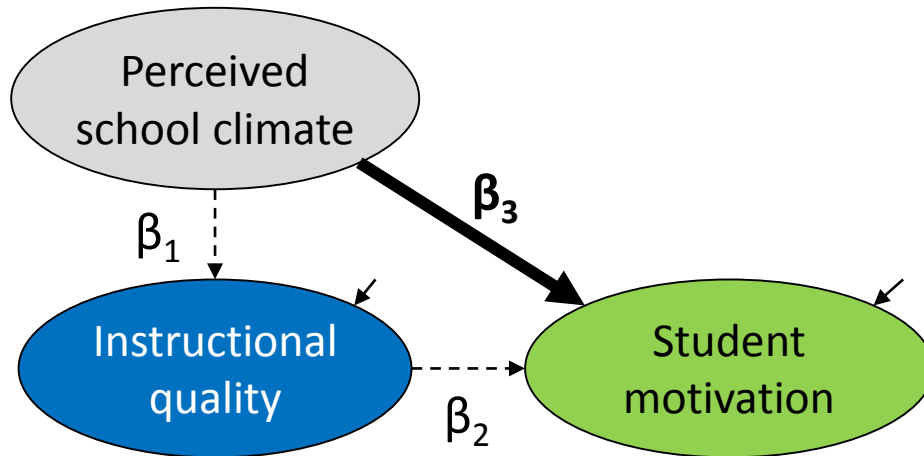


## Effects of perceived school climate and instructional quality (SC-INQ)

- SEAS-intrinsic value for 11 countries (*Mdn*  $\beta_2 = 0.87$ , *Mdn*  $\beta_3 = 0.16$ )



# Results



## Effect of perceived school climate only (SC)

- SEAS-intrinsic value in none of the countries
- SEAS: only for self-concept and extrinsic value



# Results

## Absolute frequencies of model occurrences for SEAS:

Model	Self-concept	Intrinsic value	Extrinsic value
Instructional Quality	22	26	29
MED	12	12	13
School climate	1	0	1
School climate + Instructional Quality	13	10	4

+ 40 countries Safety-motivation (INQ)

(Scherer & Nilsen, 2016, p. 72)



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# Results

## General observations

- Similarities of patterns across school climate dimensions within countries
- Different patterns of relations (i.e., models) across the dimensions of achievement motivation
- Cultural patterns emerged (e.g. Nordic countries, English-speaking countries, etc)

(Scherer & Nilsen, 2016, p. 66)



## Conclusions

- Support for the **importance of classroom instruction** for student motivation
- **Perceived school climate** relevant in many countries  
→ potential to improve instructional quality?
- **Additive “effect”** of instructional quality and perceived school climate on achievement motivation  
→ context matters





# Thank you very much!

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