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

Evidence from TIMSS 2011

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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)
Research Model

Theoretical Framework | Methodological Approach | Selected Findings | Conclusions

Perceived school climate

Instructional quality

Student motivation

Teacher level

Student level

Instructional quality

Student motivation

Control variables:
- Gender
- Socioeconomic status

(Scherer & Nilsen, 2016)
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)
Theoretical Framework | Methodological Approach | Selected Findings | Conclusions

# Measures

<table>
<thead>
<tr>
<th>School climate</th>
<th>Student motivation</th>
<th>Instructional quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher reports</td>
<td>Student reports</td>
<td>Student reports</td>
</tr>
<tr>
<td>▪ School emphasis on academic success (SEAS)</td>
<td>▪ Mathematics self-concept</td>
<td>▪ Clarity of teaching (i.e., expectations, easy-to-understand)</td>
</tr>
<tr>
<td>▪ Safety in schools</td>
<td>▪ Intrinsic value</td>
<td>▪ Instruction to engage students to learn</td>
</tr>
<tr>
<td>▪ Order in schools</td>
<td>▪ Extrinsic value</td>
<td></td>
</tr>
</tbody>
</table>

- 4-point agreement scales (0 = I disagree a lot, 3 = I agree a lot)
- Control variables: students’ socioeconomic status and gender (1 = girl)
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
Theoretical Framework | Methodological Approach | Selected Findings | Conclusions

## Results

Absolute frequencies of model occurrences for **SEAS**:

<table>
<thead>
<tr>
<th>Model</th>
<th>Self-concept</th>
<th>Intrinsic value</th>
<th>Extrinsic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Quality</td>
<td>22</td>
<td>26</td>
<td>29</td>
</tr>
<tr>
<td>MED</td>
<td>12</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>School climate</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>School climate + Instructional Quality</td>
<td>13</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>

+ 40 countries Safety-motivation (INQ)

(Scherer & Nilsen, 2016, p. 72)
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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References


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