Conceptualizing and measuring teacher effects: the case of China and the US

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The importance of teachers

- Across contexts, teachers are one of the most important social actors in the lives of young people.
- Teachers are responsible not only for academic well-being, but also the physical and psychosocial well-being of students.
<table>
<thead>
<tr>
<th>Conceptualization</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>• Structural level</strong></td>
<td><strong>• Structural level</strong></td>
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<tr>
<td>• As a human resource that can be distributed across districts and schools</td>
<td>• Teacher credentials (licensure, test scores), teaching experience, demographic characteristics</td>
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<tr>
<td><strong>• Interactional level</strong></td>
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<tr>
<td>• As a workforce that is tasked with teaching classrooms of students</td>
<td>• Teaching, socialization</td>
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<td><strong>• Agentic level</strong></td>
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<tr>
<td>• As individuals responsible for student success</td>
<td>• Teacher perceptions, beliefs, motivation</td>
</tr>
</tbody>
</table>
What can and can’t **structure** tell us?

- **Strengths**
  - Can reveal (in)equitable distribution of teacher resources

- **Data needs**
  - Structure: Teachers nested within districts (or schools)
  - Measures: Teacher qualifications: credentials, levels of education, years of experience, awards, etc.
Figure 1. Average years of teacher educational attainment by middle school student group, China Educational Panel Survey (EPS) 2013-2014

Note: The blue bar represents national average with 95% confidence intervals. Source: Cherng and Li 2018
Figure 2. Teacher qualifications by student-type, China EPS 2013-2014

Source: Cherng and Li 2018
Figure 3. Share of First-Year Teachers in a School, by Black and Latinx Share of Enrollment, US Department of Education

Note: The share of black and Hispanic students in a school is created by adding the share of black students to the share of Hispanic students.
Source: Department of Education, Civil Rights Data Collection 2013-2014
What can and can’t structure tell us?

• Strengths
  • Can reveal (in)equitable distribution of teacher resources

• Weaknesses
  • Conceptualizes teachers by typically static indicators: credentials, licensure, demographics, etc.
  • Ignores a key aspect of what teachers do – teaching – which is a process that varies by classroom
What can and can’t interaction tell us?

• **Strength**
  • Good for focusing on classroom teaching, which is the primary responsibility of teachers
  • Can reveal differences / inequalities in teaching across classrooms

• **Data needs**
  • Structure: Students nested within schools, teachers, or classrooms
  • Measures:
    • Teacher outcomes: perceptions/recommendations of students, teaching
    • Student outcomes: test scores, grades, transitions/dropout, absenteeism, expectations
Figure 4. Average teacher perspective by student-type and subject: How well do non-local students perform compared to local students, China EPS 2013-2014

Note: Coding was 1. Worse, 2. Similar, 3. Better than students from this county (district), 95% CI shown

Source: Cherng and Li 2018
Figure 5. Average teacher perspective of individual parents by student-type, China EPS 2013-2014

Note: Coding was 1= Completely disagree, 2 = Disagree, 3 = Agree, 4 = Completely agree

Source: Cherng and Li 2018
Figure 6. Descriptive averages of teacher-student relationships, by race/ethnicity

*** p< 0.01, ** p< 0.05, + p< 0.1, reference White

Source: Cherng 2017
Figure 5. Coefficients from Fixed Effects Linear Regression Models Estimating Teaching Scores, Measures of Effective Teaching (US) 2009-2011

Note: Darker bars represent coefficients that are statistically significant at the p < 0.05 level

Source: Cherng and Halpin 2018
What can and can’t interaction tell us?

• **Strength**
  • Good for focusing on classroom teaching, which is the primary responsibility of teachers
  • Can reveal differences / inequalities in teaching across classrooms

• **Weaknesses**
  • Does not pinpoint the mechanism for potential biases, which makes it difficult to address inequalities
What can and can’t agency tell us?

• Strengths
  • Can identify mechanisms the explain inequalities

• Data needs
  • Structure: Interviews, measures of psychological concepts
  • Data: In depth data examining teacher beliefs and motivations
Mechanisms behind inequalities

• “Since they can’t take the zhongkao in Shanghai, they must leave Shanghai to continue their schooling. So it leads to these consequences that are unfair in our school. We need to care more about the local kids. Teachers need to be more concerned and diligent in teaching local kids compared to migrants.”
  -Teacher in an integrated migrant-urban middle school in Shanghai (Yiu 2016)

• Student teachers (at a US university) with higher levels of multicultural awareness are better able to create positive classroom environments (Cherng and Davis, 2017)
What can and can’t agency tell us?

• **Strengths**
  - Can identify mechanisms that explain inequalities

• **Weaknesses**
  - Can obscure links between individual-level conditions and broader contextual factors
  - Can be difficult to elicit responses on sensitive topics
Conceptualizing and measuring teacher effects

Structural level

Interactional level

Agentic level

MACRO Level

MICRO Level

MESO Level
Thank you!

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