The Power of Networked Education Systems: Mapping the Flow of PISA-Induced References

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CIES 2021
Acknowledgments

- Phoebe Linh Doan
- Gita Steiner-Khamsi
- Nancy Green Saraisky
Thank you students and volunteers

- Desiree Halpern
- Abbas Abbasov
- Allison Vas
- Amna Malik
- Angela DePompeis
- Carine Verschueren
- Daniela Kempf
- Desiree Halpern
- Doo Rhee Lee
- Encan Wang
- Erika Kessler
- Farah Amalia
- Fatima Abdelwhab
- Gayatree Anand
- Gisel Teixeira
- Haoyan Zhang
- Helena Hinke
- Dobrochinski Candido
- Hinako Miyazaki
- Jisun Jeong
- Joona Moborg
- Josef Schumann
- Kairat Kurakbayev
- Katia Diaz
- Kevin Nascimento
- Konoka Shiino
- Lasse Skogvold Isaksen
- Lauren Bowden
- Lina Zhu
- Linh Doan
- Livia Calvet
- Maia Gelashvili
- Manuel Cardoso
- Mathias Minetti
- Matthew Maynard
- Melanie Nethercott
- Merrielle M Davis
- Misa Kuniyosh
- Nicole Ricci
- Nikol Mudrová
- Nisha Parikh
- Olivia Pan
- Omar Kallon
- Peter McCuskey
- Rainy Duan
- Raman Grover
- Rizqarossaa Darni
- Rocio Conde
- Samantha Pepe
- Sarah French
- Sarah Lewis
- Seyma Pekgoz
- Shenshen Hu
- Shinji Katsumoto
- Sonal Chheda
- Soomin Park
- Sumita Ambasta
- Talita Nascimento
- Veronica Bohorquez
- Vivian (Chen) Zhao
- Vivian Zhao
- Wen Xuan Siow (Caelen)
- Wenyue Xuan
- Xiaowen Han
- Xue Jiang
- Yang XU
- Yiping
- Yibing Qu
- Yingjia Zhang
- Yinlin Yu
- Yiran Du
- Yiran Ma
- Yiran Ma
- You Zhang
- Young Eun Bae
- Zhuqian Zhou
- Zi (Grace) Hu
- Zoé Brosy
International Large-Scale Assessments (ILSAs)

Source: https://www.economist.com/international/2016/12/10/what-the-world-can-learn-from-the-latest-pisa-test-results
Why Study Media Coverage of ILSAs?

Dissemination

“Window” to the Policy Process
## Typology of Research on Media and ILSAs

<table>
<thead>
<tr>
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<th>Single Case</th>
<th>Multiple Countries</th>
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<tr>
<td></td>
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<td>Martens &amp; Niemann (2010)</td>
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<td>Pizmony-Levy &amp; Torney-Purta (2018)</td>
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<td>Schmidt (2003)</td>
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<td>Stack (2007, 2008)</td>
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*What is missing?*
Typology of Research on Media and ILSAs

• “[...] there also exist a plethora of studies on how PISA results are discussed or ‘translated’ at country-level, mostly in the media. However, rarely do these studies adopt a critical comparative perspective that allows them to see how PISA translation relates to ongoing policy debates and power relations among the various policy networks in a country.” (Steiner-Khamsi & Waldow, 2018: 564)
Network Perspective on Globalization

• Shields (2013) tested whether millions of individual student decisions on studying abroad were related to certain globalized structures:
  • Economic Structures (Competition & Neoliberalism)
  • Power and Hegemonic Structures (Critical Theories)
  • Cultural Structures (Neo-I and World Culture)
Research Questions

1. What characterizes the PISA-induced reference societies (PIRS) network?

2. To what extent is the PISA-induced reference societies (PIRS) correlated with other types of international networks?
Hypotheses/propositions

• **Materialist/economic perspective:**
  • Flows of PISA discourse references will be correlated with the network of international trade

• **Cultural perspective:**
  • Flows of PISA discourse references will be correlated with co-membership in international organizations (IGOs)

• **Regional geopolitics perspective:**
  • Flows of PISA discourse references will be correlated with distance between countries
Pilot study: PISA 2012

• An original dataset of 266 news articles and opinion pieces published between December 2nd and 10th, 2013 in 112 newspapers in 23 education systems.

• Texts with references (to other education systems) are more likely than other texts to present PISA results using ranking, focus on international competition, and less likely to focus on domestic inequalities.
Data & Methods

• Dataset
  • **851 news** articles and opinion pieces
  • From December 6\textsuperscript{th} and 12\textsuperscript{th}, 2016
  • Total of **47 education systems**
    • Sample includes 69% of all systems that participated in PISA 2015

• Research team:
  • ~**100 students and volunteers** from TC and 5 other institutions, received 2-3 hours of training.
  • ITSF 5035 Social Analysis of International Assessments
Data & Methods

Educational systems in study: Australia, Belgium, Brazil, Canada, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Denmark, Dominican Republic, Finland, France, Georgia, Germany, Hungary, Indonesia, Ireland, Italy, Japan, Jordan, Kazakhstan, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mexico, New Zealand, Norway, Peru, Portugal, Qatar, Russian Federation, Singapore, South Korea, Switzerland, Taiwan, Thailand, Trinidad and Tobago, Turkey, United Arab Emirates, United Kingdom, United States, Uruguay, Vietnam

Educational systems NOT in study: Albania, Algeria, Argentina, Austria, Bulgaria, Cyprus, Estonia, Greece, Iceland, Israel, Kosovo, Lebanon, Macedonia, Moldova, Montenegro, Netherlands, Poland, Romania, Slovak Republic, Slovenia, Spain, Sweden, Tunisia

We would love your help!
Data & Methods

• **Data collection protocol** to identify at least ten news articles published in at least two newspapers
  • Data collection and coding in China and Belgium
  • 29 countries with 10 stories or more
  • 10 countries with 5-9 stories
  • 8 countries with 1-4 stories

• **Codebook** to analyze news stories at the article- and speaker levels. Codebook is informed by previous work by Green Saraisky (2016) and Pizmony-Levy (2013)
Study Limitations

• One week of media coverage (immediately after the release of results)

• A non-random sample of education systems participating in PISA 2015

• **BUT**: Our dataset allows us to examine how news media in different social contexts inform the general public on the results of PISA
Analytical Strategy: Social Networks

- A social network consists of “a finite set or sets of actors and the relation or relations defined on them” (Wasserman & Faust, 1994)

- **Actors** = nodes = a unit that possibly is connected
  - E.g., individuals, education systems

- **Relationships** = edges = specific types of interdependency
  - E.g., friendship / conflict, reference in media
Analytical Strategy: Social Networks

• Focus: PISA-Induced Reference Societies Network

• Correlates:
  • Export/import (economics)
  • Distance (culture)
  • Shared IGOs (culture)
Bilateral Total Trade in Goods – Exports / Imports

• BTDIxE Bilateral Trade in Services

• The database presents estimates of bilateral flows of goods from 1990 to the latest available year

• Provides values of imports, exports, re-imports and re-exports of goods broken down by industrial sectors and by categories of end-use.

Distance Measure - CEPII

• Mayer & Zignago (2011)
• Distance in Kilometers
• The main contribution of Geo Dist is to compute internal (or intra-national) and international bilateral distances in a totally consistent way.
• Bilateral distances measured using city-level data to account for the geographic distribution of population inside each nation.

Correlates of War - IGOs

• The IGO data sets contain information about intergovernmental organizations (international organizations that have at least 3 nation-states as their members) from 1815-2014.

• We use Form 3 which combines individual country memberships into joint dyadic memberships in each IGO, marking joint membership in each IGO for each pair of states.

• Data contains one record per dyad-year (with years listed at 5-year intervals through 1965, and annually thereafter).

Source: https://correlatesofwar.org/data-sets/IGOs
Analytical Strategy: Social Networks

• QAP Correlation:
  • Correlating variables vs. correlating networks

| DV: PIRS | | | |
|---|---|---|
| A | - | 1 |
| B | 1 | - |
| C | 1 | - |

| IV: Trade | | | |
|---|---|---|
| A | - | 1 |
| B | 1 | - |
| C | 1 | - |

• Calculating statistical significance through permutations
Findings

• Prevalence of “reference societies” in media coverage

• Associated meaning of “reference societies”

• Media’s PISA reference network

• Correlation analysis
Prevalence of “reference societies”

70% of news stories in the sample refer to results of other countries
Prevalence of “reference societies”

80%

of education systems in the sample, majority of news stories refer to results of other countries
International flows of references in news stories about PISA 2015: **Switzerland**

**TITLE**

“Since 2000, the PISA (Programme for International Student Assessment) study has assessed 15-year-old students in OECD countries. If Switzerland occupies a good level on the European level, it is the Asian countries, **Singapore** in the lead, which hold the top of the world ranking.”
International flows of references in news stories about PISA 2015: New Zealand

“New Zealand was 10th highest in reading alongside Germany and Macao, 12th highest in science alongside Slovenia, and 21st in maths alongside Vietnam.

Among English-speaking countries, only Singapore and Canada had higher scores than New Zealand in reading and science, and Singapore, Canada and Ireland had higher scores in maths [...]

International flows of media references in news stories about PISA 2015
International flows of media references in news stories about PISA 2015
International flows of media references in news stories about PISA 2015

Density 0.26
In-degree centralization 0.45
Out-degree centralization 0.51
Arc Reciprocity 0.36
Dyad Reciprocity 0.22
International flows of media references in news stories about PISA 2015

**Core**: Australia, Brazil, Canada, China, Estonia, Finland, France, Germany, Italy, Japan, Luxembourg, Netherlands, Russia, Singapore, South Korea, Spain, Sweden, Switzerland, Taiwan, UK, USA, Vietnam
Correlation between in-degree centrality and student achievement on PISA 2015

Pearson’s $r = .66$
## Correlation Coefficients for Selected Global Networks

<table>
<thead>
<tr>
<th></th>
<th>Correlation with PIRS network (binary)</th>
<th>Correlation with PIRS network (valued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>-.023</td>
<td>-.061</td>
</tr>
<tr>
<td>Import</td>
<td>-.019</td>
<td>-.045</td>
</tr>
<tr>
<td>Distance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared IGOs</td>
<td>.194***</td>
<td>.161***</td>
</tr>
<tr>
<td>Other networks to consider?</td>
<td></td>
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</tbody>
</table>
So What?

• Local actors – journalists and speakers mentioned in news stories – make many decisions when engaging and interpreting PISA results:
  • They can choose to ignore PISA
  • They can choose to ignore other countries
  • They can choose to reference other countries
  • They can choose which countries to reference
So What?

• News stories about PISA results include many references to foreign education systems (externalization in the context of ordinalization)
  • News stories with references to foreign education systems are loaded with specific meaning

• News stories with references produce a coherent international network of policy reform discourse

• This network is not random >> it is associated with pre-existing networks between countries

• Conclusion: *Networked education systems and the flow of policy reform discourse*
Future Directions

• Extending analysis to additional countries

• Exploring quality and meaning of reference

• Comparison between two ILSA discourse networks: PISA 2015 and TIMSS 2015
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