

Identifying a Typology of New York City Schools through Teacher Perceptions of Organizational Context: A Latent Class Analysis

Megan Duff & Alex J. Bowers

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A Graduate School of Education, Health & Psychology

School and District Improvement

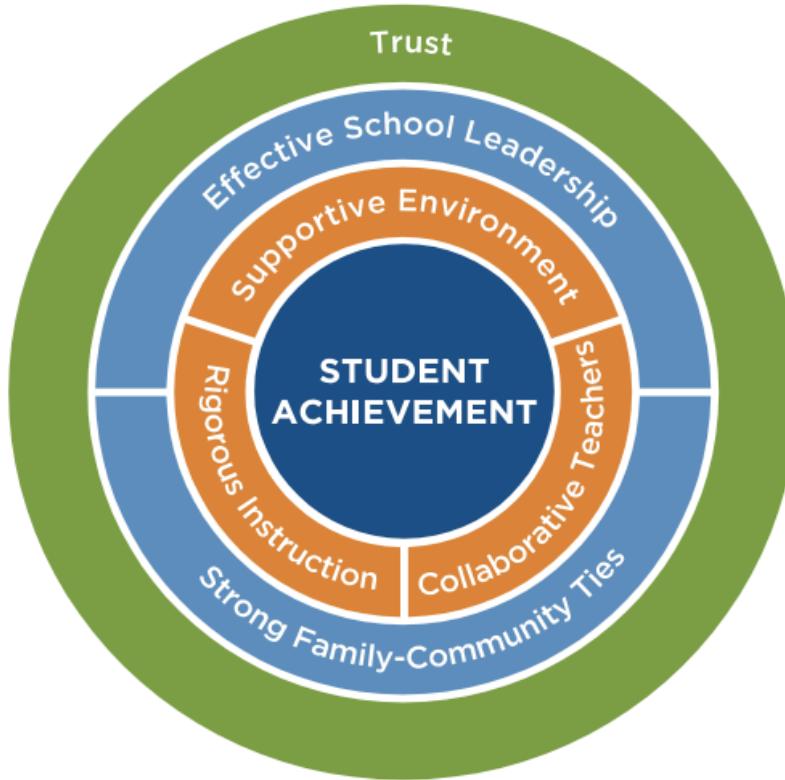
School effectiveness and improvement need not be an individual pursuit: districts, charter management organizations (CMOs), and school improvement networks can foster conditions to support improvement at scale.

Like many large urban districts, New York City has struggled to find the right approach to group schools for improvement:

- Market-based groups (schools select improvement networks)
- Geographical groups (schools grouped by local district)
- Outcome-based groups (schools grouped by test scores)

The effectiveness of improvement strategies is context-dependent—schools with different organizational needs require different supports.

School Organizational Context



Source: New York City Department of Education, 2015.
<http://schools.nyc.gov/AboutUs/schools/framework/default.htm>.

Research Questions

Do teachers perceive different subgroups of elementary and middle schools in New York City based on their schools' organizational context?

How are selected student, school, and teacher characteristics related to teachers' perceptions of organizational context?

Is there an association between teachers' perceptions of school organizational context and student outcomes?

Data & Sample

Two publicly-available datasets in this analysis:

- 2016 New York City teacher school climate survey
 - Publicly-available responses aggregated to the school level
 - 81% response rate accounting for 70,172 of all teachers in 1,922 schools in New York City
- 2016 New York State school report card database

This study includes teachers in 1,289 elementary and middle schools.

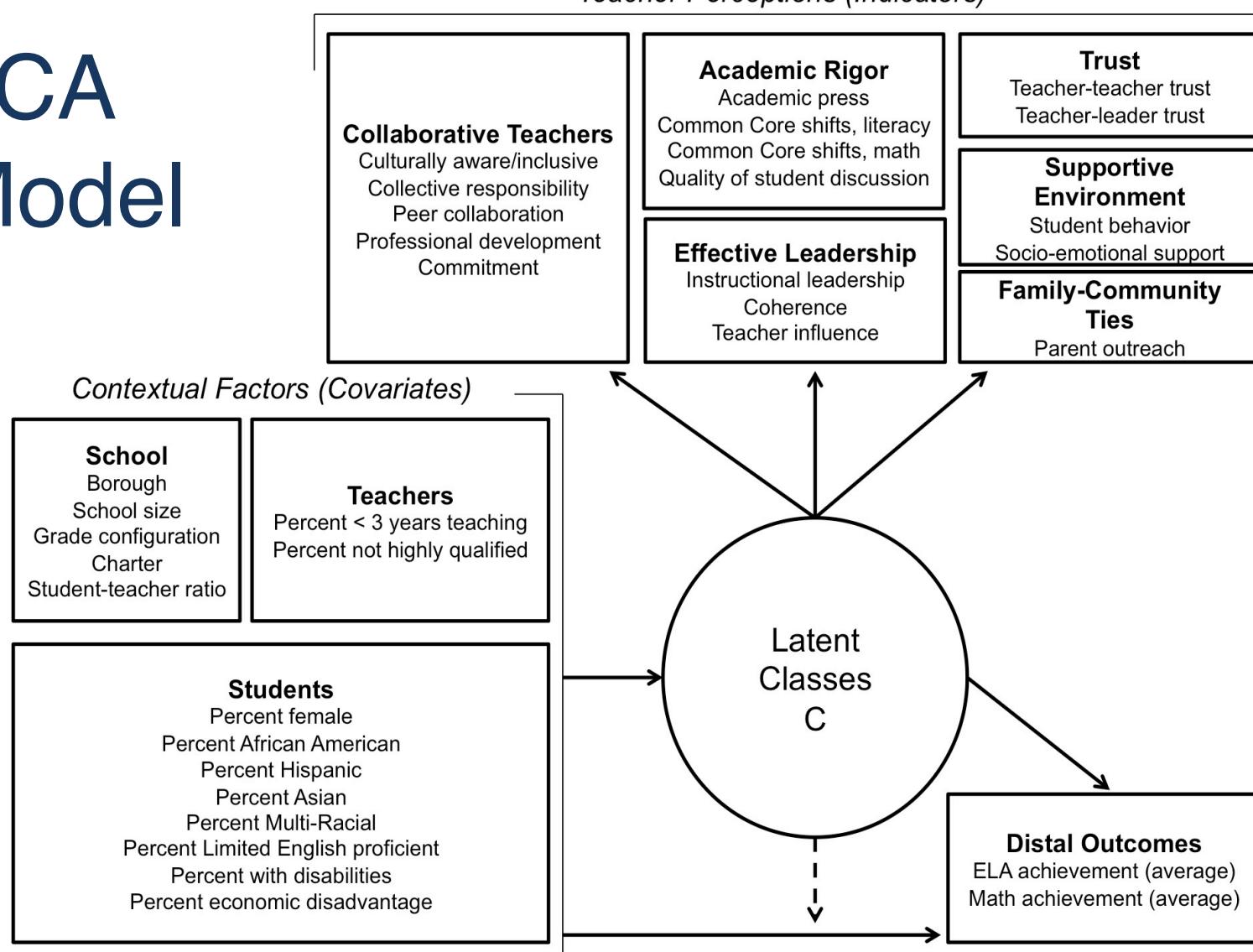
Methods

We employ Latent Class Analysis (LCA)¹ in order to identify distinct subgroups or effective schools among all New York City's traditional and charter schools based on teacher perceptions during the 2015-2016 school year.

We employ a three-step approach to LCA², which allows us not only to identify homogeneous subgroups of schools, but also to explore covariates that help to explain schools' likelihood of belonging to a particular subgroup and distal outcomes that are associated with subgroup belonging³.

¹ McCutheon, 1987; Lanza & Collins, 2010; Asparouhov & Muthén, 2014; ² Nylund-Gibson, et al, 2014; Vermunt, 2010; ³ Allison, et al, 2016; Bowers, et al, 2017; Agasisti, Bowers, & Soncin, in press

LCA Model



Class Enumeration Process

	AIC	BIC	Adjusted BIC	- Log Likelihood	LMR Test for k-1 Classes	p-value	Entropy
2 Classes	21894.496	22075.152	21963.975	-10912.248	7941.883	<0.001	0.937
3 Classes	20596.489	20870.055	20701.700	-10245.244	1334.007	<0.001	0.899
4 Classes	20135.437	20501.912	20276.380	-9996.718	497.052	0.007	0.900
5 Classes	19930.623	20390.007	20107.298	-9876.311	240.814	0.002	0.884
6 Classes	19751.066	20303.359	19963.473	-9768.533	215.557	0.054	0.861
7 Classes	19690.926	20336.129	19939.066	-9720.463	96.194	0.433	0.864

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	1	2	3	4	5	6
1	0.857	0.000	0.029	0.029	0.041	0.044
2	0.000	0.959	0.000	0.027	0.014	0.000
3	0.015	0.000	0.928	0.000	0.000	0.057
4	0.013	0.043	0.000	0.876	0.036	0.032
5	0.042	0.051	0.000	0.049	0.856	0.002
6	0.041	0.000	0.072	0.037	0.000	0.850

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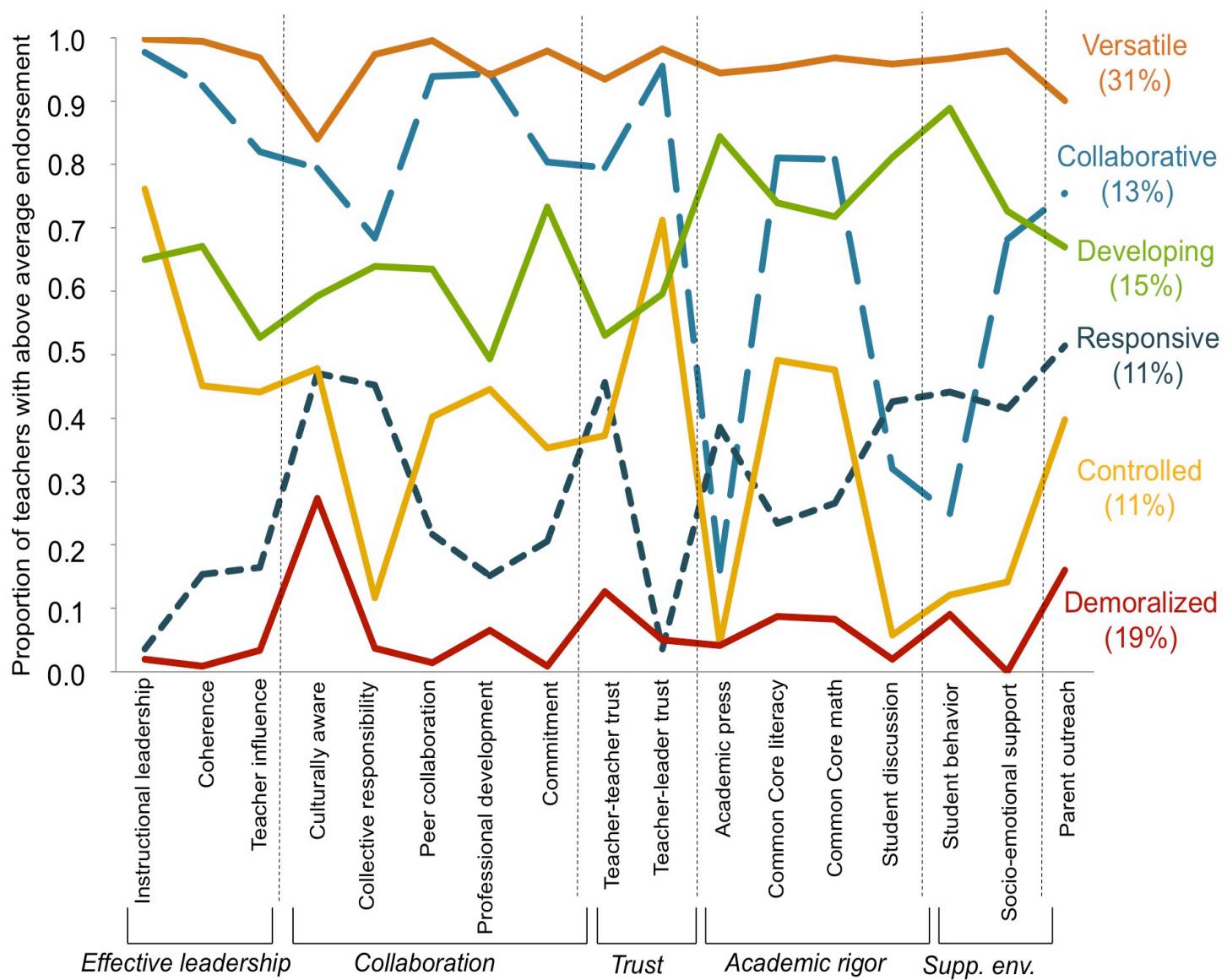
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	Versatile (31%)	Collaborative (13%)	Developing (15%)	Responsive (11%)	Controlled (11%)	Demoralized (19%)			
	Mean	Mean	Odds Ratio	Mean	Odds Ratio	Mean	Odds Ratio	Mean	Odds Ratio
School Characteristics									
<i>Borough¹</i>									
Brooklyn	0.34	0.41		0.35		0.18	0.27*	0.35	0.28
Bronx	0.16	0.29		0.12		0.23		0.31	0.36
Queens	0.25	0.10		0.24		0.36		0.10	0.18
Staten Island	0.06	0.04		0.06		0.05		0.06	0.02
<i>School Size²</i>									
Medium Enrollment (400-750)	0.41	0.39		0.43		0.50		0.42	2.21**
Large Enrollment (>750)	0.31	0.15		0.35	2.57*	0.25		0.19	0.31 5.69***
<i>Grade Configuration³</i>									
Elementary School	0.58	0.54		0.47		0.67		0.45	0.26** 0.44*
Middle School	0.19	0.33		0.21		0.14		0.28	0.23
K-8	0.14	0.11		0.15		0.09		0.09	0.29* 0.21
Charter	0.12	0.08	0.32*	0.19		0.07		0.17	0.12
Student Characteristics (School-level aggregate)									
% Female	49.61	48.19		50.44		48.74		48.12	48.63
% African American ⁴	23.22	43.03	1.04**	29.78		29.10		41.00	1.06** 38.81 1.08***
% Hispanic ⁴	36.62	43.54		33.77		41.18		47.89	48.69 1.05*
% Asian ⁴	16.41	4.97		13.89		16.47		4.81	7.12
% Other Race/Ethnicity ⁴	2.29	1.42		2.23		2.13		1.69	1.70 1.14**
% Limited English Proficient	10.97	13.22	1.05*	9.89		11.72		14.34	1.06** 15.26 1.07***
% Disabilities	20.44	25.58	1.09**	20.02		19.69		25.14	1.11** 23.96 1.13***
% Economic disadvantage	65.46	81.48		66.85		69.17		81.50	82.02
Teacher Characteristics (School-level aggregate)									
% Fewer than 3 Years									
Teaching	13.28	15.23	1.03*	14.87		15.28		16.61	1.04** 15.40 1.02*
% Not Highly Qualified	11.79	14.31		13.82		12.85		16.24	15.00

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Class-Specific Intercepts for Distal Outcomes, Controlling for all Covariates

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Math	351.743	343.350	350.002	343.956	338.594	339.214

Wald tests for pairwise comparisons of class-specific intercepts for ELA achievement

	Demoralized	Controlled	Responsive	Developing	Collaborative
Versatile	8.180***	7.85***	4.149***	0.984	5.820***
Collaborative	2.360*	2.034	-1.672	-4.836***	
Developing	7.196***	6.870***	3.164*		
Responsive	4.032***	3.706**			
Controlled	-0.326				

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Wald tests for pairwise comparisons of class-specific intercepts for Math achievement

	Demoralized	Controlled	Responsive	Developing	Collaborative
Versatile	12.528***	13.149***	7.787***	1.741	8.393***
Collaborative	4.136**	4.757**	-0.606	-6.652***	
Developing	11.408***	11.408***	6.046**		
Responsive	4.741**	5.362**			
Controlled	0.621				

Limitations

- Results are not causal.
 - The relationship between student outcomes and teachers' perceptions may be bi-directional.
 - Schools may simply be at a different point of their improvement trajectory than their peers.¹
- High means across most indicators.

¹ Day, Gu, & Sammons, 2016.

Conclusions and Implications

- Method of more holistically and meaningfully differentiating between schools
- Means of designing more targeted school supports
- Opportunities for further research

Speaking of further research...

- “How to bake a cake: Recipes for school improvement in New York City”
- Partial dissertation committee: Priscilla Wohlstetter, Alex J. Bowers, Carolyn J. Riehl

Mixed Methods Approach

	Research Questions	Methodological Approach
Phase one	<ol style="list-style-type: none">1. Do teachers perceive different subgroups of elementary and middle schools in New York City based on their school improvement capacity?2. What are the major patterns of change in school improvement capacity?	Latent transition analysis (LTA)
Phase two	<ol style="list-style-type: none">3. How do schools increase their improvement capacity?4. Do strategies for increasing improvement capacity vary across different types of schools?	Comparative case studies of schools purposefully sampled based on results of phase one analysis

Indicators: Teacher Perceptions 2015

Effective leadership

- Instructional leadership
- Coherence
- Teacher influence

Collaborative teachers

- Cultural Inclusiveness
- Collective responsibility
- Peer collaboration
- Professional development
- Commitment

Family-community ties

Trust

- Teacher-leader
- Teacher-teacher

Academic Rigor

- Common Core Lit.
- Common Core Math
- Student discussion

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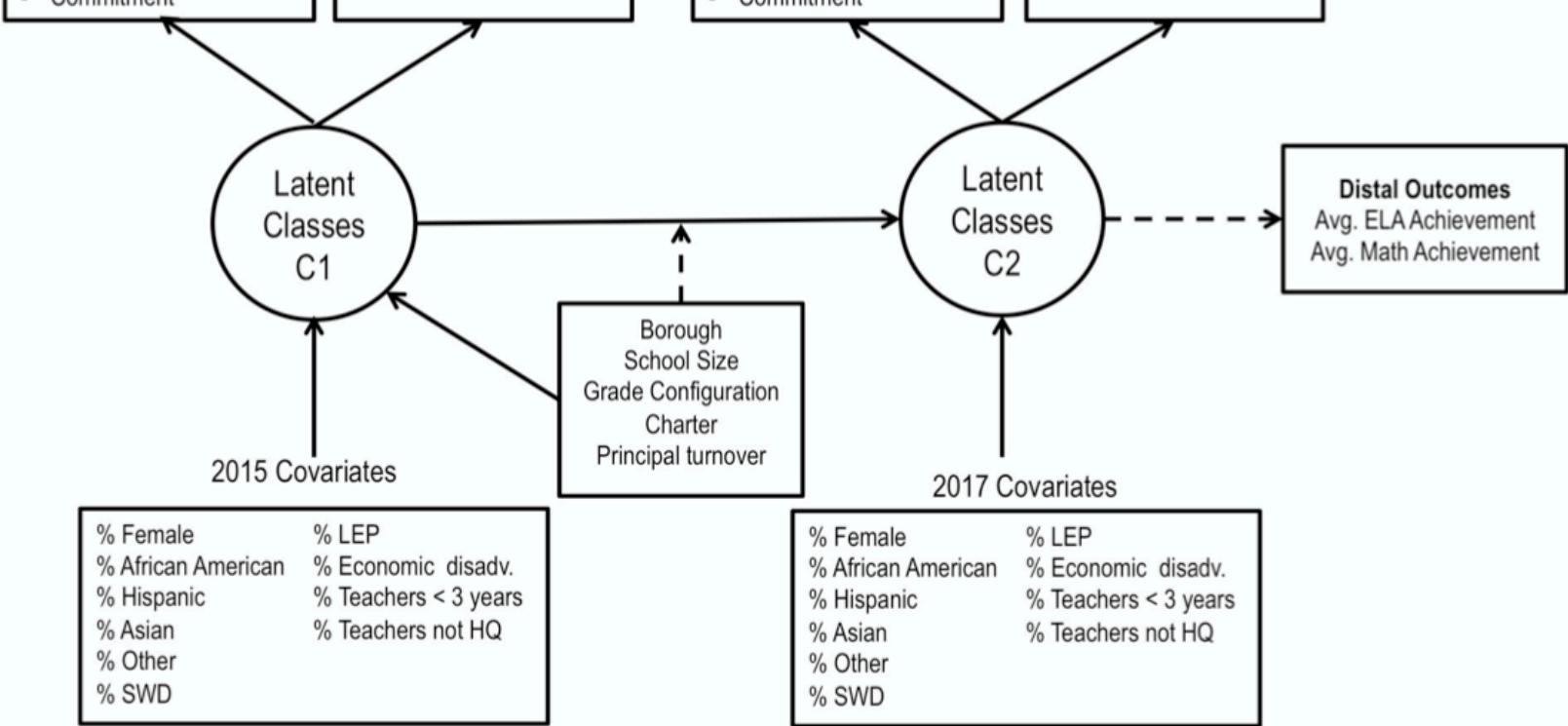
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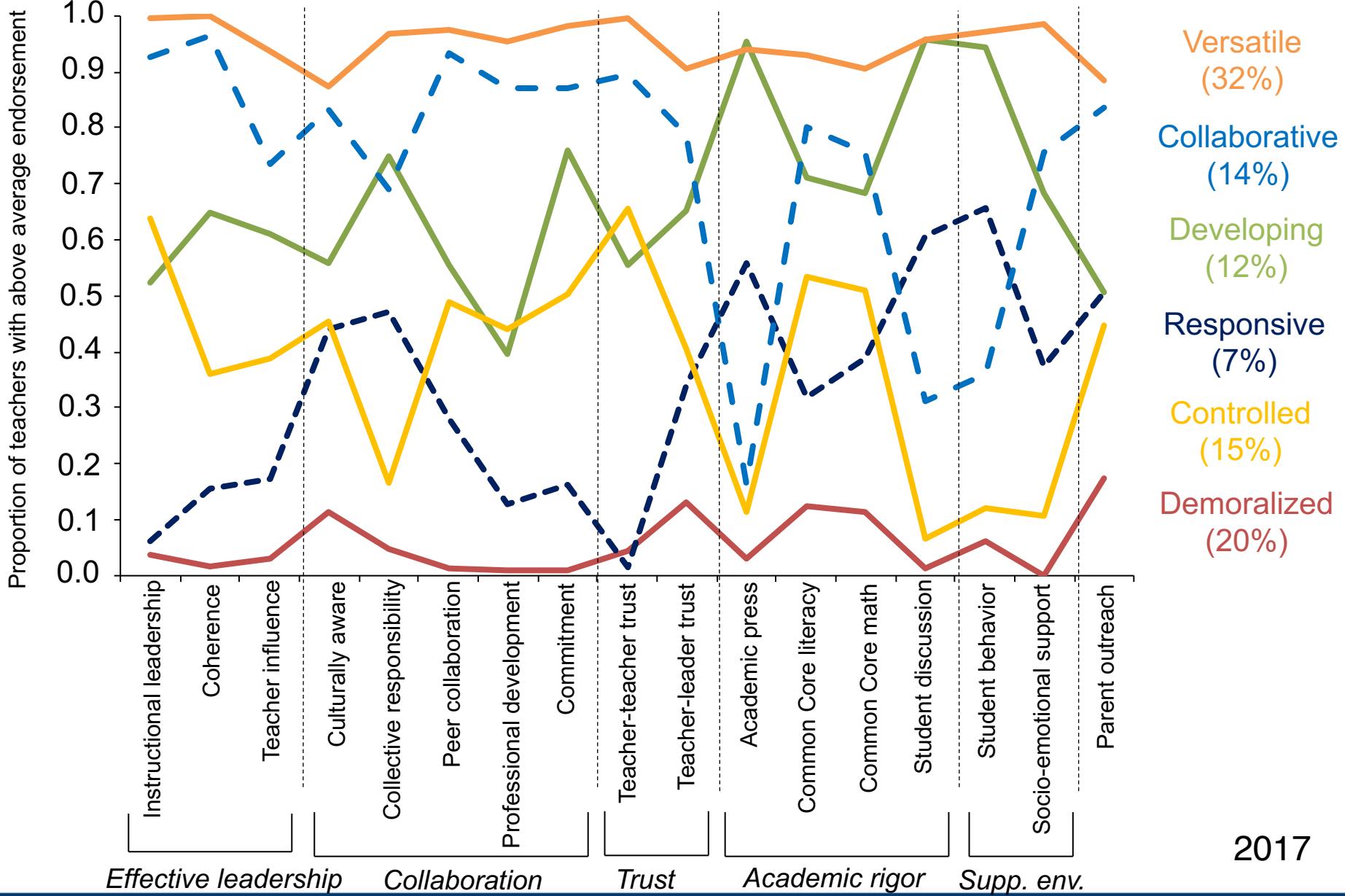
Trust

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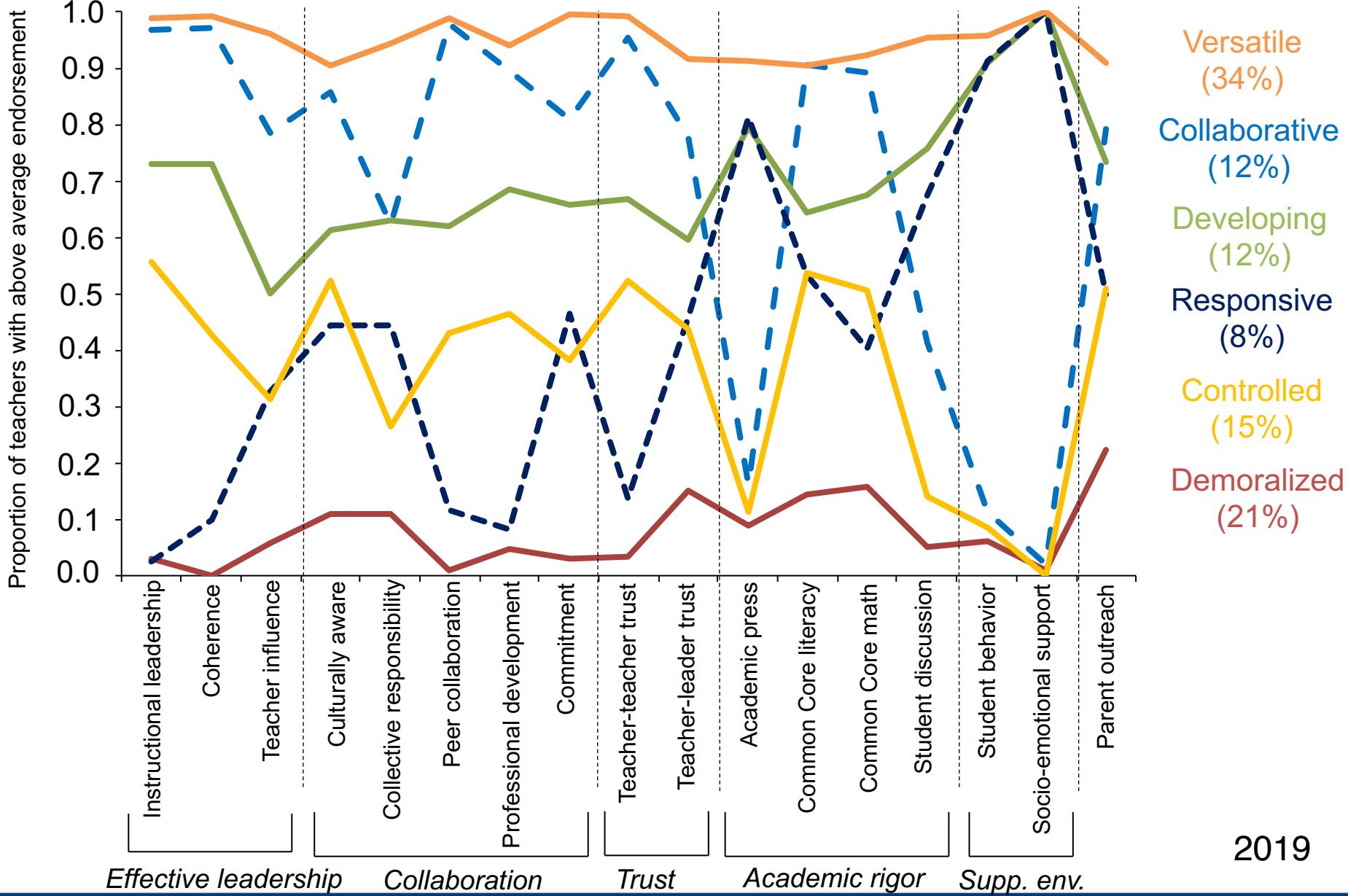
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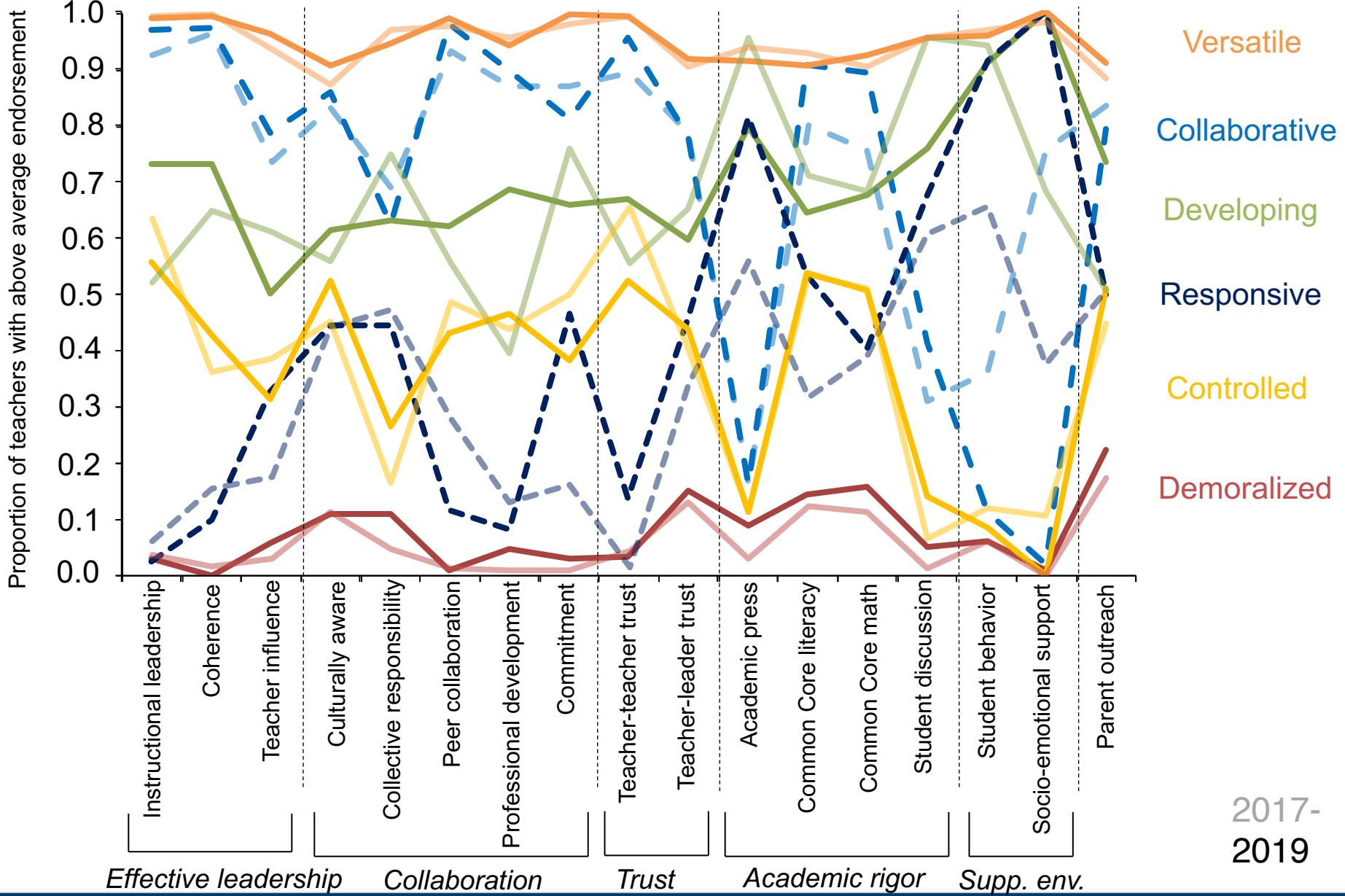
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2017





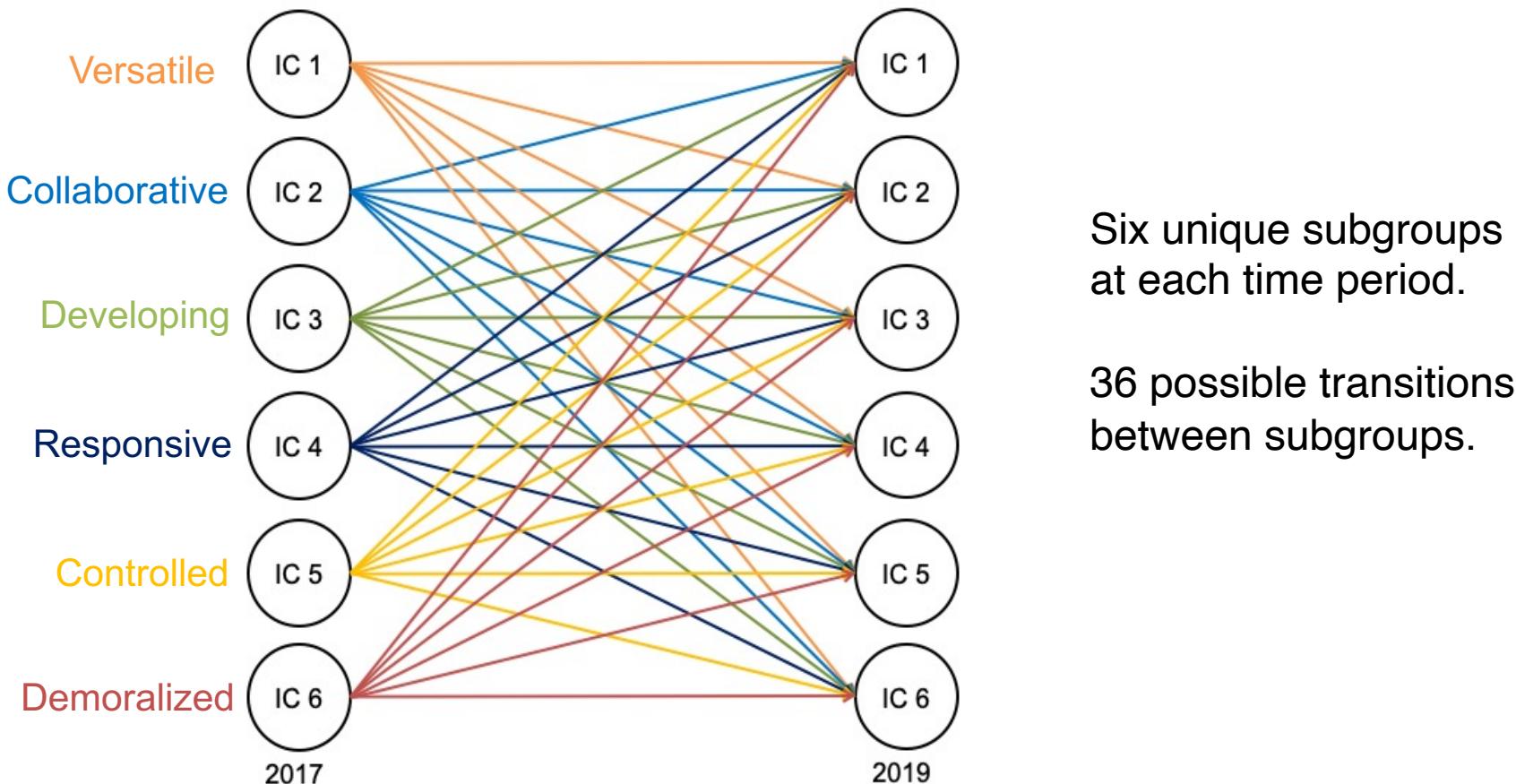
Transition Probabilities 2017-2019

	Versatile	Collaborative	Responsive	Developing	Controlled	Demoralized
Versatile	0.733	0.051	0.025	0.098	0.042	0.051
Collaborative	0.299	0.232	0.032	0.100	0.264	0.073
Responsive	0.135	0.048	0.324	0.156	0.163	0.175
Developing	0.285	0.050	0.209	0.320	0.061	0.075
Controlled	0.093	0.192	0.042	0.068	0.296	0.310
Demoralized	0.043	0.051	0.053	0.066	0.220	0.567

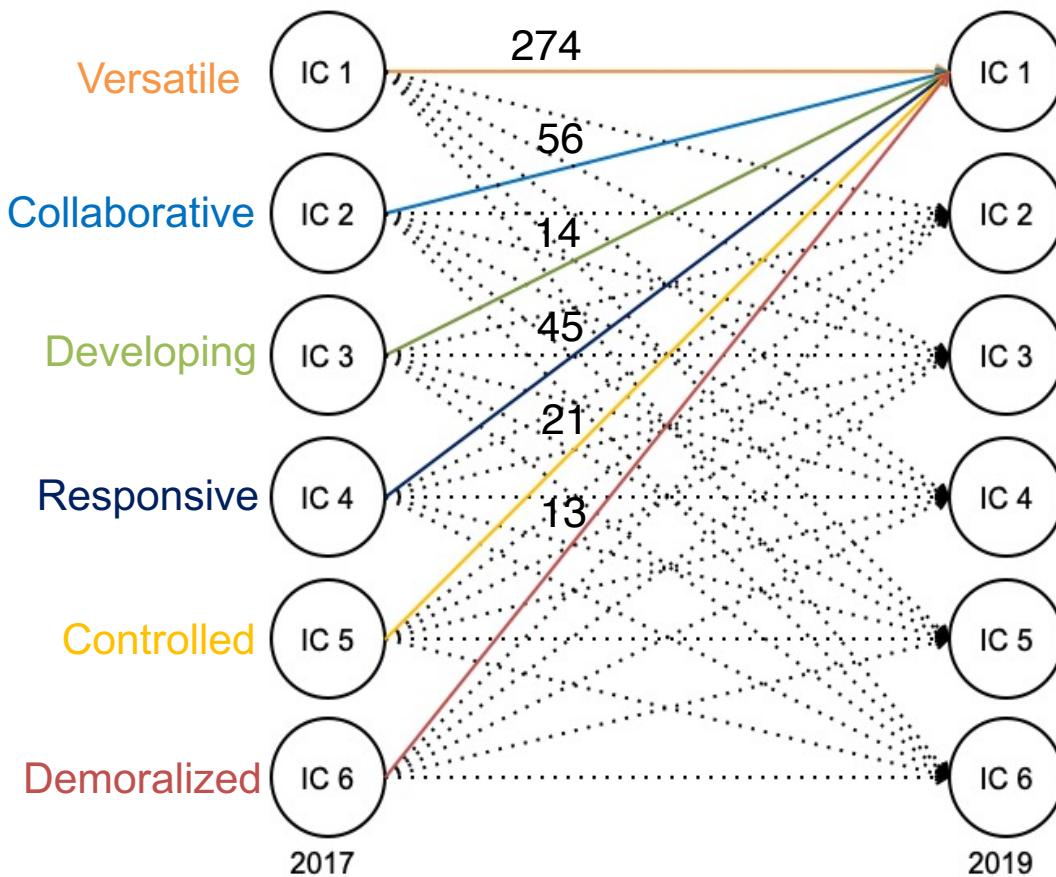
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Purposeful Sampling



Purposeful Sampling



Transitions from which I am drawing sample cases.

$n=1225$ schools

Thank you!

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