

IMPACT GROUP PRESENTATION | JANUARY 2019

META-ANALYSIS OF RCT'S TARGETING CLASSROOM PRACTICE

HOW RESPONSIVE IS A TEACHER'S CLASSROOM PRACTICE TO INTERVENTION?

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Note: This work is forthcoming in *Review of Research in Education*

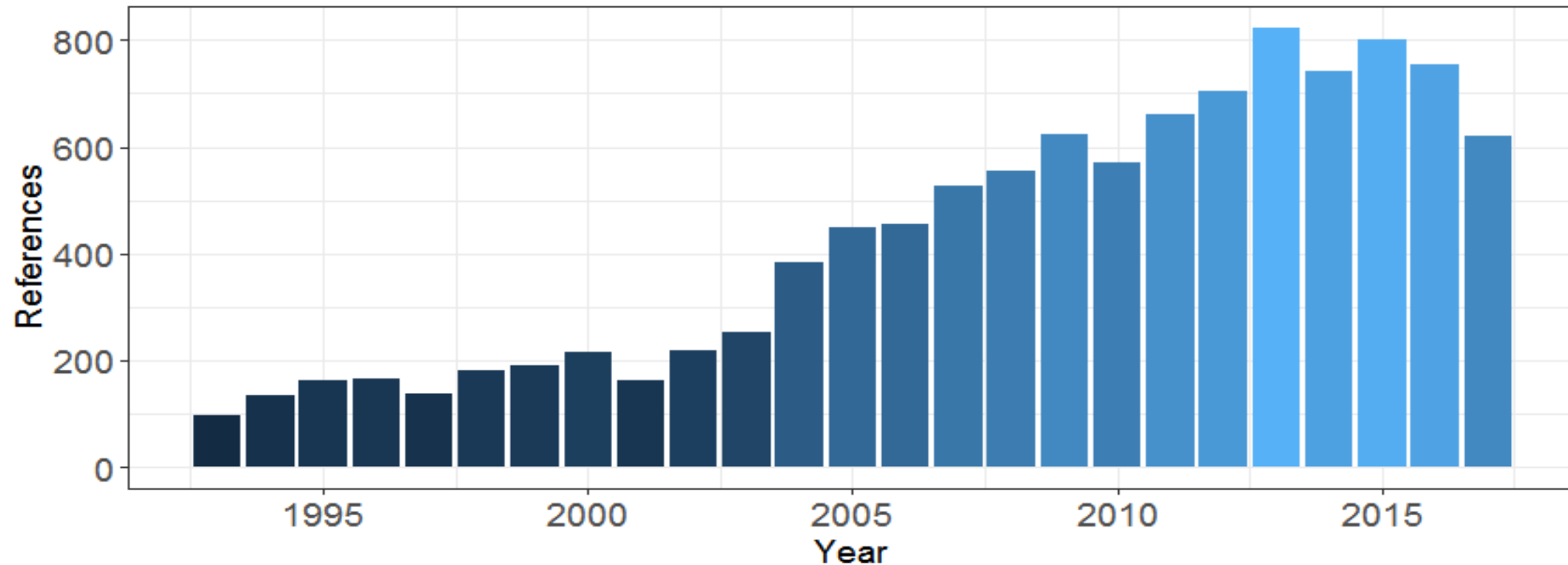
Thank you to the O2 Lab for support!

Motivation

- Lots of research has demonstrated that teachers can vary in their effectiveness, and teacher quality is a key school-based determinant of student achievement.
- Federal education policy has acknowledged the importance of high quality teaching, especially over the last 15 years.

Motivation

- Coinciding with the federal policy focus and the creation of IES, there has been an uptick in rigorous research targeting classroom practice.



Number of references per year of randomized field studies that target classroom practice. The figure shows the citation returns from an EBSCO Host search of the previous 25 years, by year, for the following search string: (“classroom practice” OR instruction OR “instructional practice” OR “classroom practice” OR “teacher effectiveness”) AND (intervention OR strateg* OR program OR treatment) AND (experiment OR “randomized experiment” OR “randomized trial” OR “randomized control”).

Motivation

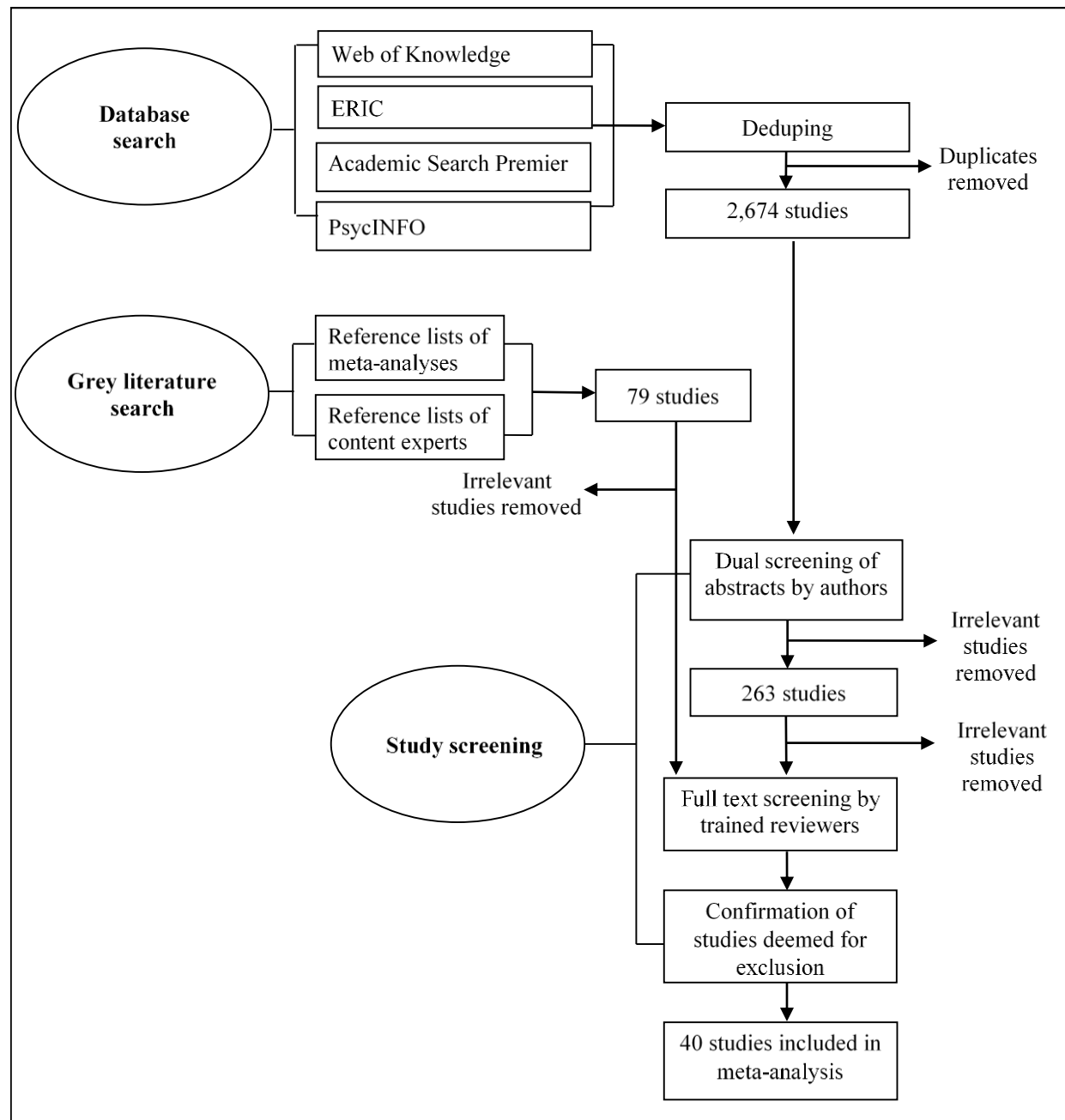
This has provided the impetus and opportunity to empirically examine some fundamental questions that have not yet been addressed:

1. How does a teacher's classroom practice respond to intervention?
2. Are specific aspects of classroom practice more or less responsive?
3. Are particular intervention features (e.g. coaching, video and technology components, intervention length) associated with improvements in classroom practice?

Approach

Meta-Analysis Inclusion Criteria

- We required studies meet the following inclusion criteria
 - In-service teachers in grades K-12
 - Evaluation of an intervention that aims to improve classroom practice for academic learning
 - RCT design
 - Classroom practice is measured through observation
 - Written in English and information available to calculate effect sizes



Coding the Included Studies Using UTOS

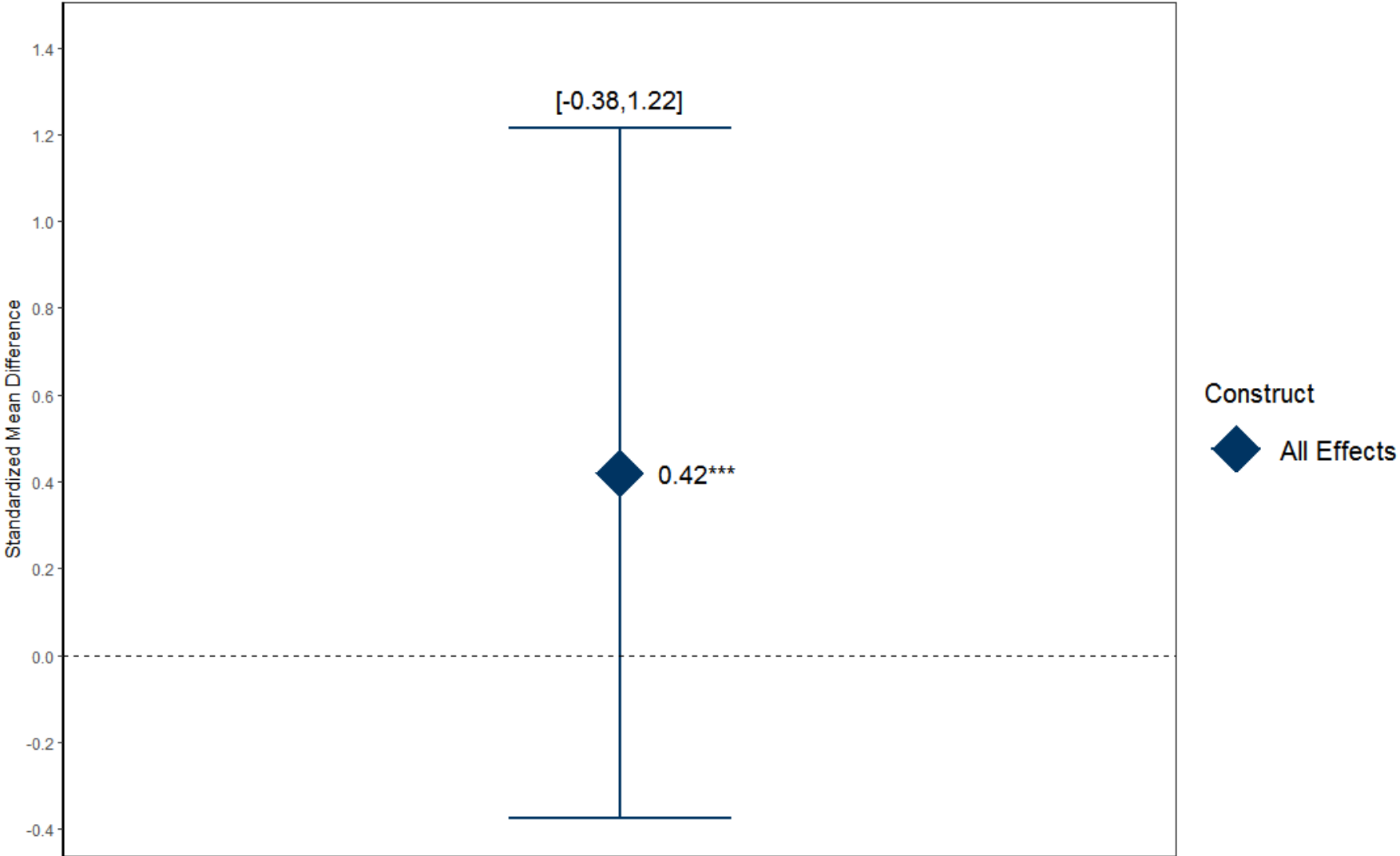
- Basic study information
- Sample characteristics (U)
- Intervention characteristics (T)
- Outcome information (O)
- Setting information (S)
- Effect size information

Analysis

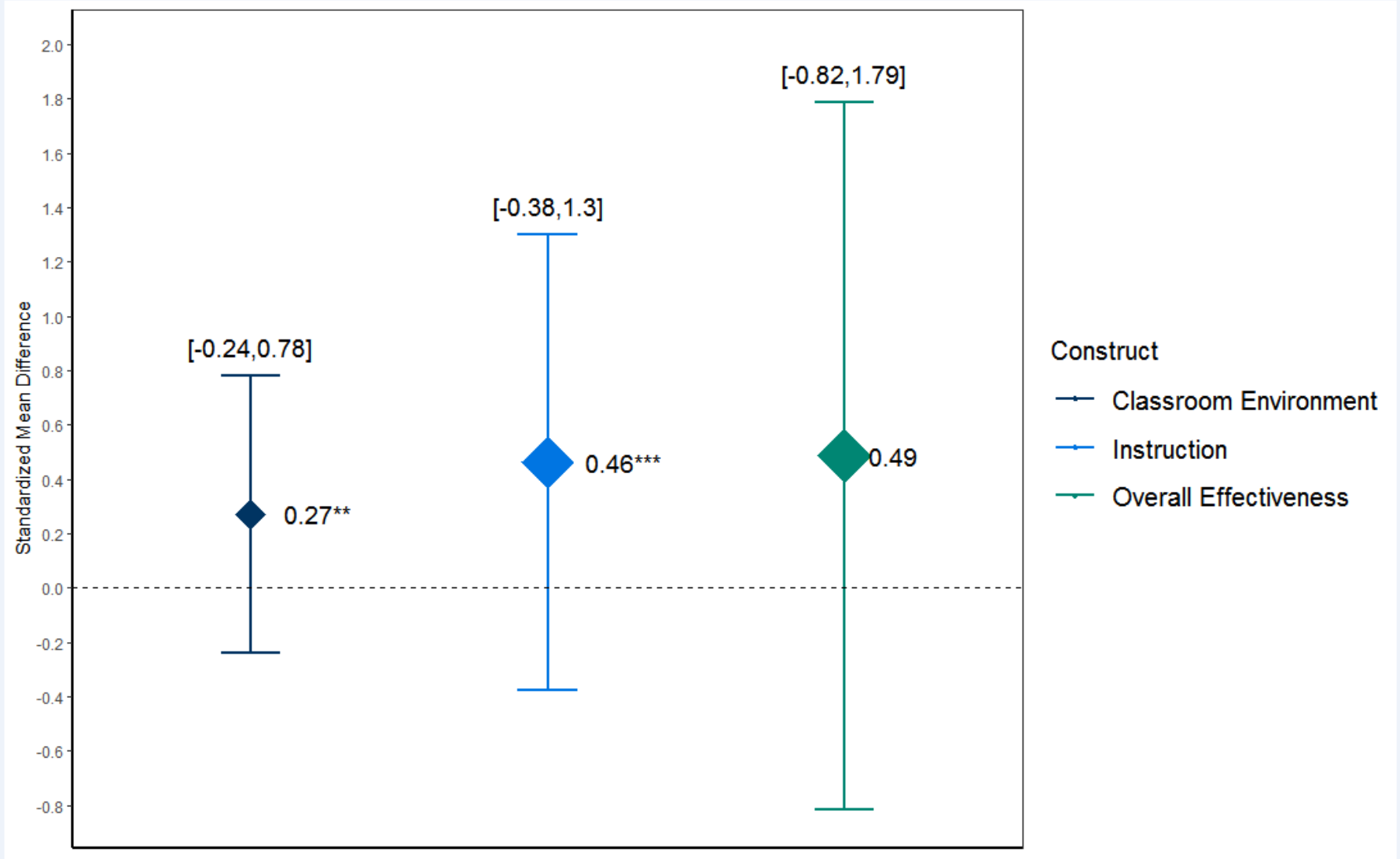
- Estimated overall weighted mean effects using the random-effects model
 - Overall and for each classroom practice outcome domain and construct
- Examined sources of heterogeneity using the mixed-effects model
 - Included intervention intensity, timing of the observational measurement, intervention features, grade band, teacher experience, and study characteristics (publication year and sample size), separately as moderators in the model
 - Controlled for the classroom practice outcome domain
- Estimated heterogeneity using I^2 and 95% prediction intervals for the estimated average effect

Findings

How does a teacher's classroom practice respond to intervention?

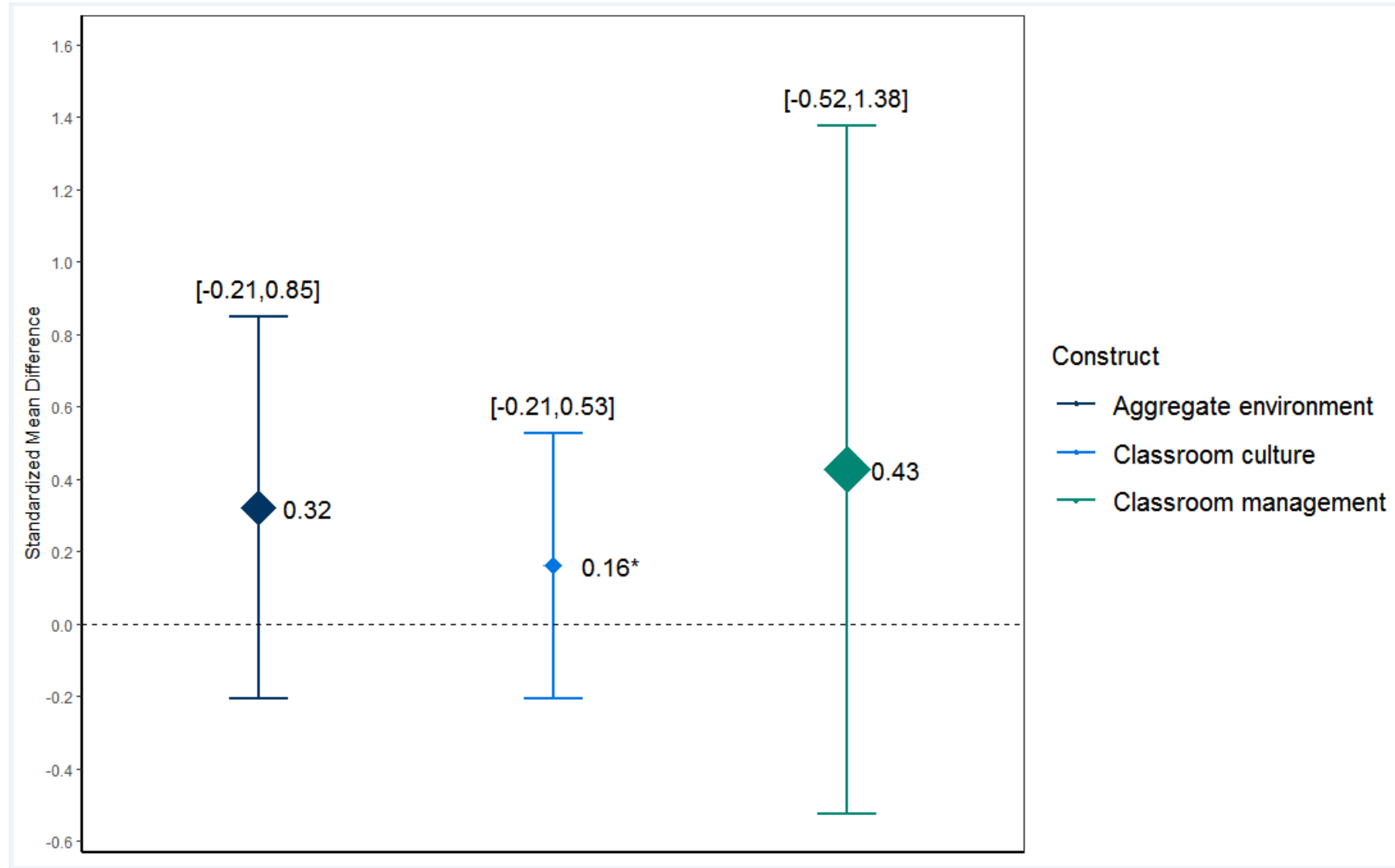


Broad domains of classroom practice



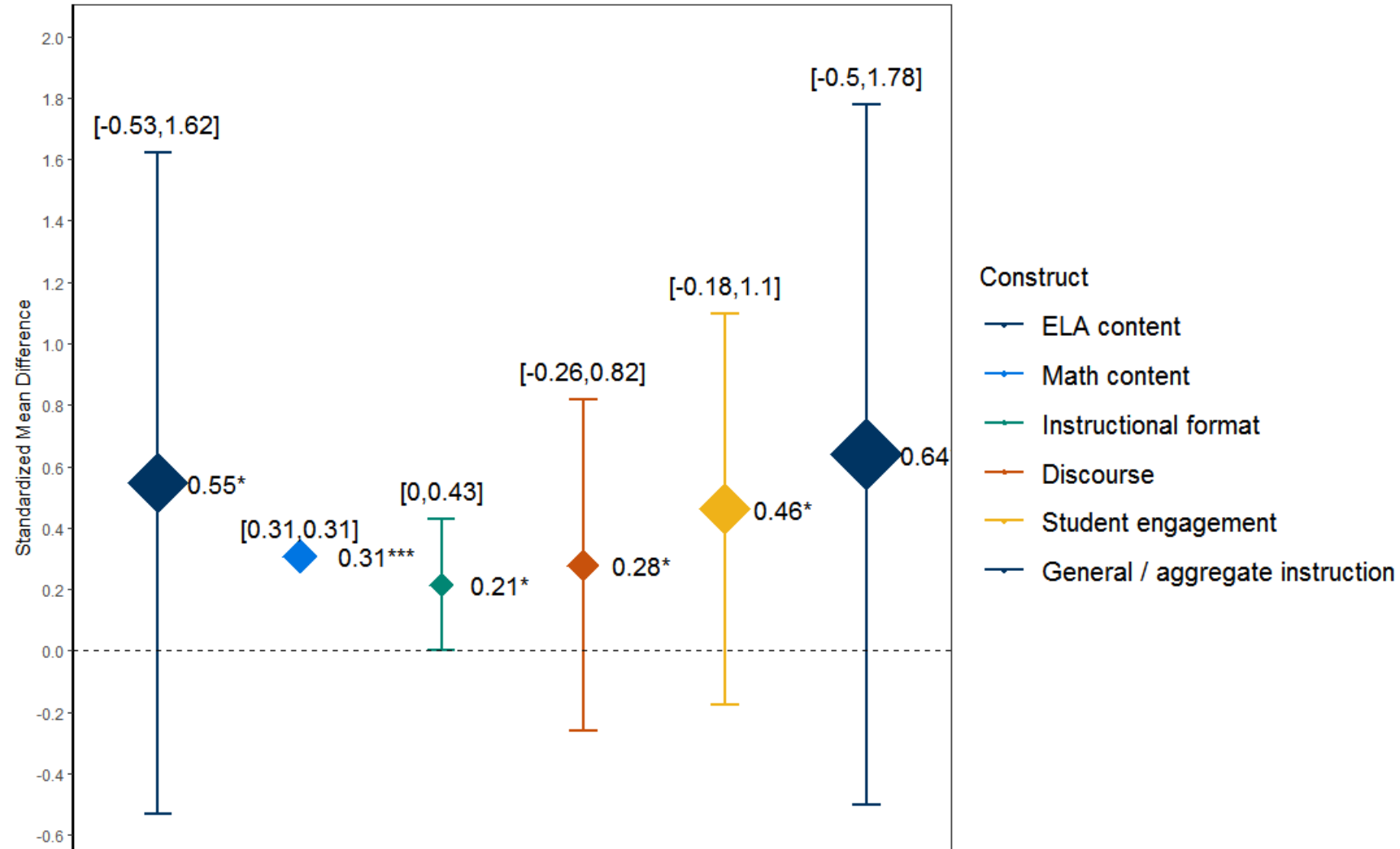
Are specific aspects of classroom practice more or less responsive?

- Classroom environment



Are specific aspects of classroom practice more or less responsive?

- Instruction



Moderator Analyses

- Results were not statistically significant (not surprising with sparse data)
- We used the following guidelines to help interpret differences in effect sizes among moderator groups:
 - Less than 0.1: Small
 - 0.10 to 0.25: Medium size and suggestive
 - Greater than 0.25: Large and of substantive interest

Are particular intervention features associated with improvements in classroom practice?

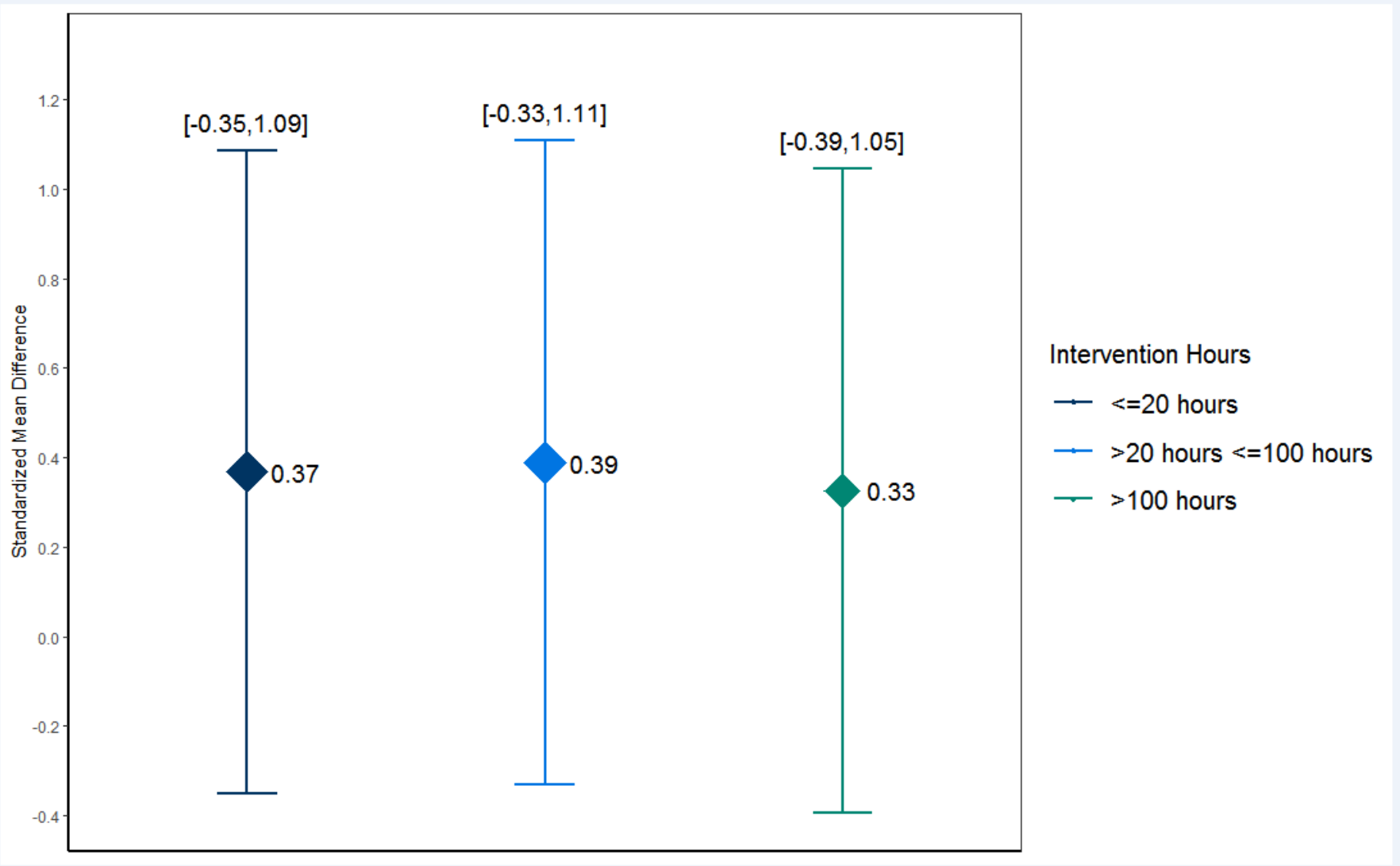
Try grouped bar charts?

Individualized training	Mean	Comparison Feature	Mean	Δ
Individual training	0.33	No individual training	0.17	0.16
Established coach	0.14	Other coach	0.42	-0.28
In-person + remote training	0.43	In-person only	0.31	0.12
Structured observation protocol for coaching	0.21	None used/described	0.49	-0.28

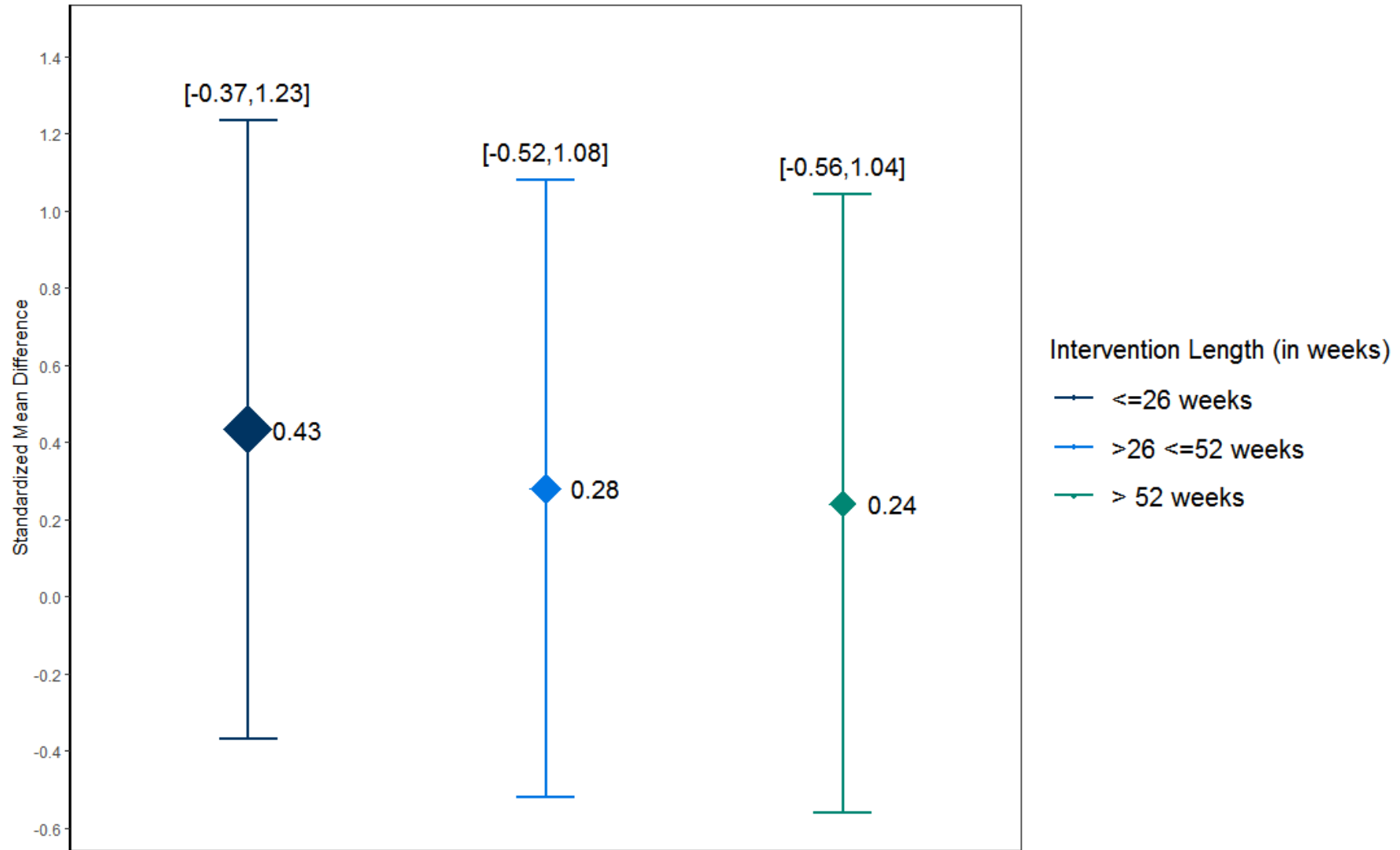
Are particular intervention features associated with improvements in classroom practice?

Intervention Feature	Mean	Comparison Feature	Mean	Δ
Focus on using data to inform instruction	0.45	No focus on using data	0.26	0.19
Active learning/practice	0.43	No active learning/practice described	0.25	0.18
Instructional materials	0.38	No instructional materials	0.27	0.11
Summer + school year	0.29	No summer	0.39	-0.1
Technology enhanced	0.37	No technology	0.29	0.07
Teacher driven learning	0.34	Not teacher driven	0.31	0.03

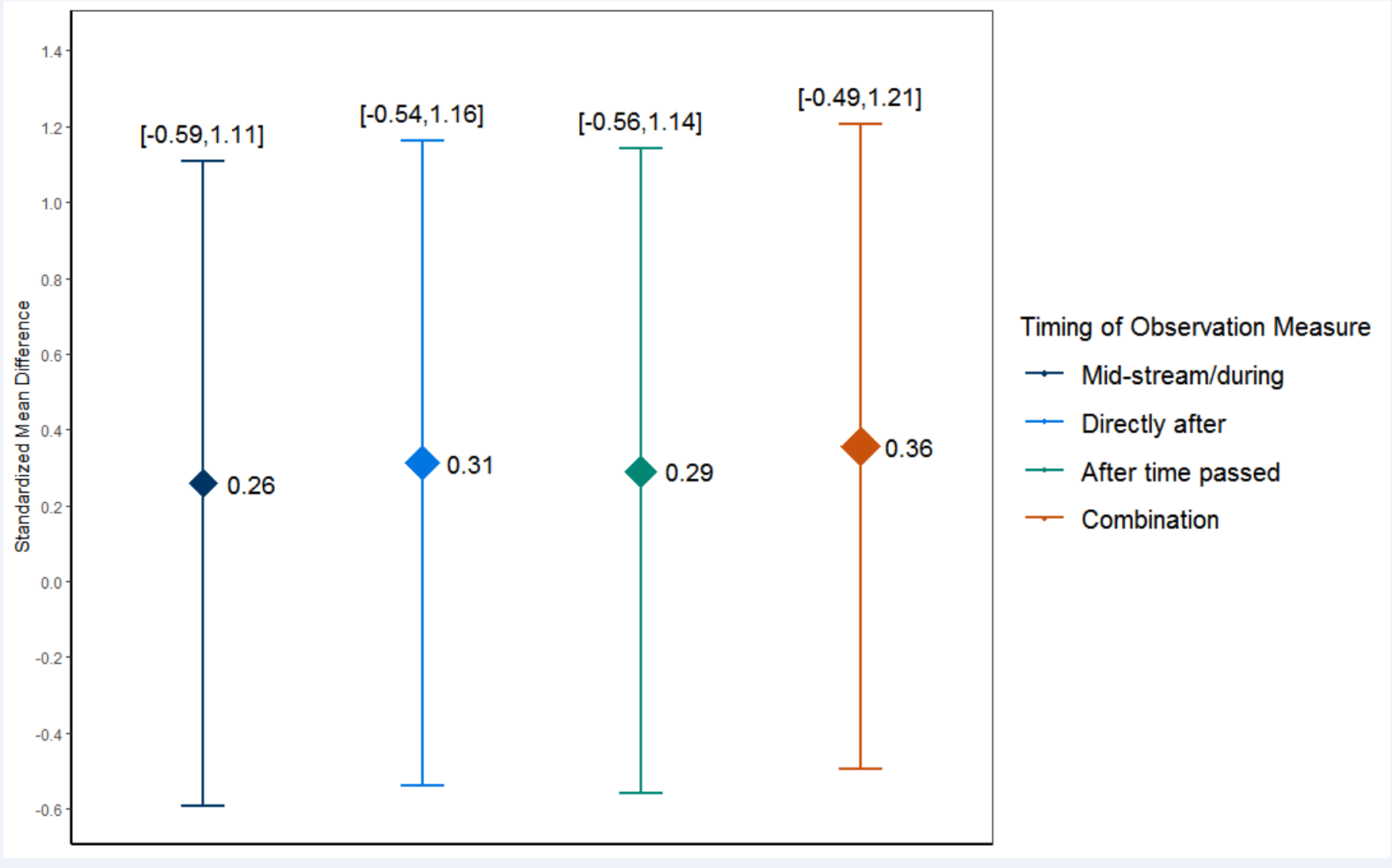
Intervention Hours



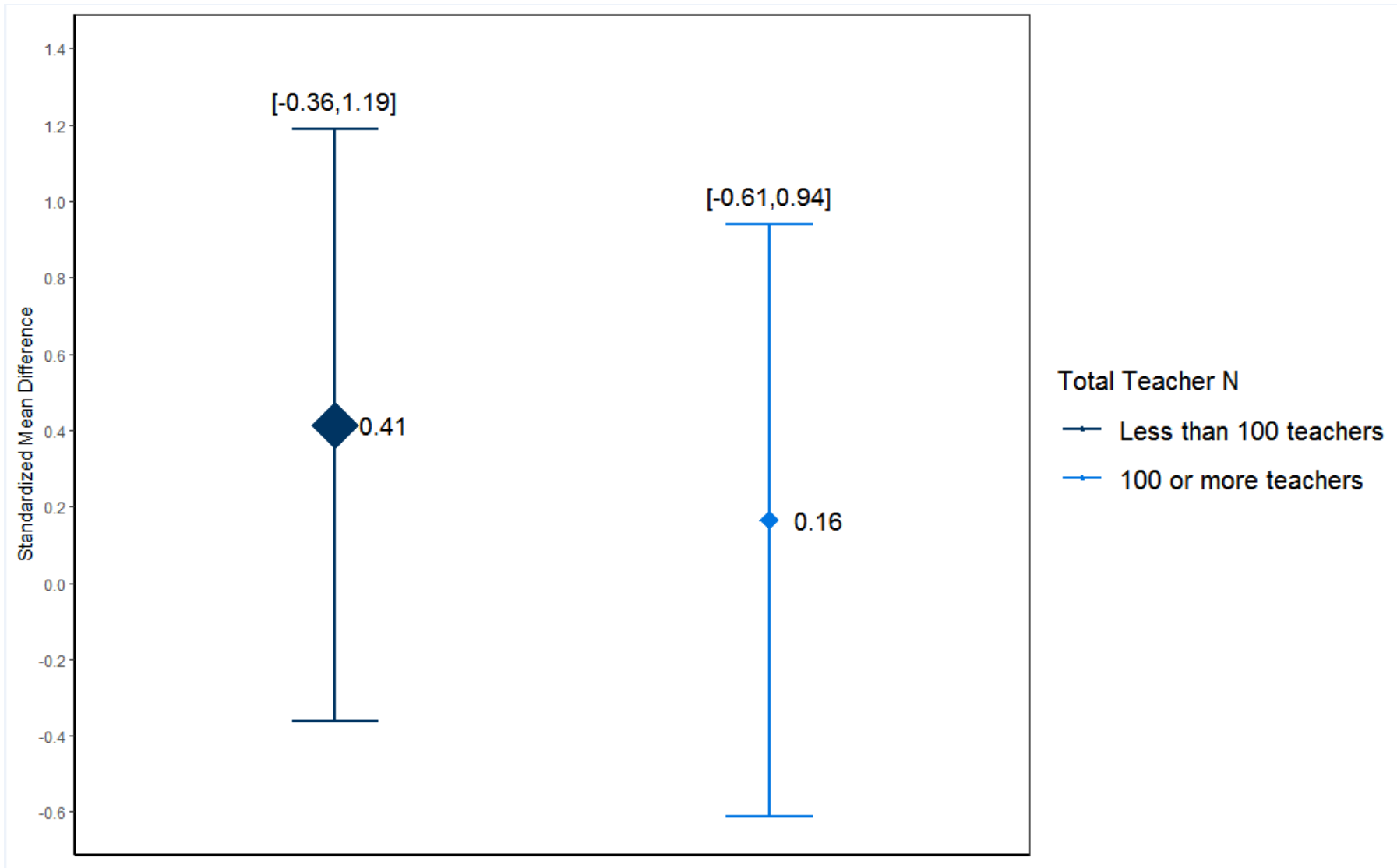
Intervention Length



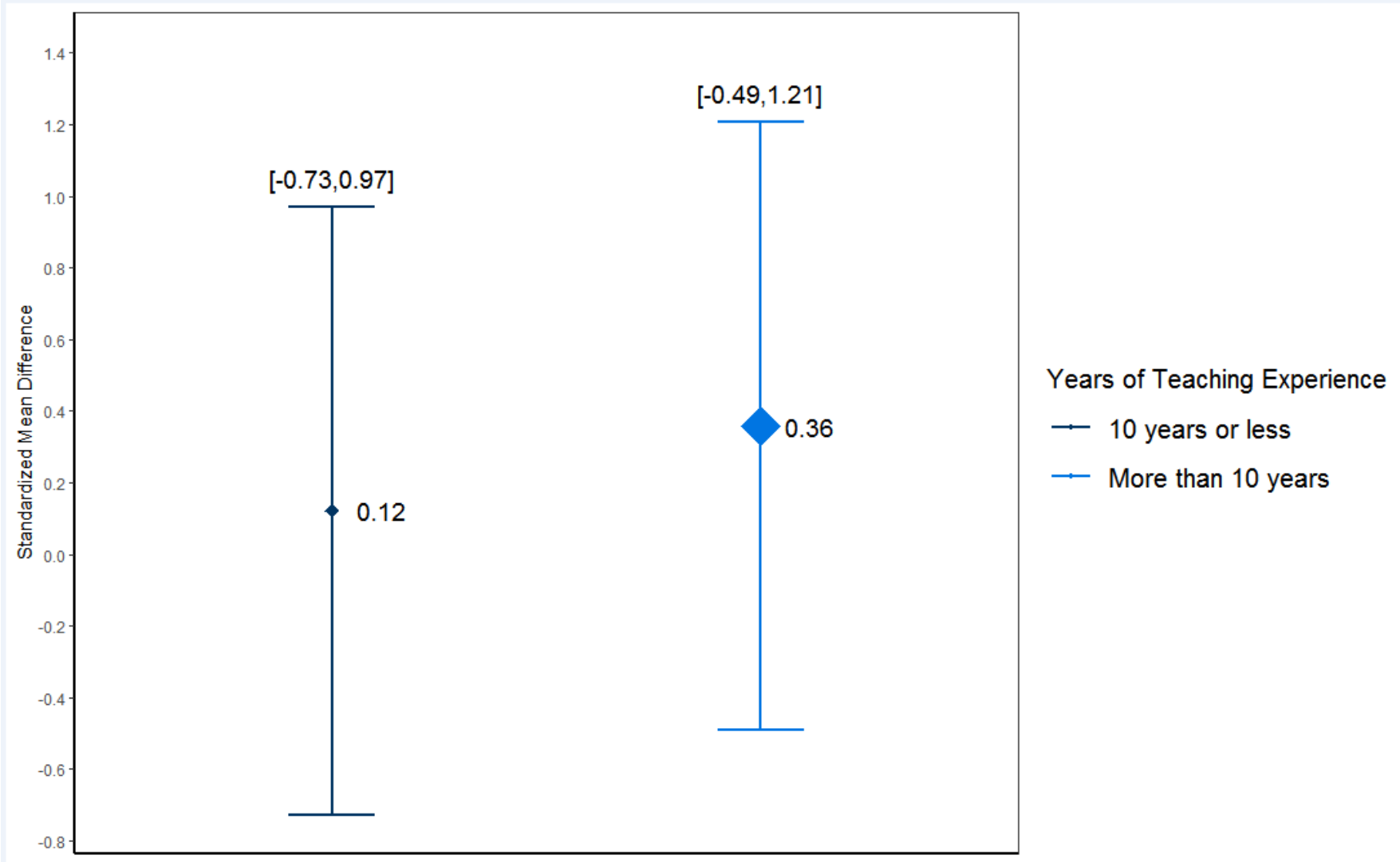
Is variation explained by the timing of the classroom observation?



Is variation explained by study characteristics?



Is variation explained by teacher years of experience?



Discussion

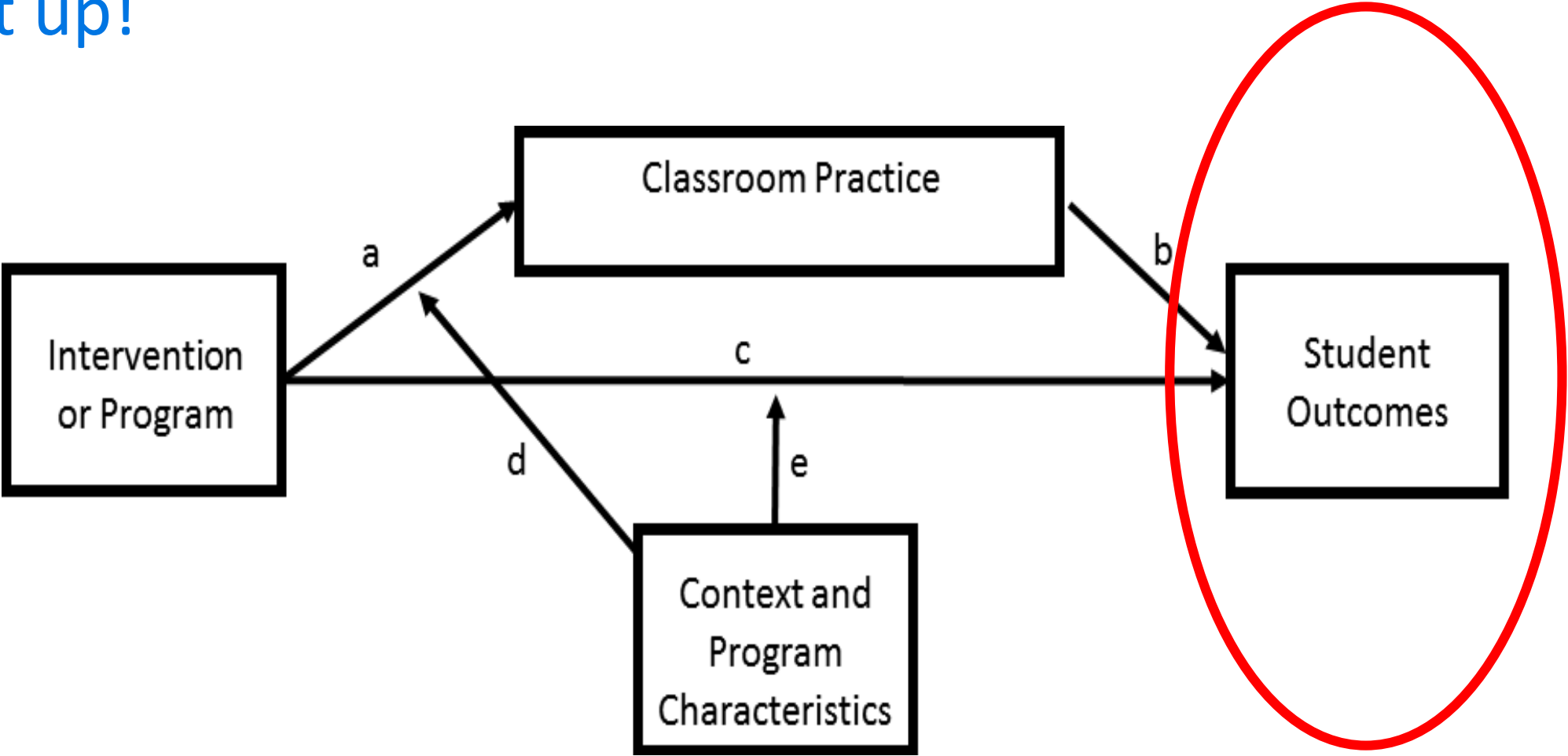
Discussion

- Classroom practice is responsive - and largely improved - when targeted through PD
 - Positive impacts across different aspects of practice
 - Practice may be improved across a teacher's career
- Some indication of “active ingredients” in PD?
 - Individualized training
 - Active learning
 - Using data

Discussion

- Classroom practice might be a good target for short-cycle professional learning approaches
 - Not useful to spend more hours or extend over a longer time span
 - Lends support for a smaller grain size when making instructional improvements
- There is much still to learn
 - More work is needed to understand how to scale (harder with larger scale, more general coaches)
 - Researchers need to document more carefully the details of their studies!

Next up!



Are specific practices or program features most able to improve student achievement?

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THANK YOU

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Summary Information – Study Features

	N (studies)	K (Effect sizes)
Total	40	321
Years of Teaching Experience		
Up to 10 years	14	91
More than 10 years	19	196
School Levels Included		
Grades K-5	29	246
Grades 6-8	17	182
Grades 9-12	5	27
Timing of Observational Measurement		
Mid-stream/during	10	91
Directly after	30	151
After time passed	2	14
Combination	12	75

Summary Information - Intervention Features

	N	k
Total	40	321
Intervention Features		
Individual Training	33	177
Regular coach	10	59
Structured protocol for coaching	15	118
Instructional materials	16	110
Teacher driven learning	6	26
Technology enhanced	9	57
Focus on using data to inform instruction	10	61
Active learning/practice in training	17	92
Intervention Length		
<=26 weeks	8	99
>26 <=52 weeks	17	124
> 52 weeks	9	67
Intervention Hours		
<=20 hours	9	144
>20 hours <=100 hours	14	112
>100 hours	6	23