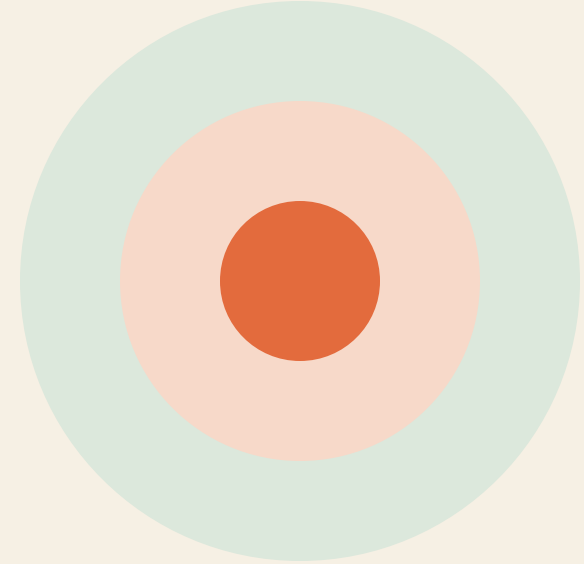


The impact of emotional and physical safety at school on student achievement

Evidence from Latvian PISA 2015 and 2022 data

Linda Mihno, Rita Kiseļova, Laima Mitenberga

Focus • bullying • perceived safety • school climate • achievement



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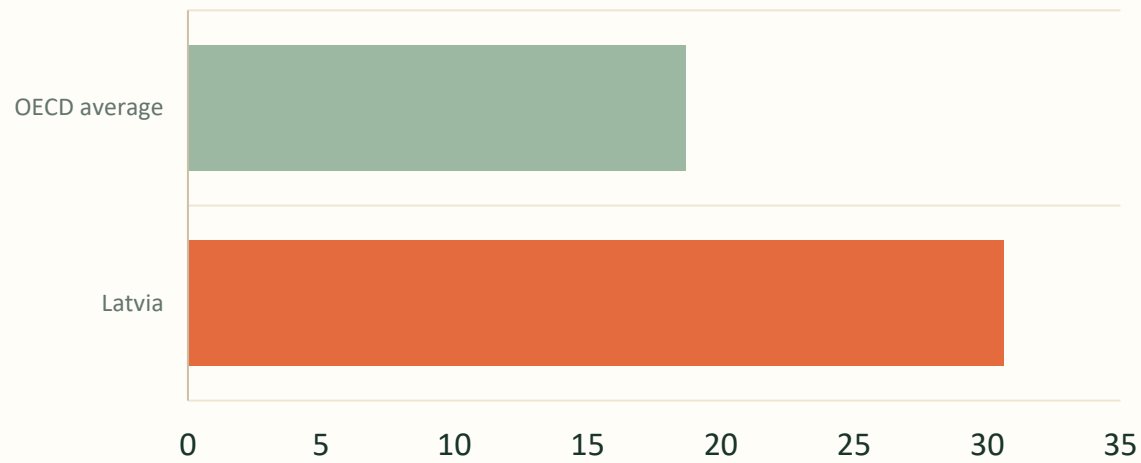


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Latvia's bullying context makes safety a learning issue

Students reporting bullying several times a month



2015 context

30.6% vs 18.7%

**47
points**

Lower average science score in high-bullying schools across OECD comparisons.

Safety shapes more than victim experience

- Concentration and readiness to learn
- Engagement, attendance and motivation
- Bystanders and the wider classroom climate

Safety is learning infrastructure

One aim, three questions

AIM

Analyse safety trends in Latvian schools and test how emotional and physical safety indicators are associated with student achievement.

01

What characterises school environments with high versus low bullying and perceived safety?

02

How are safety indicators associated with achievement across PISA cycles?

03

To what extent might school-level safety and antibullying contexts matter for performance?

The analytical distinction between school context and individual experience runs through the deck.

Bullying combines repetition, intent and power imbalance

REPEATED

Not a one-off incident

INTENTIONAL

Harm is purposeful

POWER IMBALANCE

Defending oneself is difficult

Four main forms

PHYSICAL

Hitting, pushing, damaging belongings

VERBAL

Insults, threats, repeated ridicule

RELATIONAL / SOCIAL

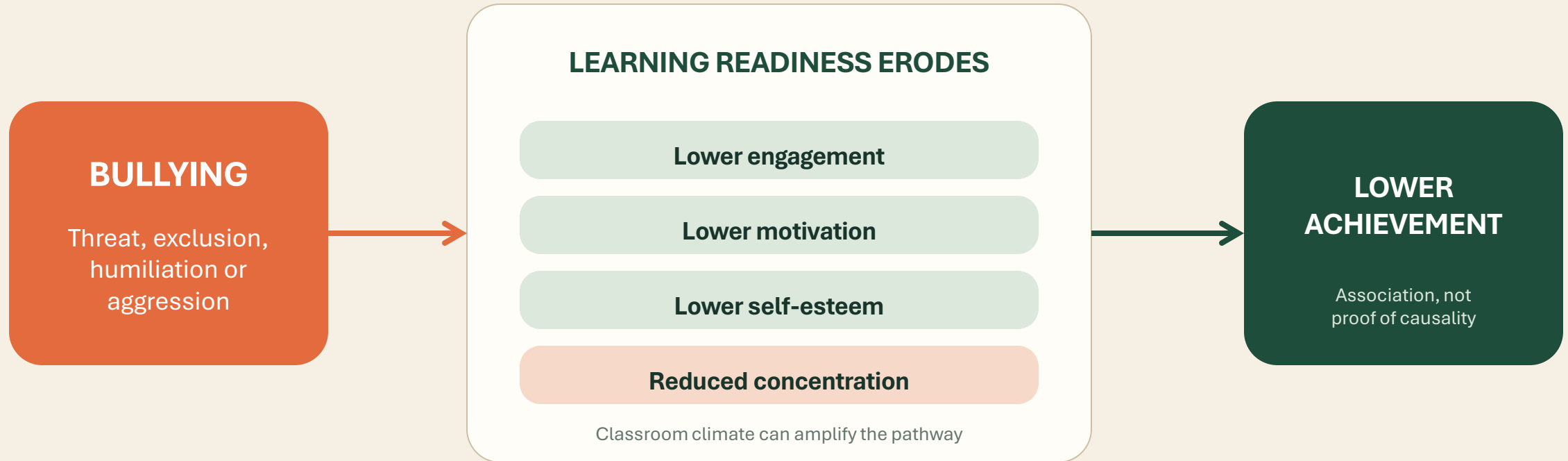
Exclusion, rumours, status harm

CYBERBULLYING

Digital harassment, sharing or targeting

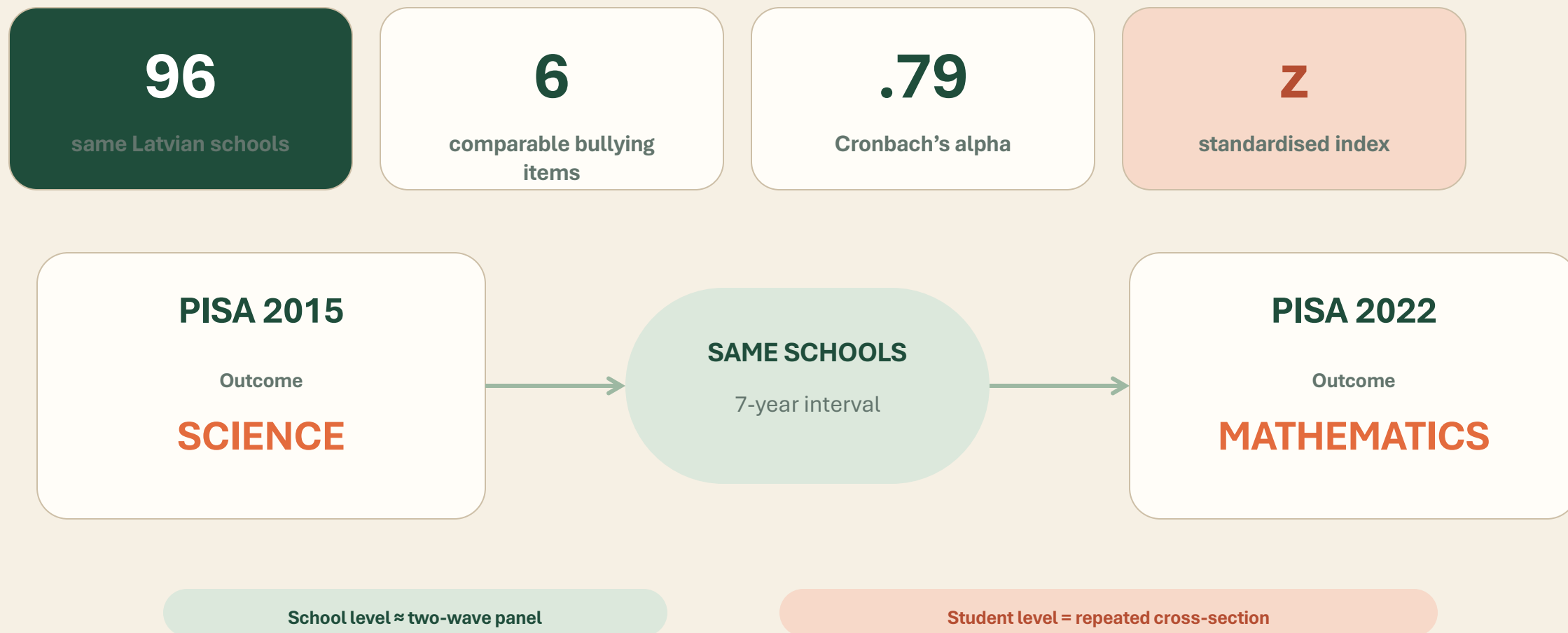
A multidimensional school-safety issue

Bullying can erode the conditions for learning



The pathway can affect victims, bystanders and the shared classroom environment.

A matched-school comparison across two PISA cycles



Multilevel modelling separates context from individual experience

OUTCOME

Student bullying-frequency index

SCHOOL LEVEL • BETWEEN

School mean climate and resources

STUDENT LEVEL • WITHIN

Student deviation from school mean

GROUP-MEAN CENTERING

student score – school mean

Isolates within-school variation from between-school differences.

Predictor set

Disciplinary climate

Sense of belonging

Parent / family support

Teacher support

Family ESCS

Fixed effects estimated simultaneously at both levels.

School climate factors explain about 90% of 2015 between-school bullying variance

≈ 90%

between-school variance
explained

τ_{00} null τ_{00} full
0.493 → 0.049

$$R^2_{L2} = (0.493 - 0.049) / 0.493 = .901$$

School-level predictors in the simultaneous model

Disciplinary climate -0.409 $p < .001$

Sense of belonging -0.337 $p = .020$

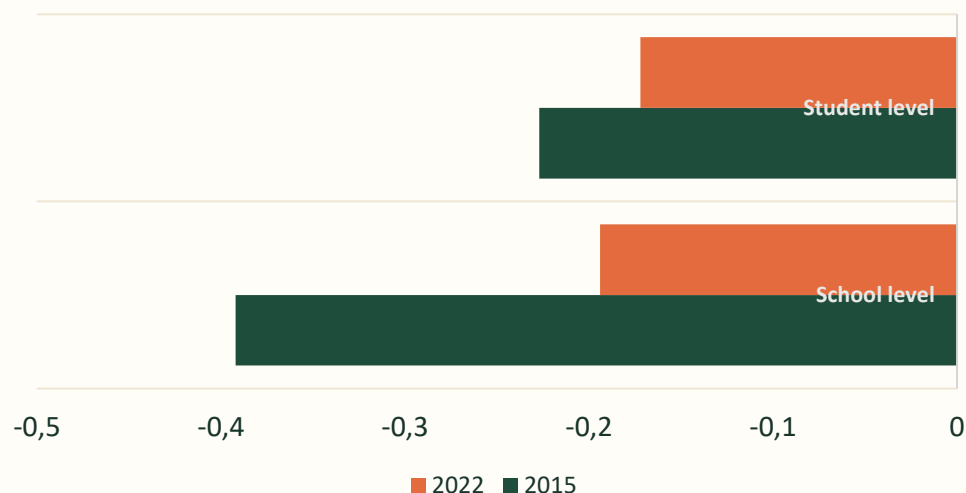
Parent emotional support -0.153 $p = .175$

Family ESCS -0.049 $p = .452$

All coefficients are negative; only discipline and belonging remain significant together.

From 2015 to 2022, protection becomes more multidimensional

Disciplinary climate remains strongest — but weakens



Coefficient B; all shown effects significant.

BELONGING

School mean: $-.286, p=.054 \rightarrow -.299, p=.028$

clearly significant in 2022

FAMILY SUPPORT

School mean: $-.141, p=.239 \rightarrow -.265, p=.029$

becomes significant

TEACHER SUPPORT

Student: $p=.702 \rightarrow p=.041$

individual perception now matters

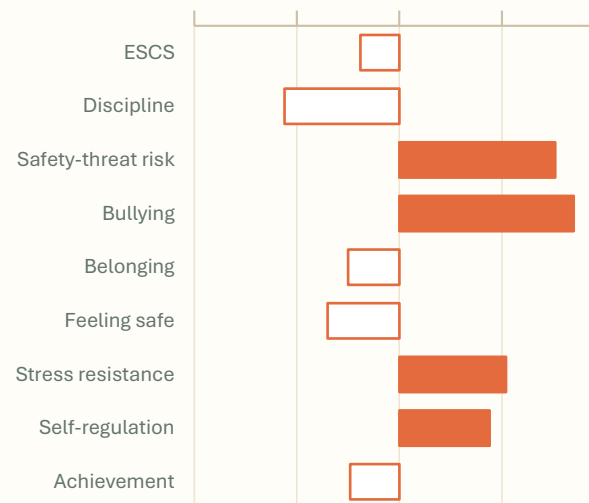
Marginal R^2 .121 $\rightarrow$.090 | Conditional R^2 .148 $\rightarrow$.123 | ICC .030/.026 $\rightarrow$.036/.033

Same schools; different student cohorts

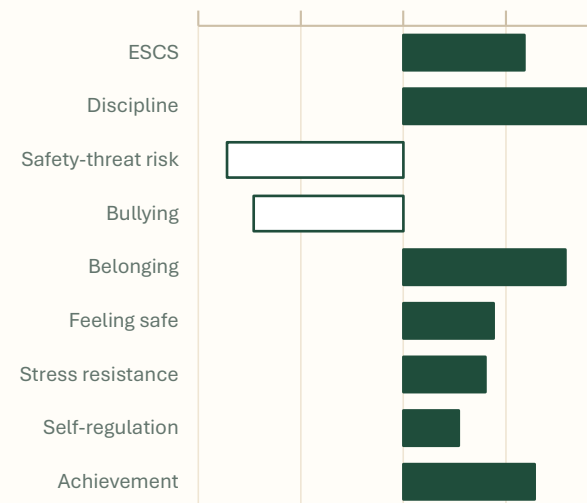
CLUSTER 1 **N=37**
Low safety-threat risk,
low functioning



CLUSTER 2 **N=32**
High safety-threat risk,
unsafe environment

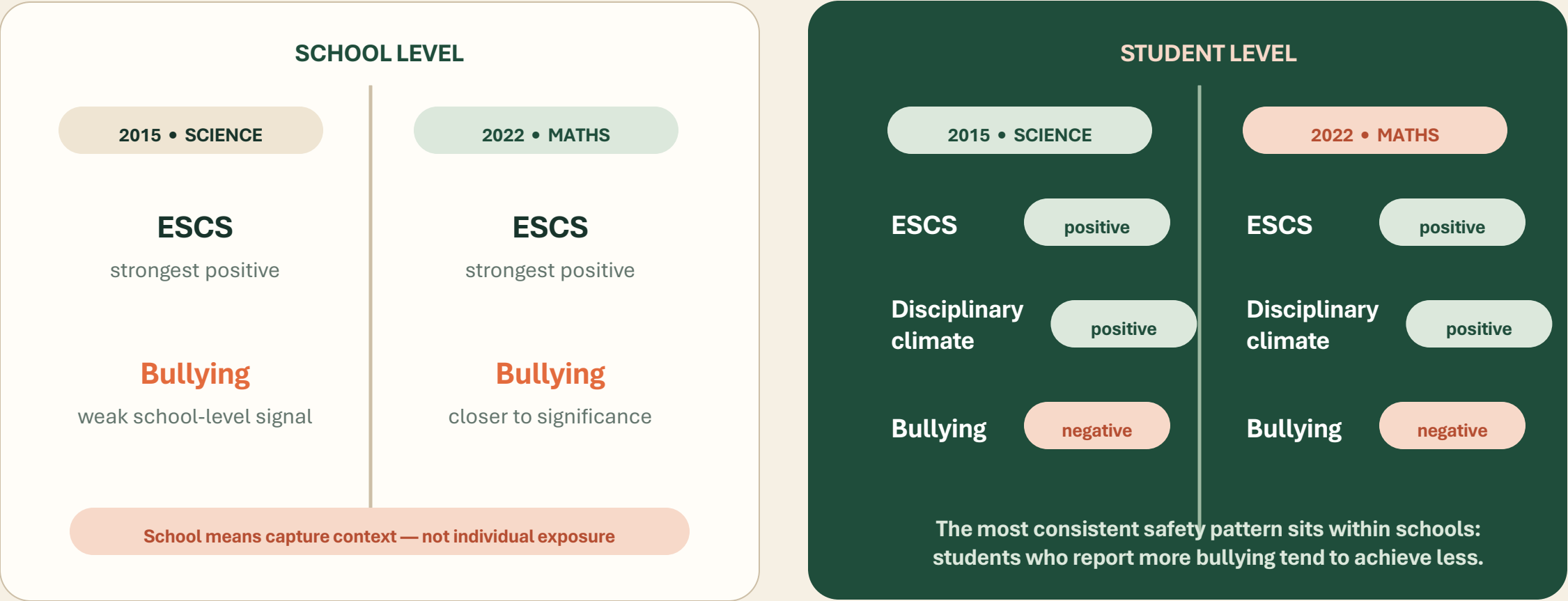


CLUSTER 3 N=27
Safe, high-achievement
environment



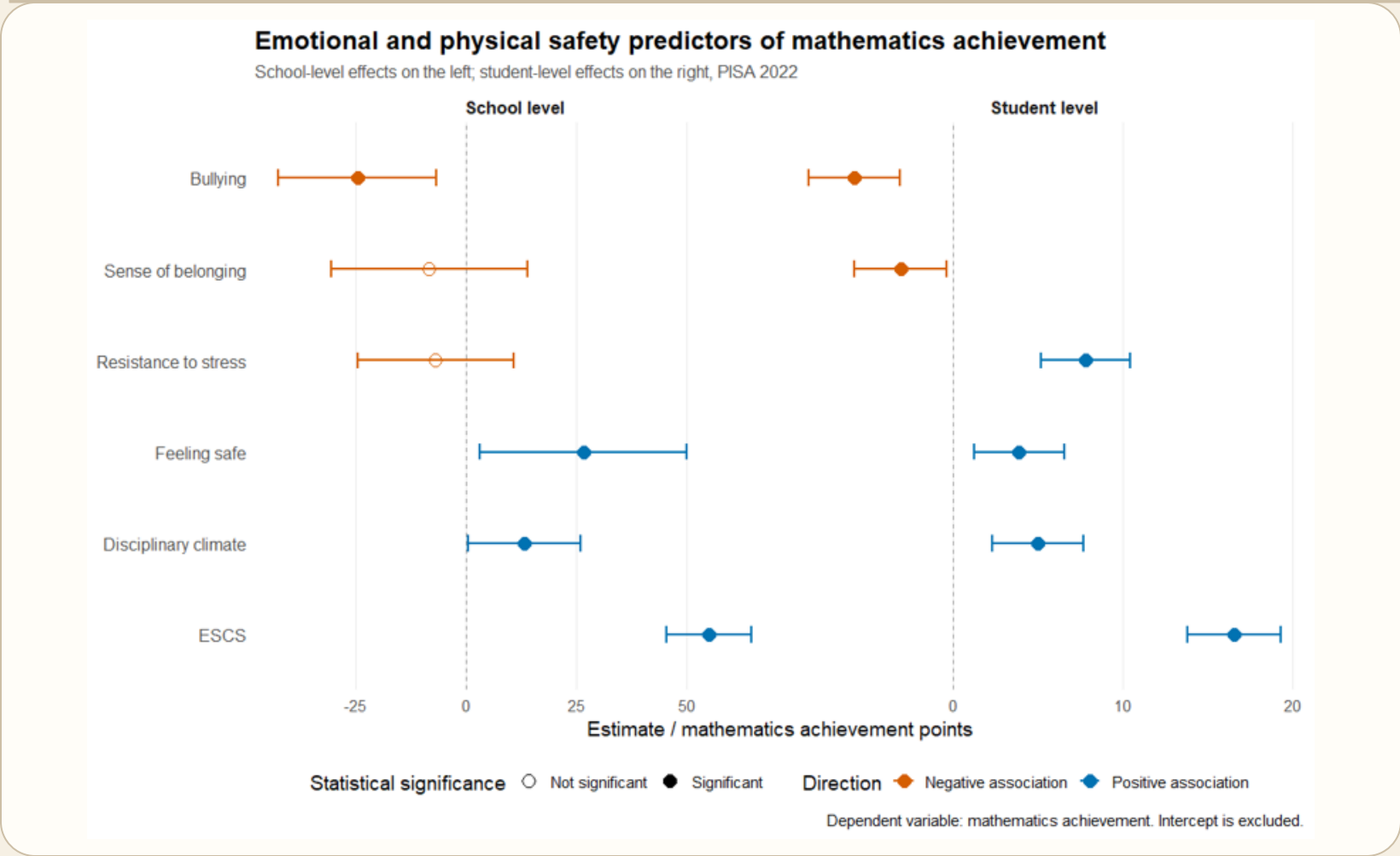
Key insight: low safety-threat risk is not the same as readiness to learn.

Achievement models show stable individual-level safety patterns



Do not interpret between- and within-school effects as the same mechanism

Safety adds explanatory value beyond bullying in 2022



WHAT THE EXTENDED MODEL ADDS

SCHOOL LEVEL

ESCS, bullying, feeling safe and disciplinary climate are significant.

STUDENT LEVEL

ESCS, discipline, bullying, feeling safe, belonging and stress resistance are significant.

BEYOND BULLYING

Feeling safe and resistance to stress add independent explanatory value.

Safety resources matter

Safety is part of the learning infrastructure

1 Bullying remains relevant

Latvian schools continue to face an emotional and physical safety challenge.

2 Discipline is consistent

Disciplinary climate is the strongest, most stable predictor of lower bullying.

3 Individual exposure matters

Student-level bullying is consistently associated with lower achievement.

4 ESCS remains dominant

Socio-economic context is the strongest positive achievement predictor.

5 Safety resources add value

Feeling safe and stress resistance explain additional 2022 variation.

6 Levels are not mechanisms

School-level context and student-level experience must be interpreted separately.

The policy unit is both the school climate and the student experience.

Safer learning requires climate-level and student-level action

IMPLICATIONS

- 1 Target both school climate and individual student experiences.
- 2 Strengthen disciplinary climate and belonging together.
- 3 Include emotional and physical safety in achievement policy.
- 4 Support psychological resources even where visible risk is low.

LIMITATIONS

Student-level design	Repeated cross-section, not a longitudinal student panel.
Different outcomes	Science in 2015; mathematics in 2022.
Measure boundary	Comparable index does not directly capture cyberbullying.
Inference	Associations do not establish causality.

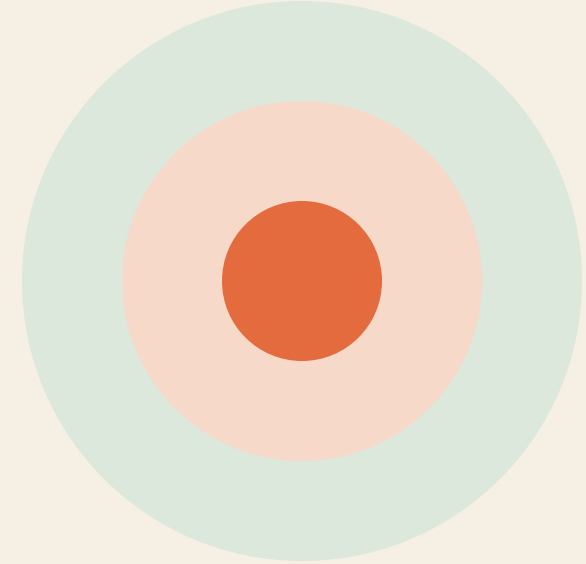
Best next step: test intervention and change models with longitudinal or quasi-experimental designs

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