

Are Social-Emotional Learning Competencies Stable Over Time? Implications for Practice, Policy, and Evaluation

By James Soland and Megan Kuhfeld

KEY FINDINGS

- Unlike the rank ordering of math and reading skills which are highly stable over time, the four SEL domains are sensitive to contextual factors.
- More variation in SEL scores is between students within schools rather than between schools. Subcontexts and subcultures within schools, like classrooms, peer groups, and teachers, may be important factors in SEL.

Research shows that social-emotional learning (SEL) competencies, such as growth mindset and self-management, are important for student success in school and beyond.^{liii} Because of this, districts and states are investing significant funds to provide academic supports, curriculum, and interventions related to SEL for their students. Some, like California Office to Reform Education (CORE), a consortium of districts representing over one million students, include SEL competencies in their accountability systems.

Studies show that SEL can be improved by short-term, targeted interventions and longer-term strategies to improve school contextual factors. However, little is known about how much of the variance in SEL constructs is stable over time, or trait-like, versus specific to a given time or context, or state-like. Given the increasing prominence of SEL in education practice and policy, understanding the state-trait balance of these constructs has important implications both for how to foster SEL and for how to evaluate the effect of teachers and schools on those competencies.

Using annual SEL survey data and math and reading achievement data from MAP® Growth™ assessments collected over three years from a large, urban school district participating in CORE (a total of 33,534 students in 54 schools in grades 3 to 11), using latent state-trait models, this study examined the stability of academic achievement relative to four SEL domains: growth mindset, self-efficacy, social awareness, and self-management.

Trait variation: includes aspects of a construct that are stable over time for an individual, including personal or stable environmental characteristics.

State variation: includes aspects of a construct that vary more over time or contexts for an individual.

Growth mindset Measures how much students perceive their intelligence as being malleable versus fixed. Students with a growth mindset believe they can change their intelligence over time.

Self-efficacy Measures a student’s confidence in their ability to attain a certain educational goal or outcome, such as to do well on a test or earn a good grade.

Self-management The manner in which a student maintains control over their thoughts, behaviors, and emotions. Measures aspects such as the ability to stay focused and come to class prepared.

Social awareness Broad term, defined in this district as the ability to understand social norms for behavior.

Brief definitions of four SEL constructs measured by this CORE district and evaluated in this study. See paper for full definitions and references.

These four SEL constructs were implemented by the CORE district and included in this study because they were identified as meaningful, measurable, and malleable: there was evidence^{iiiii,iv} that intervention could change the mean score for that SEL over time, and that they were associated with academic motivation and achievement.

This research addressed three questions:

- How much of the variance in each of these SEL constructs is explained by a stable trait-like factor, and how do those proportions differ across constructs?
- How does the relative stability of the SEL constructs compare with that of math and reading achievement?
- To what extent does school environment explain differences in SEL state and trait variance?

Trait-like factors have more influence on variance in SEL scores than on variance in math or reading scores

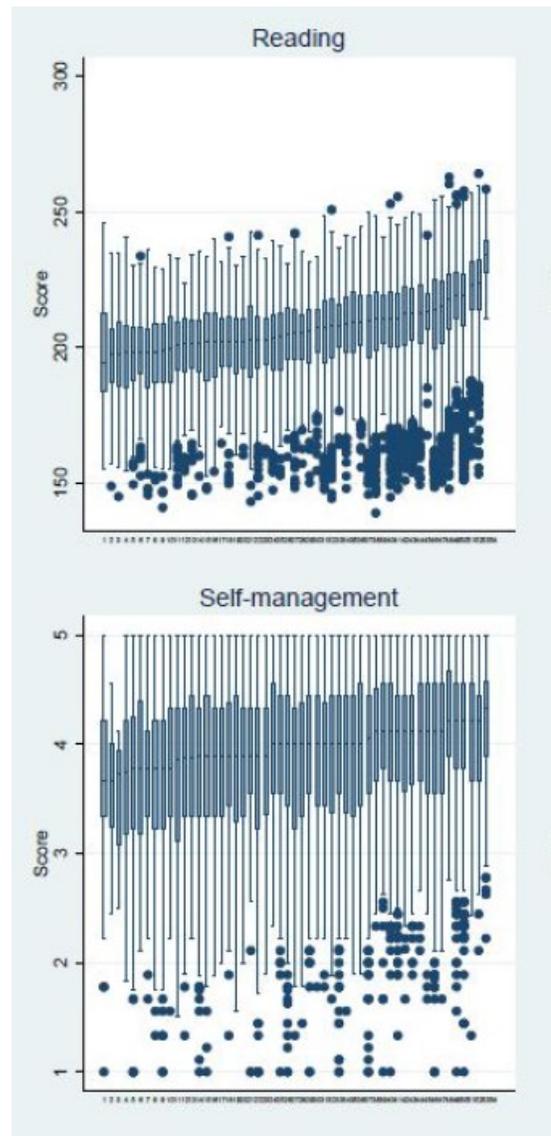
The results showed that more of the variance in SEL scores was attributable to situational and environmental factors than was the case for variation in mathematics and reading scores. Correlations of the scores across years provided one piece of evidence for this: if the SEL constructs were entirely trait-like, they would be expected to show the same correlation values across years. Instead, correlation values for the four SEL constructs for spring of the first year to the second year ranged from .41 to .51, while the correlation across two years ranged from .36 to .40. By contrast, math and reading scores were more stable, and showed correlation values of .84 and .78 from one year to the next, and of .82 and .74 from the first year to the third.

The models showed that all four SEL constructs exhibited a balance of state and trait components over time. At the first time point, the proportion of state variance attributable to the stable trait factor ranged from 36% for social awareness to 54% for growth mindset. Models varied somewhat for the constructs across the second and third time points, but in each case, at each time, there was a substantial state component.

For the latter timepoints, the models also examined how much of the variation in the SEL constructs was due to the influence of the prior score for that construct. The results demonstrated this influence was low for each SEL construct: most of the variance at a given point in time was idiosyncratic and unrelated to shared situational characteristics across the two time points. This may be due to shifting personal characteristics (such as mood or motivation) or due to aspects of context that do not carry over from one time point to the next (such as changing teachers or classroom peers between school years).

In comparison, a higher proportion of the variance in math and reading test scores, about 70 to 80 percent,

was attributable to stable trait factors. The model also revealed that very little of the variance in math and reading scores was due to the prior occasion. This result showed that much more of the shared variation in math and reading scores across time was due to student characteristics (traits), rather than situational circumstances from an earlier timepoint that were still influencing scores at the next.



Distribution of reading and self-management scores within and across schools. Each vertical bar displays the interquartile range (IQR) for a school, and schools are rank ordered by median reading or SEL score. Other SEL constructs showed similar patterns (see paper).

More variation in SEL scores is between students within schools rather than between schools

While enough of the variation in reading achievement was across schools to statistically distinguish schools from each other, this was not the case for any of the SEL constructs. This result is not necessarily surprising: it is hard to imagine a school in which every student has high self-efficacy in mathematics, for example. Even in a high-achieving school, some students likely feel less competent in certain subjects than their peers, despite being well above average nationwide. The results suggest that the factors that most strongly influence SEL relate to subcontexts and subcultures within schools, such as classrooms or peer groups.

- i Almlund, M., Duckworth, A. L., Heckman, J., & Kautz, T. (2011). Personality psychology and economics. In *Handbook of the Economics of Education* (Vol. 4, pp. 1-181). Elsevier.
- ii Cunha, F., & Heckman, J. J. (2008). Formulating, identifying and estimating the technology of cognitive and noncognitive skill formation. *Journal of Human Resources*, 43(4), 738-782.
- iii Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). *Teaching adolescents to become learners: The role of noncognitive factors in shaping school performance—A critical literature review*. Chicago, IL: Chicago Consortium on School Research, University of Chicago.
- iv Dweck, C., Walton, G. M., & Cohen, G. L. (2011). *Academic tenacity: Mindset and skills that promote long-term learning*. Seattle, WA: Bill & Melinda Gates Foundation.

RECOMMENDATIONS

Context appears important to developing SEL

These findings have implications both for how to approach SEL-based interventions and how we evaluate them. Our results indicate that a student's context likely matters a great deal for the development of SEL. At the same time, we find that little of the variance in SEL scores is at the school level. Thus, contexts within schools like classrooms and peer groups are likely important.

More research is needed to understand what elements of educational contexts drive SEL scores

This research shows that situational and environmental factors matter for SEL, but teachers and schools may benefit from better understanding which factors contribute to students' SEL needs across time. Other research has suggested that teachers and student-teacher interactions can have an important effect on changes in student SEL scores. Additional research is needed to understand what elements of educational contexts drive SEL scores, and which contextual levels (teacher, parent, peer) are most important.

This brief describes research documented in:

Soland, J & Kuhfeld, M. (2019). Examining the state-trait composition of social-emotional learning constructs: implications for practice, policy, and evaluation. (The Collaborative for Student Growth at NWEA Working Paper).

Suggested citation:

Soland, J & Kuhfeld, M. (2019). Are social-emotional learning competencies stable over time? Implications for practice, policy, and evaluation. (The Collaborative for Student Growth at NWEA Research Brief).

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OCT19 | KAP3905