Identifying Students Who Are Off-Track Academically In Ninth Grade: The Role Of Social-Emotional Learning Trajectories

By James Soland and Megan Kuhfeld

KEY FINDINGS

- Students' growth mindset, self-efficacy, and self-management are associated with being off track to graduate in ninth grade.

- Students generally showed increases on a measure of growth mindset but decreases in academic self-efficacy and self-management during middle school. Growth in self-efficacy and self-management are highly correlated.

- Self-management appears to be the most consistent predictor of a student being off-track in ninth grade. Both a student's initial score and his or her growth in self-management are correlated.

- These results suggest educators may benefit from paying attention to both students' SEL status and growth when trying to identify and support students who may be at risk to not graduate from high school.

A student's transition from middle school to high school is an important and sometimes challenging one. Students who successfully manage this transition have a high probability of graduating four years later, but those who do not earn sufficient credits in ninth grade have a substantially higher risk of dropping out of high school[1]. Research has shown that a successful transition depends not only on how prepared students are academically, but also on whether they have the social-emotional learning (SEL) skills to succeed in a more independent high school environment.

Often, students who drop out are off track in middle school, but those issues are exacerbated considerably with the move to high school: grades and test scores often decline, and other concerning signs of academic disengagement, like absenteeism and suspensions, also increase in ninth grade[ii]. Fortunately, research suggests that identifying students who are likely to be off-track in ninth grade early, while they are still in middle school, can give educators a chance to get those students back on track[iii].

A critical question, then, is how to best identify students who are at risk of dropping out so they can get the support they need to get back on track. Because SEL competencies are connected to important long-term educational outcomes like high school graduation, many schools are now measuring students' SEL skills. Yet, little is known about whether students' SEL skills are stable or change over time[iv], and if they do change, whether SEL skill levels at the start of middle school or changes across time are a better indicator of whether the student will be off track academically in ninth grade.

This study begins to fill that gap in our understanding using data from a cohort of students in a district that is part of the California Office to Reform Education

(CORE), a consortium of districts that includes SEL competencies in their accountability systems.

Using SEL survey data from these students from sixth to eighth grade (about 2,300 to 3,300 students, depending on how many completed the SEL survey each year), we examined how students' skills develop over the course of middle school in three SEL domains: growth mindset, self-efficacy, and self-management, and how these scores and changes in them may be useful in identifying students likely to be off track academically in ninth grade.

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.

The study focused on three early indicators in ninth grade that students are academically disengaged and off track to finish high school: low GPA (below a C), being suspended, and being chronically absent (defined by this state as absent 10 percent or more of school days). Research demonstrates that students who exhibit these behaviors when they start high school are more likely to drop out.[v]

This study addressed three questions:

1. How do students' skills in growth mindset, self-efficacy, and self-management typically change during middle school? How similar are growth patterns across these three SEL constructs?

2. For each, is a student's SEL skill level at the start of middle school or the change in the skill over time a better indicator of whether the student will be off track academically in ninth grade?

3. Does combining all three constructs in a single model change which constructs predict whether a student is off track in ninth grade?

Since other factors, like a student's gender, socioeconomic status, whether they are an English language learner, and their academic achievement may also be associated with off-track indicators, the study also examined and controlled for these background variables. Doing so was important to understand the role of SEL and to provide comparison and context, since these background variables were often strongly associated with the off-track indicators. For example, male students were 1.7 times as likely to be suspended and 3.5 times as likely to have a GPA of below a C as female students. The odds of being chronically absent or ever suspended were moderately lower for students with higher math achievement in eighth grade.

Student growth mindset increased while self-efficacy and self-management declined through middle school.

Measures of students' academic self-efficacy and self-management generally declined across middle school, with the average student dropping 0.2 standard deviations in self-efficacy and 0.15 standard deviations in self-management. Growth mindset, on the other hand, increased by about 0.25 standard deviations from the start of sixth grade to the end of eighth grade. Initial SEL status and growth were strongly associated across constructs, especially for self-management and self-efficacy, with growth correlated over .95 for self-management and self-efficacy, and .46 for growth mindset and self-efficacy. This suggests that students' development in these SEL constructs during middle school is highly related.
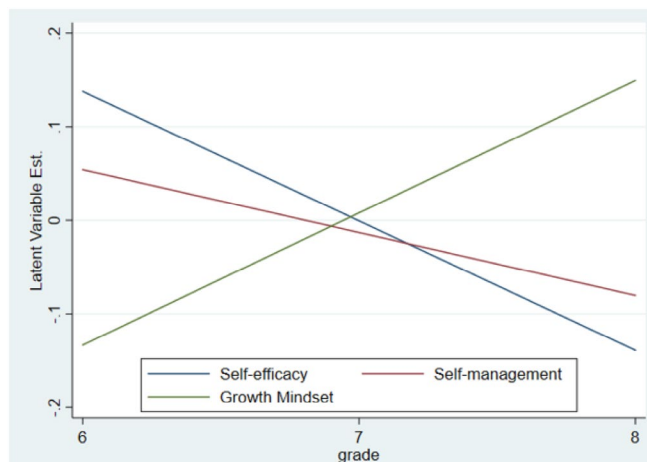
Trends in the SEL IRT scores across middle school.

Both students' self-efficacy and self-management scores at the start of middle school and SEL growth predict risk of being off track in ninth grade.

The results showed that students' scores in self-efficacy and self-management were significantly associated with indicators of whether they were off track academically in ninth grade, though results differ for different off-track indicators and SEL constructs.

Neither a student's initial score nor growth in any of these SEL constructs was significantly associated with chronic absenteeism in ninth grade. Sixth grade self-efficacy score was a significant predictor of having a GPA below a C, but it was not significantly associated with chronic absenteeism or suspension in ninth grade.

Students' self-management scores in sixth grade and growth across middle school were associated with decreased odds of having a low GPA and getting suspended, even after controlling for academic achievement and background characteristics. This result holds for models that treat each SEL construct separately, as well as those that include all three constructs. Thus, whether discussing status or growth, self-management appears to be the most consistent predictor of being on-track in ninth grade.

RECOMMENDATIONS

For SEL, multiple measures matter: educators should consider the promise of test metadata as an additional source of information about students' SEL.

Because students' social-emotional competencies are important for their success in school and beyond[viii,ix], there is substantial and growing interest in education policy and practice in measuring, understanding, and supporting these skills. However, most studies of SEL rely on student surveys and so can be distorted by self-report bias and other issues.

This study shows that response process metadata may be a promising new source of information on students' SEL, though additional research is needed. For example, student response times on difficult items may be useful as a rough proxy for self-efficacy in the absence of survey data. Duration metadata could also help validate individual scores from SEL surveys: if a student reports high academic self-efficacy but spends relatively little time on very difficult items, then these contradictory behaviors may raise concerns about self-report bias on the survey or other forms of bias. Finally, research shows that educators may better support the development of SEL competencies if they have multiple measures of related constructs[x]. Given that, additional data, like the metadata in this study, may help generate conversation between teachers and students about SEL, which can be a cornerstone for developing those competencies[xi]. And, because these metadata are captured when a computer-based test is administered, time and cost required is minimal—an important consideration given the many demands on student and teacher time and educational resources.

But, educators should also be mindful of the limitations of test metadata as a measure of students' SEL.

While response process metadata hold promise, they are not designed to provide information on SEL, and many other factors play into student response processes. For example, while response times show a correlation with self-efficacy, they can also be influenced by contextual factors like the time of day the assessment is administered, or by factors unrelated to context. For example, a student may come up with a novel, efficient approach to solve an item more quickly, which would actually suggest high motivation and self-efficacy.

Additional problems may arise as more students and educators become aware of assessment metadata use: if students know that test metadata are being used to supplement SEL data, for instance, then they may behave in unforeseen ways that introduce even more bias than typically seen from the self-report bias in surveys, especially if stakes are perceived as higher. Given these complications, response process metadata might best serve as rough proxies for SEL constructs that can supplement more traditional data and possibly supply clues about whether self-report and other biases are impacting survey scores.

i.   Neild, R. C. (2009). Falling off track during the transition to high school: What we know and what can be done. *The Future of Children*, 19(1), 53–76.

ii. Allensworth, E. (2013). The use of ninth-grade early warning indicators to improve Chicago schools. *Journal of Education for Students Placed at Risk (JESPAR)*, 18(1), 68–83.

iii. Balfanz, R., Herzog, L., & Mac Iver, D. J. (2007). Preventing student disengagement and keeping students on the graduation path in urban middle-grades schools: Early identification and effective interventions. *Educational Psychologist*, 42(4), 223–235.

iv. Soland, J., Kuhfeld, M, Wolk, E, and Bi, S. (2019). Examining the State-Trait Composition of Social-Emotional Learning Constructs: Implications for Practice, Policy, and Evaluation. *Journal of Research on Educational Effectiveness*. https://doi.org/10.1080/19345747.2019.1615158

v.   Allensworth, E. (2013). The use of ninth-grade early warning indicators to improve Chicago schools. *Journal of Education for Students Placed at Risk (JESPAR)*, 18(1), 68–83.

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