

# How Do Social and Emotional Skills and School Climate Relate to College Readiness in STEM?

Cristina Anguiano-Carrasco, Jill McVey, and Jeremy Burrus

Social and emotional (SE) skills are related to many positive outcomes, including academic performance, degree attainment, and life satisfaction (Poropat, 2009; Steel, Schmidt, & Shultz, 2008), and are often taught through social and emotional learning (SEL) programs. Furthermore, a positive school climate is important for students' social and emotional wellness and ability to learn. For example, students with positive relationships with their teachers and who feel safe at school tend to show higher academic performance (Korpershoek, Carrinus, Fokkens-Bruinsma, & de Boer, 2020). The purpose of the current study is to examine the relationship between SE skills and students' perceptions of school climate with college readiness in science, technology, engineering, and mathematics (STEM). STEM readiness is measured by the ACT<sup>®</sup> math and science tests and the ACT College Readiness Benchmark for STEM.

Mosaic<sup>™</sup> by ACT<sup>®</sup> Social Emotional Learning assessment data were collected from 6,747 students (53% female and 47% male; 67% White, 12% Hispanic, 6% Black, and 3% Asian; 74% 11th graders and 23% 12th graders when they took the ACT test) and matched to their ACT scores. Their SEL assessment data were captured during the school years 2018–2019 and 2019–2020, while the ACT tests occurred from 2018 to 2021. The assessment measures five social and emotional skills and two school climate scales.

## Social and Emotional Skills

- **Sustaining Effort:** diligence, effort, organization, self-control, and compliance with rules
- **Getting Along with Others:** positive interactions, cooperation with others, kindness, friendliness, and tactfulness
- **Maintaining Composure:** relative calmness, serenity, and the ability to manage emotions effectively
- **Keeping an Open Mind:** open-mindedness and curiosity about a variety of ideas, beliefs, people, and experiences
- **Social Connection:** a preference for social interaction, assertiveness in social situations, and optimism

## School Climate Scales

- **Relationships with School Personnel:** the extent to which students relate to school personnel as part of their connection to school
- **School Safety:** students' perception of the school qualities related to security at school



Students in the lowest quartile on a given skill or scale were placed in the **low** category, students in the top quartile were placed in the **high** category, and the rest of the students were placed in the **medium** category.

Students who meet or exceed the ACT College Readiness Benchmarks have a 50% chance of obtaining a B or higher in corresponding credit-bearing first-year college courses and a 75–80% chance of earning a C or higher in such courses (Allen & Radunzel, 2017). In fall 2015, ACT introduced a STEM score for the ACT test that provides students and educators with more insight into students’ readiness for first-year college course work in STEM disciplines and represents students’ overall performance in these subjects (ACT, 2022, section 5.2.3). The ACT STEM Benchmark indicates readiness for the first-year math and science courses most commonly taken by students in STEM majors (calculus, chemistry, biology, physics, and engineering).

For every SE skill, a larger percentage of students placed in the high category met or exceeded the ACT STEM Benchmark, and the same result is true for School Safety but not for Relationships with School Personnel. These results are shown in Figure 1.

**Figure 1.** Percentage of Students Who Met or Exceeded the ACT STEM Benchmark

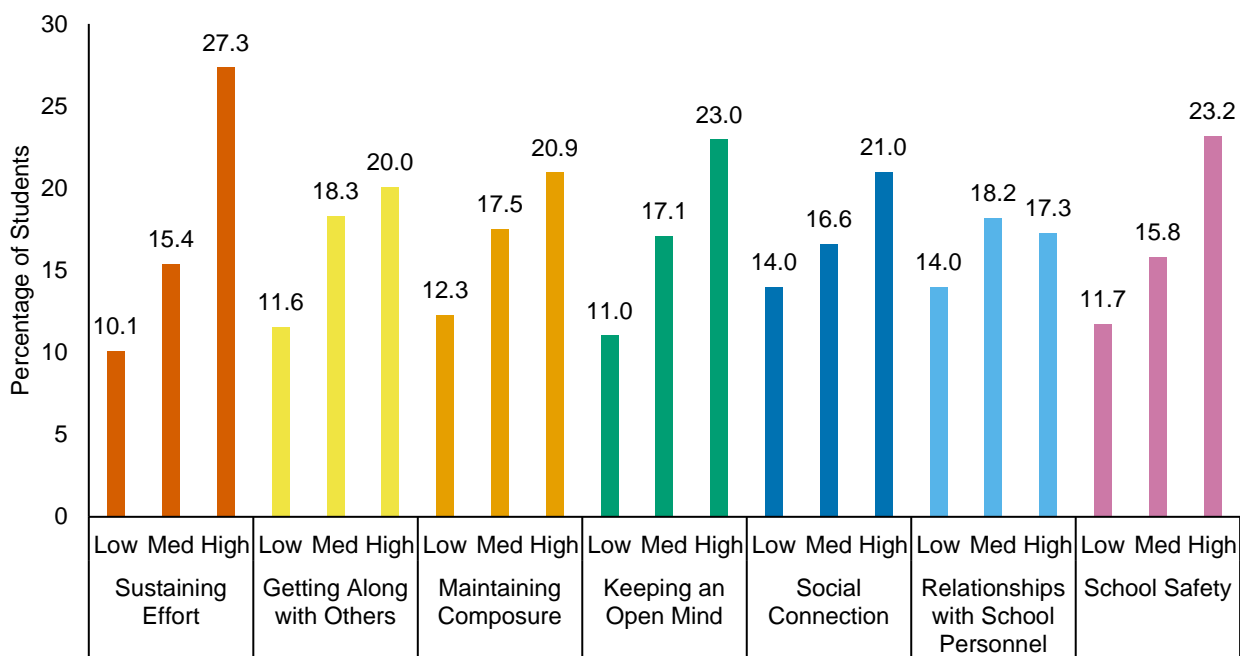


Figure 1 shows that fewer students who were placed in the low category for any of the SE skills or school climate scales met or exceeded the ACT STEM Benchmark and that the percentage increased substantially as their SE skills and school climate scale scores increased. The only exception to the trend is in the school climate scale Relationships with School Personnel where a notable increase is found between students classified as low and medium, but there is a very small decrease in the percentage of students who met or exceeded the Benchmark when

---

students classified as medium and high were compared. Further research is needed to better understand the relationship between this school climate scale and the ACT STEM Benchmark.

Although this study was descriptive in nature, these results are consistent with previous research showing that SEL programs lead to significant gain in academic achievement (e.g., Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Mahoney, Durlak, & Weissberg, 2018) and that students with positive relationships with their teachers and who feel safe at school tend to show higher academic performance (Korpershoek et al., 2020).

## References

- ACT. (2022). *The ACT® technical manual*. Iowa City, IA: ACT.
- Allen, J. & Radunzel, J. (2017). What are the ACT® College Readiness Benchmarks? Iowa City, IA: ACT.
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development* 82(1), 405–432.
- Korpershoek, H., Canrinus, E. T., Fokkens-Bruinsma, M., & de Boer, H. (2020). The relationships between school belonging and students' motivational, social-emotional, behavioural, and academic outcomes in secondary education: a meta-analytic review. *Research Papers in Education*, 35(6), 641–680.
- Mahoney, J. L., Durlak, J. A., & Weissberg, R. P. (2018). An update on social and emotional learning outcome research. *Phi Delta Kappan*, 100(4):18–23.
- Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin*, 135(2), 322–338.
- Steel, P., Schmidt, J., & Shultz, J. (2008). Refining the relationship between personality and subjective well-being. *Psychological Bulletin*, 134(1), 138–161.



## ABOUT ACT

ACT is a mission-driven, nonprofit organization dedicated to helping people achieve education and workplace success. Headquartered in Iowa City, Iowa, ACT is trusted as a national leader in college and career readiness, providing high-quality assessments grounded in over 60 years of research.

ACT offers a uniquely integrated set of solutions designed to provide personalized insights that help individuals succeed from elementary school through career. Visit us online at [www.act.org](http://www.act.org).