

## ACT Research and Policy

Research Reports  
Educator Reports  
Policy Reports  
Issue/Information Briefs

### Issue Brief

# Student- and Teacher-Reported Behavioral Measures: Do They Agree?

April 2013

- Middle school academic behaviors account for about 30% of the prediction of early high school GPA (ACT, 2011).
- Measuring behaviors can help schools identify and intervene with students at risk of academic failure or dropout.
- ACT Engage® Grades 6–9 assessment measures student behaviors from the student's perspective (ACT, 2012b).
- ACT Engage® Teacher Edition measures student behaviors from the teacher's perspective (ACT, 2012c).

Middle school students' behavior is an important dimension of high school readiness (ACT, 2008). Research has shown that academic achievement and academic behavior in middle school affect high school academic outcomes (ACT, 2011; Casillas et al., 2013; Langenkamp, 2010; Tobin and Sugai, 1999), high school persistence (ACT, 2012a), and high school graduation (McLeod and Kaiser, 2004; Karakus et al., 2012). McIntosh (2008) showed that the behavior of grade 8 and 9 students has a significant effect on their academic skills and achievements. The importance of academic behaviors goes beyond high school—other studies show that academic behaviors predict success and persistence in college (Robbins et al., 2006; Conrad, 2006; Wang, 2013; US Department of Education, 2001). Research has also shown that behavior during adolescence is related to employment, wages in adulthood (Bowles et al., 2001), and labor market outcomes (Heckman et al., 2006).

The academic behaviors that are important for success in middle school, high school, and beyond can be grouped into three broad domains (Robbins et al., 2004):

**Motivation** includes personal characteristics that help students to succeed academically by focusing and maintaining energies on goal-directed activities;

**Social Engagement** includes interpersonal factors that influence students' successful integration into their environment; and

**Self-Regulation** includes the thinking processes and emotional responses that govern how well students monitor, regulate, and control their behavior related to school and learning.

Middle school student behavior can be assessed from multiple perspectives, including that of the students themselves (ACT, 2012b; Montague et al., 2011) and that of teachers (ACT, 2012c; Montague et al., 2011). This raises questions about the accuracy of each of these perspectives and how well they predict later outcomes.

[infobrief@act.org](mailto:infobrief@act.org) for more information or to suggest ideas for future ACT Issue Briefs.



[www.act.org/research](http://www.act.org/research)

This paper addresses three key questions about student and teacher observations of behavior.

1. Do both types of behavioral measures—student-reported and teacher-reported—predict important educational outcomes: course grades, absenteeism, and being suspended from school? Does using both perspectives together improve prediction?
2. How similar are the students' self-reports to teachers' perceptions of these same students' behaviors in each of the three domains?
3. Do the relationships between student-reported and teacher-reported behavioral measures vary by student grade level?

Data were collected for over 6,000 students from 42 schools. The student-reported behavioral measures were collected using ACT Engage Grades 6–9, an instrument designed to measure behavior and psychosocial factors. Behavioral ratings were collected from these students' teachers using ACT Engage Teacher Edition.<sup>1</sup>

## To what extent are student and teacher behavioral measures related to educational outcomes?

The charts on the following pages show the relationships between student- and teacher-reported behavioral measures and three educational outcomes.

**Academic Success** was defined as earning grades of mostly Bs or As.

**Absenteeism** was measured by the number of days absent from school in the past month.

**Suspension** was defined as having ever been suspended from school.

The three outcomes are based on student-reported data collected at the same time students took the ACT Engage Grades 6–9 assessment. For analysis, each behavioral domain was paired with a theoretically-linked outcome: motivation with academic success, social engagement with absenteeism, and self-regulation with suspension.

For each student, we calculated teacher-reported and student-reported summary measures for each domain. Then, students were classified according to their rank on each measure: Low (bottom 25%), Medium (middle 50%), and High (top 25%).

- For each domain and each perspective, students were grouped according to their score ranks:

Low (bottom 25%)

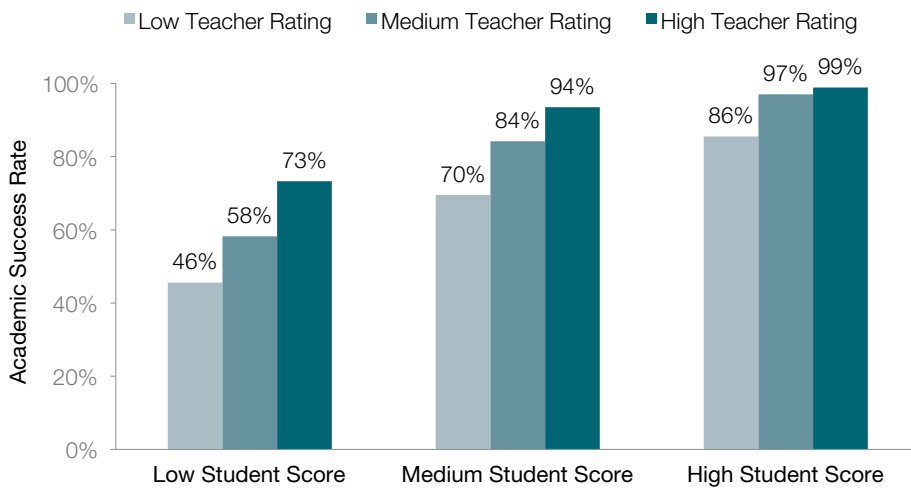
Medium (middle 50%)

High (top 25%)

<sup>1</sup>The measurements from both instruments can be mapped to the three behavioral domains introduced above (motivation, social engagement, and self-regulation). Each instrument's scales and their mappings to the three domains are presented in the Appendix.

As shown in the following three graphs, for all three behavioral domains, both the student- and teacher-reported measures of behavior were significant predictors of the relevant educational outcomes. This provides evidence that while students' perceptions of their own behavior may differ somewhat from those of their teachers, both perspectives are important for understanding risk. In addition, for all three domains, the combination of both teacher- and student-reported behavior provided significantly better prediction of the outcomes than either perspective alone.

**Motivation and Academic Success**



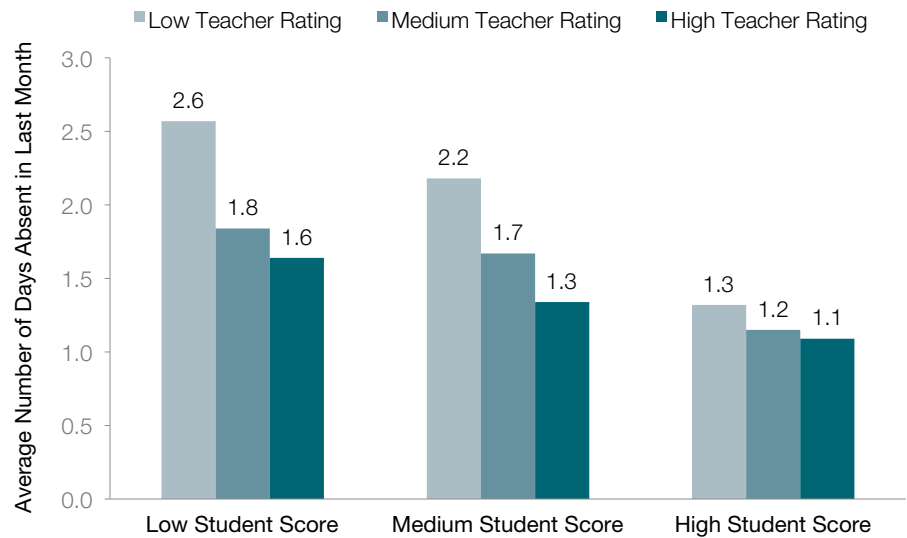
Graph reads: Among students with low student and low teacher assessments of motivation, 46% earned grades of mostly Bs or mostly As.

- Academic success rates ranged from 46% for students with low scores from both perspectives to 99% for students with high scores from both perspectives.
- The teacher-reported measure of motivation was more strongly related to academic success than the student self-report. However, using both measures of motivation predicts academic success better than using either the student-reported score or the teacher rating alone.<sup>2</sup>
- Results show that both student and teacher perspectives of student motivation are important for understanding academic outcomes.

<sup>2</sup>The Wald Chi-Square statistics (and R-Square) from a logistic regression model predicting academic success were 686.3 (and 0.136) for the teacher-reported rating alone, 461.8 (and 0.085) for the student-reported score alone, and 811.9 (and 0.167) for the combined teacher rating and student score. Tests of the difference between using the combined predictors—student-reported score and teacher rating—and using each of the two individual predictors alone were statistically significant with p-value < 0.05.

- Average days absent in the past month ranged from 2.6 for students with low scores from both perspectives to 1.1 for students with high scores from both perspectives. The difference of 1.5 days per month translates to about 13–14 additional days per school year missed.
- Absenteeism increased with lower levels of student- and teacher-reported measures of social engagement.
- The teacher- and student-reported measures of social engagement were similar in the strength of their relationships with absenteeism. Using both the student-reported score and the teacher rating of social engagement provides a better predictor of absenteeism than either measure alone.<sup>3</sup>
- For students with high self-reports of social engagement, there was little variation in absenteeism across the teacher-reported levels (see three bars on the far right of the chart).

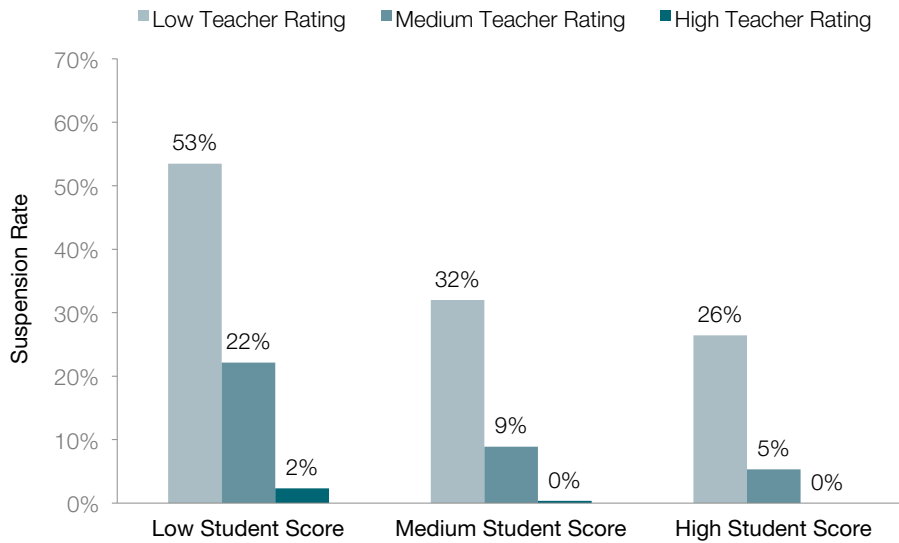
### Social Engagement and Absenteeism



Graph reads: Among students with a medium student- and low teacher-assessments of social engagement, the average number of school days missed in the past month was 2.2.

<sup>3</sup>The *F* statistics (and R-Square) from a regression model predicting number of days absent were 87.2 (and 0.027) for the teacher-reported rating alone, 77.0 (and 0.024) for the student-reported score alone, and 67.4 (and 0.041) for the combined student score and teacher rating. Tests of the difference between the combined predictors—student-reported score and teacher rating—and each individual predictor alone were statistically significant with *p*-value < 0.05.

### Self-Regulation and Suspension



Graph reads: Among students with a high student and medium teacher assessments of self-regulation, 5% had been suspended from school.

- Student- and teacher-reported measures of self-regulation were both related to school suspension.
- The student-reported measure of self-regulation was more strongly related to suspension. However, using both the student score and the teacher rating of a student's self-regulation better predicts whether or not the student has been suspended.<sup>4</sup>
- Suspension rates ranged from 53% for students with low scores from both perspectives to 0% for students with high scores.
- Very few students with high teacher ratings of self-regulation had ever been suspended from school.

<sup>4</sup>The Wald Chi-Square (and R-Square) statistics from a logistic regression model predicting suspension were 427.4 (and 0.077) for the student-reported level alone, 332.8 (and 0.158) for the teacher-reported rating alone, and 508.2 (and 0.181) for the combined student score and teacher reported rating. Tests of the difference between the combined predictors—student-reported score and teacher rating—and each individual predictor were statistically significant with p-value < 0.05.

## Do student and teacher behavioral measures agree?

We found that student-reported scores are predictive of teacher ratings for all three domains, but the agreement is not perfect. The table below shows the percentage of students at each teacher-reported rating level (Low, Medium, and High) for each of the three student-reported score levels. For example, 41% of students with a high self-reported motivation score also received a high rating from their teachers for this domain. Similarly, 30% of students with a low self-reported self-regulation score also received a low rating from their teacher.

### Student and Teacher Assessments by Domain

- Student-teacher score correlations:
  - Motivation: 0.41
  - Social Engagement: 0.30
  - Self-Regulation: 0.41
- Overall agreement<sup>5</sup>:
  - Motivation: 49%
  - Social Engagement: 44%
  - Self-Regulation: 50%

Motivation				
Student Score Level	Teacher Rating Level (%)			
	Low	Medium	High	Total
Low	38.6	52.5	8.9	100.0
Medium	20.0	58.5	21.6	100.0
High	7.6	51.4	41.0	100.0
Social Engagement				
Student Score Level	Teacher Rating Level (%)			
	Low	Medium	High	Total
Low	28.8	54.8	16.4	100.0
Medium	15.9	53.7	30.4	100.0
High	9.8	45.9	44.2	100.0
Self-Regulation				
Student Score Level	Teacher Rating Level (%)			
	Low	Medium	High	Total
Low	30.0	60.2	9.8	100.0
Medium	12.2	64.4	23.4	100.0
High	3.7	50.9	45.4	100.0

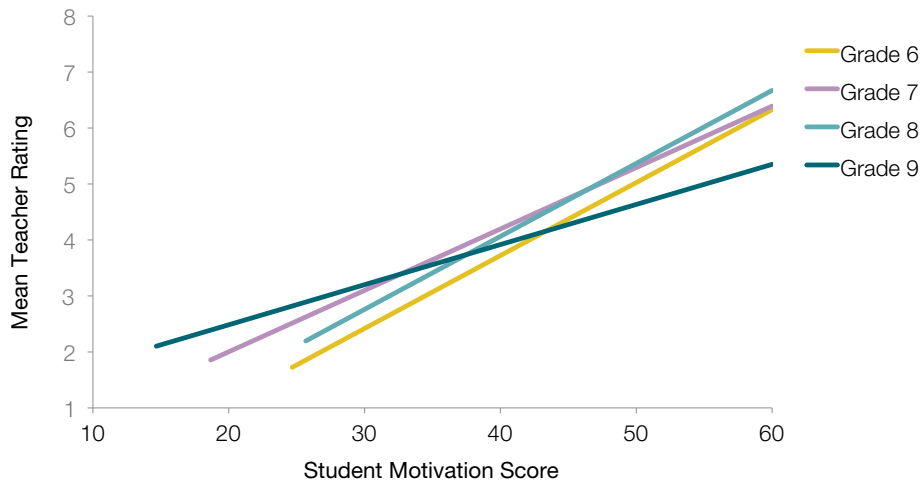
Based on data from 6,326 students from 42 schools. The students took ACT Engage Grades 6–9 and teachers rated their behavior using ACT Engage Teacher Edition. Data were collected for students in grades 6–9.

<sup>5</sup> Defined as the percentage of students whose Low/Medium/High classifications matched.

## How does the relationship between student-reported and teacher-reported behavioral measures vary by student grade level?

The study included students in grades 6 through 9, allowing us to examine whether the relationship between student- and teacher-reported behavioral measures varied by grade level. The following chart shows the relationship between average teacher ratings on the motivation scale and student-reported motivation scores. For each student grade level, a trend line was created to summarize the relationship between these two scores.<sup>6</sup> The next two graphs show similar results for social engagement and self-regulation.

### Mean Teacher Ratings by Student Score: Motivation



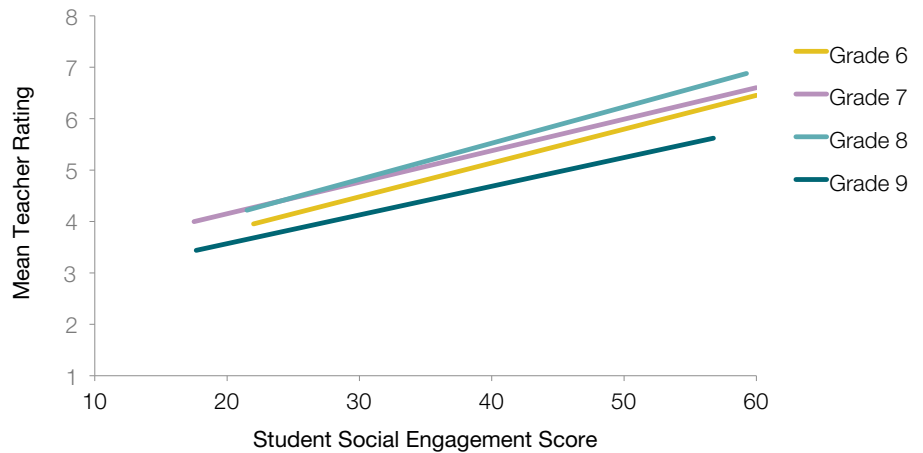
- On average, the relationship of student-reported and teacher-reported measures of students' motivation was nearly identical for students in grades 6, 7, and 8. The discrepancy between student and teacher perceptions of students' motivation is larger in 9th grade.

The teacher ratings of motivation (and social engagement and self-regulation) increase steadily as the student-reported motivation score increases. At the highest levels of student-reported motivation, the average teacher rating tops out between 6 and 7 (on the 8-point rating scale).

<sup>6</sup> The relationship between student-reported and teacher-reported scores for each grade level is summarized with linear trend line in all three graphs.

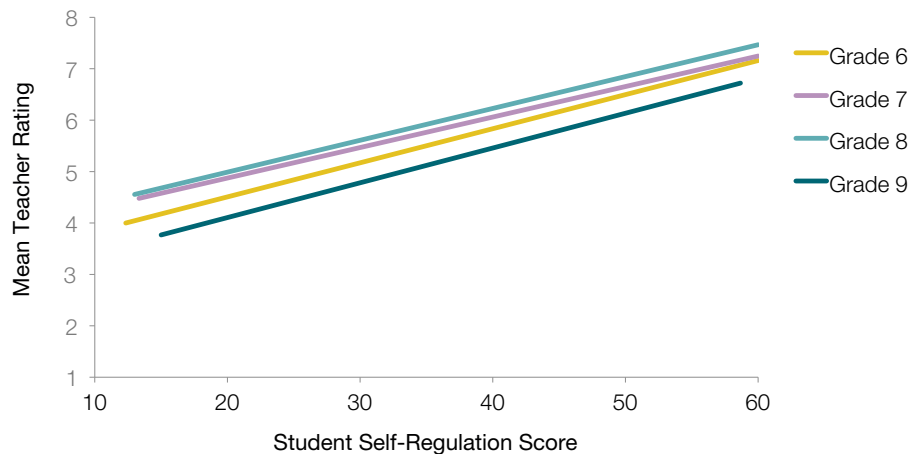
- On average, teacher ratings of students' social engagement increase with student-reported scores. Relative to students in grades 6–8, teachers gave 9th grade students lower social engagement ratings.

### Mean Teacher Ratings by Student Score: Social Engagement



- The relationship of student-reported and teacher-reported measures of students' self-regulation was nearly identical for students in grades 6, 7, and 8. The discrepancy between student and teacher perceptions of students' self-regulation is larger in 9th grade.

### Mean Teacher Ratings by Student Score: Self-Regulation



- Across all grade levels and domains, teacher ratings increased steadily as student-reported behavioral scores increased.
- Generally, teacher ratings were lower for 9th grade students compared to 6th, 7th, or 8th grade students.

The relationships between student-reported and teacher-reported behaviors were similar across all grades with the exception of grade 9. For social engagement and self-regulation, students in grade 9 tended to receive lower teacher ratings<sup>7</sup> than students in grades 6 through 8. On average, 9th grade students with higher motivation scores were rated by their teachers as less motivated than students in grades 6 through 8.<sup>8</sup>

<sup>7</sup> A Tukey-adjusted multiple comparisons test of pairwise differences between means of teacher ratings showed significantly (p-value < 0.05) smaller grade 9 means compared to the means of grade 6, 7, and 8.

<sup>8</sup> For students' motivation scores above 35, a Tukey-adjusted multiple comparisons test of pairwise differences between means of teacher ratings showed a significantly (p-value < 0.05) smaller grade 9 mean compared to the means of grade 6, 7, and 8. There was no significant difference in grade level means of teacher ratings for student motivation scores below 35.



## Implications for School Practice and Policy

The three broad academic behavior domains of focus in this study—motivation, social engagement, and self-regulation—are important contributors to educational and workplace success. The results of this study suggest that the assessment of academic behaviors from multiple perspectives—student and teacher—yields more accurate and actionable information than either perspective alone. Implications for classroom and school practice and policy focus on more effective use of student information to improve student educational outcomes.

1. In addition to traditional academic measures such as test scores and grades, it is important to examine behavioral factors for better signaling of student risk. Both student-reported scores and teacher-reported ratings are related to important educational outcomes, such as earning good grades, absenteeism, and school suspension.
2. Teacher observations of student behavior, and their relationships to educational outcomes, are an important source of input that is complimented by student self-assessments of their own behavior. While student and teacher assessments of student behavior do not completely agree, our analyses show that each is incrementally predictive of educational outcomes. In addition, comparing student-reported and teacher-reported behavioral measures can: help clarify behavioral expectations; confirm behavioral signals; provide additional information to educators about student strengths and weaknesses; and lead to more targeted instruction for students.

The study results also illuminate a 9th grade perception gap related to student behaviors, reinforcing the importance of efforts to improve the transition from middle school to high school. The relationship between student scores and teacher ratings varies by student grade level for self-regulation and social engagement. For a given self-reported score, teachers tend to rate grade 9 students lower than they rate students in grades 6–8. For motivation, high scoring grade 9 students are rated less motivated than their counterparts in grades 6 through 8. Typically, grade 9 in the United States is located within the first year of the high school context, when students are expected to assume substantially more responsibility and control over their educational experience and success.

## References

- ACT. (2007). *Impact of cognitive, psychosocial, and career factors on educational and workplace success*. Iowa City, IA: Author
- ACT. (2008). *The forgotten middle: Ensuring that all students are on target for college and career readiness before high school*. Iowa City, IA: Author.
- ACT. (2011). *Enhancing college and career readiness and success: The role of academic behaviors*. Iowa City, IA: Author.
- ACT. (2012a). *The Condition of College and Career Readiness 2012*. Iowa City, IA: Author.
- ACT. (2012b). *Engage Grades 6–9 User Guide*. Iowa City, IA: Author.
- ACT. (2012c). *Engage Teacher Edition User Guide*. Iowa City, IA: Author.
- Bowles, S., Gintis H., and Osborne M. (2001). The Determinants of earnings: A behavioral approach. *Journal of Economic Literature*, 39 (4).
- Casillas, A., Robbins, S., Allen, J., Kuo, Y., Hanson, M. A., and Schmeiser, C. (2012). Predicting early academic failure in high school from prior academic achievement, psychosocial characteristics, and behavior. *Journal of Educational Psychology*, Vol. 104, No. 2: 407-420.
- Conard, M. A., (2006). Aptitude is not enough: How personality and behavior predict academic performance. *Journal of Research in Personality*, 40: 339-346.
- Heckman J., Stixrud J., Urzua S. (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor Economics*. 24(3): 411-482
- Karakus, M. C., Salkever, D. S., Slade, E. P., Ialongo, N., & Stuart, E. (2012). Implications of middle school behavior problems for high school graduation and employment outcomes of young adults: estimation of a recursive model. *Education Economics*, 20(1): 33-52.
- Langenkamp, A. G. (2010). Academic vulnerability and resilience during the transition to high school: the role of social relationships and district context. *Sociology of Education*, 83(1): 1-19.
- McIntosh, K., Flannery, K., Sugai, G., Braun, D. H., & Cochrane, K. L. (2008). Relationships between academics and problem behavior in the transition from middle school to high school. *Journal of Positive Behavior Interventions*, 10(4): 243-255.
- McLeod, J. D., & Kaiser, K. (2004). Childhood emotional and behavioral problems and educational attainment. *American Sociological Review*, 69(5): 636-658.

- Montague, M., Enders, C., Cavendish, W., & Castro, M. (2011). Academic and behavioral trajectories for at-risk adolescents in urban schools. *Behavioral Disorders, 36*(2): 141-156.
- Robbins, S., Allen, J., Casillas, A., Peterson, C., & Le, H. (2006). Unraveling the differential effects of motivational and skills, social, and self-management measures from traditional predictors of college outcomes. *Journal of Educational Psychology, 98*: 598-616.
- Robbins, S., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130*: 261-288.
- Tobin, T. J., & Sugai, G. M. (1999). Using sixth-grade records to predict school violence, chronic discipline problems, and high school outcomes. *Journal of Emotional and Behavioral Disorders, 7*(1): 40-53.
- U.S. Department of Education (2001). *High school academic curriculum and the persistence path through college*. National Center for Education Statistics (NCES) 163, by Laura Horn and Lawrence K. Kojaku. Project Officer: C. Dennis Carroll. Washington, DC.
- Wang, Y., Cullen, K. L., Yao, X., Li, Y. (2013). Personality, freshman proactive social behavior, and college transition: Predictors beyond academic strategies. *Learning and Individual Differences, 23*: 205-212.

## Appendix

### ACT Engage Scales by Domain

Domain Name	ACT Engage Grades 6–9 Scales	ACT Engage Teacher Edition Scales
<b>Motivation</b>	Academic Discipline Commitment to School Optimism	Initiative Planning & Organizing Sustained Effort Performance
<b>Social Engagement</b>	Family Attitude toward Education Family Involvement Relationships with School Personnel School Safety Climate	Communication Working with Others
<b>Self-Regulation</b>	Managing Feelings Orderly Conduct Thinking Before Acting	Managing Feelings Orderly Conduct