

Development and Validation of ACT Engage[®]

Technical Manual

ACT[®] Engage[®]



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Introduction

ACT Engage measures personal, behavioral, and academic skills critical to academic achievement. Researchers have demonstrated that even after accounting for standardized achievement tests and demographic variables, ACT Engage is a useful predictor of academic outcomes (Moore, Way, Casillas, Burrus, Allen, & Hanson, in press). ACT Engage offers several reports that include student, advisor, roster, school aggregate, and district aggregate versions. The reports offered by ACT Engage are designed to help identify individuals' strengths and weaknesses in order to ensure success in education. This technical manual provides information on the literature behind ACT Engage, how it was developed, its reliability and validity, and normative data. A glossary can be found at the end of this document with information on the statistical terms used throughout.

ACT Engage Grades 6–9

General Approach

Development of ACT Engage Grades 6–9 followed a construct validation approach (Clark & Watson, 1995; Loevinger, 1957; Nunnally & Bernstein, 1994). It began with a thorough literature review to identify psychosocial characteristics, or constructs, likely to predict academic performance and persistence in high school. An initial model representing the major categories of predictors was developed based on this literature and reviewed by a panel of experts.

This conceptual model provided the foundation for the scale development process. Specifically, we developed items representing the constructs in the conceptual model. The items were administered to samples of middle school students and explanatory and confirmatory factor analyses were used to examine the factors underlying these items. Items were screened based on their loadings on these factors (i.e., Academic Discipline, Commitment to School, Family Attitude toward Education, Family Involvement, Managing Feelings, Optimism, Orderly Conduct, Relationship with School Personnel, School Safety Climate, and Thinking Before Acting). Finally, we collected data from additional student samples and continued to track these students for several years until high school graduation, to collect outcome data and refine prediction models. Details for each of the steps in ACT Engage development are provided in the following sections. Interested readers should refer to the *ACT Engage User Guide* for more detailed information on the ACT Engage scales and structure.

Literature Review

To focus our efforts, we divided potential predictors of academic success into two categories: status and alterable (similar to work done by the National Center on Secondary Education and Transition [NCSET]; Lehr, Johnson, Bremer, Cosio, & Thompson, 2004). Status predictors are those that are difficult or impossible to change (e.g., ethnicity, socioeconomic background, and other demographic

characteristics), whereas alterable predictors are those that may be more easily influenced by students, parents/family, and educators. Focusing on alterable variables is important, as these can conceivably be impacted by interventions. Thus, efforts were made to identify a comprehensive set of alterable variables shown to predict student success.

Based on an initial review of the literature, we developed a general model to guide our search and to summarize findings. Important predictors were organized into the following categories:

- Student academic achievement
- Student behavioral data and history
- Student personality and behavior
- Student attitudes
- Parent/family attitudes
- School factors, both as reported by students and at the school level

While the focus was on alterable variables, we also included a few highly predictive status variables in the initial model.

ACT Engage Grades 6–9 development continued with a thorough review of the recent literature. We conducted searches for empirical articles and book chapters using keywords such as academic success/failure, academic performance, high school/school dropout, high school graduation, and persistence. When we encountered highly relevant articles, we minded the references included in those articles for additional literature. We also reviewed the National Center for Education Statistics (NCES) and US Department of Labor reports that provide findings from the National Educational Longitudinal Study (NELS 88; US Department of Education, 2004) and the National Longitudinal Survey of Youth (NLSY 97; US Bureau of Labor Statistics, 2002).

Our goal was to assess the relative importance of each category of variables across a large number of independent studies. We relied on effect size, a measure of strength of the relationship between two variables, to summarize the results. Therefore, only articles and chapters containing sufficient information to calculate an effect size (e.g., means and standard deviations, correlations) were retained. Results related to persistence and academic achievement are summarized separately in the following section.

Summary of research on predictors of academic success and persistence

- **Academic achievement.** As predictors of dropout, general academic competence and overall high school GPA varied considerably in terms of effect size, with most of them being small (range $d = .14$ to $.75$). However, specific core academic competencies such as English, math, and reading showed higher effect sizes, ranging from medium to large ($d = .44$ to $.80$). Having been held back in school

consistently showed large effects ($d = .96$). This variable was also a good predictor of subsequent academic achievement, with a moderate to large effect size (range $d = .39$ to 1.00).

- **Behavioral information and history.** As a predictor of dropout, disorderly conduct showed moderate effects (mean $d = .50$). Further, student absenteeism showed medium to large effects (mean $d = .70$). Time spent doing homework varied in effect size from small to large (range $d = .22$ to 1.30), depending on the response options (and resulting variance) used in each study. Generally, a greater range of response options led to higher effects. As a predictor of academic achievement, engaging in disruptive behavior showed moderate to large effects (range $d = .40$ to $.80$) and student absenteeism evidenced moderate to very large effects (range $d = .50$ to 2.00).
- **Student personality.** Several personality characteristics have been found to be predictors of both dropout and achievement, with a broad range of effect sizes reported. For example, motivation constructs, such as achievement motivation and academic discipline, as well as disinhibition and impulsivity, have demonstrated moderate effect sizes (mean $d = .43$). Emotional stability and related constructs, such as aggression, self-esteem, and academic self-confidence, demonstrated small to moderate effect sizes (mean $d = .36$). Further, optimism and self-efficacy showed medium to large effect sizes (range $d = .50$ to $.75$).
- **Student attitudes.** As predictors of dropout, measures of students' general attitude toward school showed small effect sizes (mean $d = .26$), whereas measures of school commitment had a moderate predictive effect (mean $d = .52$). Students' expectations of educational attainment also had a small to moderate effect (mean $d = .31$). As predictors of academic achievement, both general attitude and commitment to school showed moderate to large effects (range $d = .29$ to $.80$).
- **Parent/family attitudes.** As predictors of dropout, general parent and family attitudes toward education showed small effect sizes (range $d = .06$ to $.14$). However, more specific measures of parental attitudes toward education (e.g., communication with students about school, parental involvement in school activities, and educational expectations for students) evidenced large effects (range $d = .95$ to 1.67). These measures also were moderate to strong predictors of achievement (range $d = .39$ to $.90$).
- **School factors.** As predictors of dropout, a number of school characteristics (e.g., mean achievement scores, size, percent of minority students, percent of students eligible for free/reduced lunch) showed moderate effects (mean $d = .65$), whereas measures of school climate showed small effects (mean $d = .15$). However, few studies included measures of safety which was reported to be predictive by some qualitative reports. As predictors of student academic achievement (e.g., grades), both school climate and mean standardized achievement scores (at school level) showed moderate effects (mean $d = .51$).

- **Status/demographic factors.** The research on status variables was primarily used to examine dropout rates. In this context, age, ethnicity, SES, and emotional and learning disorders showed moderate to strong effects (average $d = .85, .46, .64,$ and $.85,$ respectively). Further, mobility (i.e., number of school moves) evidenced small to large effects, with larger effects for greater frequency of moves (range $d = .14$ to 1.21). Despite the difference in graduation rates for men and women, gender only showed a very small effect (mean $d = .04$). English learner status has also surfaced in our literature review as a possible predictor, but there was insufficient information to calculate effect sizes.

It is worth noting that the model presented here is derived from our quantitative appraisal of the existing literature combined with the results of a recent qualitative study based on interviews and focus groups with high school dropouts commissioned by the Bill and Melinda Gates Foundation (Bridgeland, Dilulio, & Morison, 2006). This report notes that students who dropped out reported the following reasons: lack of motivation or effort in school, feeling disconnected from school, and academic and life challenges.

Preparation of the Initial Item Pool

- **Item writing.** A team of four applied psychologists wrote items to represent each of the constructs included in the conceptual model (Figure 1). For each construct, the writers developed a definition and then wrote items to compute the constructs. The writers first generated items independently and then met to discuss the items to be retained and/or revised. This procedure yielded an initial pool of 256 items for grades 6–9.
- **Preliminary test of item clarity.** To ensure that the items would be comprehensible to middle school students, we administered the items to a small group of 25 students from 6th- to 8th-grade for 6–9. The students were asked to rate the extent to which they understood the meaning of the items using a 5-point Likert-type scale ranging from very easy to understand (1) to very difficult to understand (5). Based on the mean ratings of item clarity, we deleted or revised items. Subsequently, the revised items were presented to a group of experts in education and communication, who were asked to comment on item clarity. The items were again revised on this feedback. The resulting item pool consisted of 148 items for grades 6–9. Based on research concerning the optimal number of response options in Likert-type scales (Green & Rao, 1970; Mantell & Jacobi, 1972), items were set to a 6-point Likert-type response scale, ranging from strongly agree (1) to strongly disagree (6). The exception was the items for Orderly Conduct, which used a Yes/No response.
- **Pilot test.** Next, we collected data on a pilot version of the items at several middle schools for 6–9. The pilot study data were used to establish the initial structure and psychometric properties of the scales, as well as to guide item revision for the next phase of research and development.

- **Advisory group.** At the same time, ACT staff convened an advisory group composed of a broad range of experts in fields related to K–12 education administration, academic failure/dropout research, and secondary school remediation/intervention research. The advisory group provided feedback on the model, choice of indicator variables, and some preliminary use cases. The general consensus was that this model appropriately captured the constructs theoretically expected to be predictors of high school academic success.

Empirical Item Selection Procedures

In 2006, a total of 4,660 students from 24 middle schools and 288 students from five alternative schools participated in an item selection study. These students varied widely in terms of gender, ethnicity, and socioeconomic background (see [Table 1](#)). Items were distributed to participants in questionnaire form in a group setting during class time. Students were informed that participation was voluntary, their results would be kept confidential, and the questionnaire would require approximately 30 minutes. Participant schools were provided with group-level summaries of their students' results as an incentive for participating.

- **Exploratory factor analysis.** First, we used exploratory factor analysis to create and refine each of the scales based on ACT Engage Grades 6–9 item-level data. These analyses were carried out on two-thirds of the total sample for 6–9. We used a bottom-up strategy in which we built scales independent of one another. That is, we ran a separate factor analysis for the items written to represent each scale to determine whether they tapped a single dimension (as intended). We specified principal axis factoring as the extraction method and used varimax rotation (cf. Nunnally & Bernstein, 1994; Gorsuch, 1997). In the majority of cases, a single-factor solution was clearly indicated. In these cases, items with loadings of .40 or higher on the first principal component were retained for further analyses.
- **Confirmatory factor analysis.** Next, we used confirmatory factor analysis to (1) confirm each of the dimensions identified in the previous step and (2) select a final set of items to represent each of the scales. The confirmatory factor analysis was carried out on the remaining one-third of the total sample. For each dimension, we specified one-factor solutions using the items that were retained from the exploratory step. The fit for the intended model to the data was assessed using several fit indexes (i.e., CFI, GFI, RMSEA, and SRMR; Hu & Bentler, 1999). Items that showed clear loadings on their respective dimensions in the results of both the exploratory and confirmatory factor analyses were selected for the final versions of the scales. This process resulted in a final pool of 106 items making up 10 separate scales.

Since the initial data collection and analysis in 2006, more than 190,000 students have taken the ACT Engage Grades 6–9. These operational data from these students continues to support the initial findings. See [Table 2](#) for the demographic characteristics of the current student sample used for data analysis. Many of the

analyses discussed below were completed using this set of operational data where indicated.

Scale and Test Reliability

The resulting ACT Engage Grades 6–9 scales are relatively short (range = 9 to 12 items) and have good to excellent internal consistency reliabilities (Cronbach's alpha range = .82 to .91; median α = .87; see Table 3).

Additional analyses were conducted to assess test-retest reliability of ACT Engage Grades 6–9 (see Table 4). Test-retest data were examined for four time intervals:

- 0–2 months (the short interval that is typical for assessing instrument reliability)
- 3–8 months (interval corresponding to tests given the same school year)
- 9–15 months (tests given approximately one year apart)
- 16–32 months (tests given approximately two years apart)

Results of the analyses on the test-retest data show the following:

- Test-retest reliabilities (0–2 month interval) range from $r = .72$ to $.85$ across scales (median = $.80$). The success indices are near the top of this range ($.84$ for Academic Success and $.83$ for Graduation).
- Test-retest correlations decrease as the time interval increases, suggesting that psychosocial factors are changing between grades 6 and 9.
- Mean difference scores tend to decrease with larger time intervals. This could be due to grade-level effects; for example, scores on some scales tend to be lower for students in grade 9 relative to students in grades 6 or 7.

Development of Response Pattern Indicators

When ACT Engage Grades 6–9 is scored, students with inconsistent and/or non-varied response patterns are flagged. Response inconsistency indicates that students are responding randomly to items and without regard to the item's content. Non-varied responding indicates that students tend to use the same response option (e.g., strongly agree) for many of the items. Scores for patterns should be interpreted with considerable caution. In the field study, approximately 5% of students were flagged for such types of responding.

Convergent/Discriminant Validity

Intercorrelations. ACT Engage Grades 6–9 scale scores show a reasonable convergent/discriminant pattern, with scales that are conceptually similar more strongly correlating with one another. For example, the Academic Discipline scale was highly correlated with other scales tapping into motivation such as Orderly Conduct, Thinking Before Acting, Managing Feelings, and Optimism (range $r = .53$ to $.60$, median $r = .56$) and somewhat less correlated with scales from other domains, such

as Relationships with School Personnel ($r = .48$) or School Safety Climate ($r = .40$). Similarly, the Family Involvement scale was highly correlated with other Social Engagement scales such as Family Attitude Toward Education ($r = .63$) and generally less correlated with scales from other domains, such as Orderly Conduct ($r = .33$), Managing Feelings ($r = .42$), or School Safety Climate ($r = .38$). The Self-Regulation scales Thinking Before Acting, Orderly Conduct, and Managing Feelings all appear to relate highly with one another while being less correlated with other domains such as family and student attitudes and school factors (see [Table 5](#)).

ACT Engage Grades 6–9 scales have the expected relationships with other constructs as well. We examined correlations with behavioral information (e.g., absenteeism, times without homework), academic achievement (e.g., self-reported grades, ACT Explore^{®1} scores), and school-level factors (e.g., percent minority, average class size). The following sections detail these results.

- Behavioral information.** ACT Engage Grades 6–9 scales are correlated with a few key behavioral information indicators that have been linked to academic success in the literature (Kaufman & Bradbury, 1992; Rumberger, 1995; Rumberger & Larson, 1998). As shown in [Table 6](#), ACT Engage Grades 6–9 scales are mildly to moderately related to time spent on homework assignments (daily time spent on homework; range $r = .10$ to $.23$, median $r = .16$). In addition, most ACT Engage Grades 6–9 scales have a moderate to strong negative relation to frequency of students not having their homework completed (times without homework; range $r = -.16$ to $-.42$, median $r = -.22$). Further, ACT Engage Grades 6–9 scales are mildly to moderately negatively related to time spent watching television, playing videogames, or browsing the internet for nonacademic purposes (media time; range $r = -.20$ to $-.32$, median $r = -.21$); times absent, tardy, and/or skipping class (absenteeism; range $r = -.20$ to $-.38$, median $r = -.23$); as well as the number of times that a student has changed schools (number of transfers; range $r = -.07$ to $-.15$, median $r = -.11$).
- Academic achievement.** As shown in [Table 7](#), ACT Engage Grades 6–9 scales are positively associated with indicators of academic achievement. For example, most are moderately to strongly related to school grades earned prior to students completing ACT Engage Grades 6–9 (range $r = .20$ to $.51$, median $r = .29$). Based on the literature, the associations of ACT Engage Grades 6–9 scales with standardized achievement measures, such as ACT Explore scores, are expected to be somewhat lower. Psychosocial measures tap achievement-related content that is expected (and has generally been shown) to be distinct from most cognitive skills and standardized achievement measures (Lounsbury, Sundstrom, Loveland, & Gibson, 2003; Robbins, Allen, Casillas, Peterson, & Le, 2006; Watson & Clark, 1993). [Table 7](#) shows relationships between ACT Engage Grades 6–9 scales and ACT Explore scores. As can be seen, these relationships are generally mild and provide further evidence of discriminant validity.

¹ ACT Explore is a discontinued academic achievement test that was replaced by ACT Aspire[®] on June 13, 2014.

- **School factors.** As expected, ACT Engage Grades 6–9 scales scores are generally unrelated to school-level factors (see [Table 8](#)), including the percent of minority students in school (range $r = .01$ to $-.24$, median $r = -.08$), the percent of free or reduced-lunch recipients (range $r = -.04$ to $-.14$, median $r = -.06$), average class size (range $r = .00$ to $.06$, median $r = .03$), and student-teacher ratio (range $r = .00$ to $.03$, median $r = .02$). Percent of minority students had slightly larger correlations with Academic Discipline ($-.16$) and School Safety Climate ($-.24$), indicating that schools with larger minority populations had slightly lower aggregate scores on these two scales. However, these findings are otherwise consistent with the literature showing that psychosocial and personality measures are generally unrelated to these types of school factors (Glovinsky-Fahsholtz, 1992; Wyss, Tai, & Sadler, 2007).
- **Comparisons with alternative school students.** We collected ACT Engage Grades 6–9 data for a sample of alternative high school students because research has documented that students from alternative high schools are at higher risk of academic difficulties and dropout (Kleiner, Porch, & Farris, 2002; Rotermund, 2008). We examined whether the scales and behavioral information indicators from ACT Engage Grades 6–9 could differentiate between regular middle school and alternative high school students. As can be seen in [Table 9](#), most ACT Engage Grades 6–9 scales and behavioral information indicators were sensitive to differences between these two groups of students. This is evidenced by the statistically significant differences, as well as the magnitude of those differences, which mostly ranged from moderate to large effect sizes (in terms of Cohen's d). Among ACT Engage Grades 6–9 scales, Orderly Conduct and Academic Discipline strongly differentiate between middle and alternative school students. Similarly, among behavioral information indicators, absenteeism, and the number of times that a student changed schools strongly differentiated the two groups of students. These results were consistent with existing research (Kaufman & Bradbury, 1992; Rumberger & Thomas, 2000) and suggest that ACT Engage Grades 6–9 can help identify students who are more likely to be at risk for academic difficulties.

Predictive Validity

In partnership with the school districts that participated in the field study, we initiated a longitudinal study to follow the 4,660 students who participated in ACT Engage Grades 6–9 as they progressed into and through high school. Refer to [Table 1](#) for the demographic characteristics of the student sample used for data analysis. We continue to collect data related to the outcomes that ACT Engage Grades 6–9 was designed to predict: overall academic performance, as measured by GPA, and graduation, as measured by number of courses failed. We used the latter as a proxy for graduation in this study because dropout status was not always available from the schools. Here we present the findings from the first and second wave of follow-up data, which includes 9th-grade GPA, number of courses failed 10th-grade GPA, and on-time graduation.

In the first wave of follow-up data collection ($N = 2,764$; see [Table 10](#) for demographic characteristics) one to two years after students completed ACT Engage Grades 6–9, the ACT Engage Grades 6–9 scales were moderately correlated with 9th-grade GPA (range $r = .17$ to $.46$, median $r = .27$) (see [Table 11](#)). In the second follow-up study, four years after the initial administration of ACT Engage Grades 6–9, researchers found that the factors measured by ACT Engage Grades 6–9 are additive to the prediction of high school grades and on-time graduation (Moore et al., in press). Academic Discipline and Orderly Conduct in middle school are particularly important for predicting high school success. This follow-up data on ACT Engage Grades 6–9 also demonstrates that it is mildly to moderately correlated with 10th-grade GPA (range $r = .18$ to $.45$, median $r = .28$) and on-time high school graduation (range $r = .10$ to $.27$, median $r = .19$) (see [Table 12](#)).

[Table 13](#) presents information on the predictive value of ACT Engage Grades 6–9 on 10th-grade GPA and on-time graduation. All but the student-level demographic variables were standardized. Therefore, the beta coefficients in [Table 13](#) can be interpreted as an increase in 10th-grade GPA—or increase in the log-odds of high school graduation—corresponding to an increase of one standard deviation in the predictor, controlling for the other predictors in the model. For the student-level gender and race/ethnicity indicators, the betas correspond to the increase in the outcome corresponding to being a male student and belonging to a given race/ethnicity group, respectively.

The first set of coefficients on the left in [Table 13](#) corresponds to the model predicting 10th-grade GPA. School percent minority and student male status predict lower 10th-grade GPA. ACT Explore Composite score, Academic Discipline, and Orderly Conduct predict higher HSGPA. The second set of coefficients on the right in [Table 13](#) corresponds to the direct effects, which are the effects of each of the predictors in the full model (which takes into account a mediator). The only significant predictors in the full model ($p < 0.05$) are Orderly Conduct and HSGPA. HSGPA fully mediates the relationships between on-time high school graduation and school percent minority, male status, ACT Explore Composite, Academic Discipline, and Commitment. Orderly Conduct remains a significant predictor of on-time high school graduation, but the coefficient is reduced in magnitude, indicating partial mediation. Optimism and School Climate were marginally significant ($p < 0.1$).

To better understand the proportion of variance explained by each of these variables, we conducted additional analyses using the dominance analysis technique (Azen & Budescu, 2003). Based on regression modeling alone, the relative importance of a predictor variable cannot be determined from regression coefficients or meta-weights because of the correlations between the predictor variables. The dominance analysis approach allows us to compare the relative importance of predictors in multiple regression by providing an estimate of the amount of variation accounted for by each predictor (R^2).

Figure 2 shows the results of the dominance analysis of the predictors of early high school GPA. This figure breaks down the variance that predictors of early high school GPA (9th & 10th grade) account for. ACT Engage Grades 6–9 scores accounted for the most predicted variance in early high school GPA (33%), followed by prior grades (30%) and an assessment of academic achievement (ACT Explore; 25%). Demographics and school factors accounted for a combined 12%. This analysis suggests that academic behaviors, as measured by ACT Engage, are just as (if not more) important for predicting high school grades as prior grades and traditional achievement test scores.

As an important predictor of academic success, ACT Engage Grades 6–9 also can be used in conjunction with other measures (e.g., academic achievement) to help identify students who are at academic risk. This was examined using a sample of students who completed both ACT Engage Grades 6–9 and ACT Explore. To determine how well these measures can predict outcomes of interest (i.e., 9th-grade GPA, course failure) both alone and in combination with one another, we created several prediction models and compared them using hit rates. The hit rates indicate how well each model can identify students who are at high risk of future academic struggles. We calculated one set of hit rates for identifying students with 9th-grade GPAs of less than 2.0 and another set of hit rates for identifying students who failed at least one class during previous academic year. Four models for identifying at-risk students were compared for each outcome:

1. Random selection
2. Standardized achievement test scores only (e.g., ACT Explore Composite score)
3. ACT Engage Grades 6–9 scores and behavioral information only
4. Achievement, ACT Engage Grades 6–9 scores, and behavioral information.

These hit rates are presented in Table 14 and Table 15.

As shown in Table 14, use of ACT Explore or ACT Engage Grades 6–9 scores and behavioral information results in substantial increases in accuracy (i.e., increased hit rate) over random selection for identifying students who subsequently earned a low GPA during 9th grade (a 45% and 60% point increase over random selection, respectively). Further, the combination of cognitive (ACT Explore) and psychosocial (ACT Engage Grades 6–9) scores resulted in highest level of accuracy (a 59% point increase over random selection).

Similarly, Table 15 shows that use of ACT Explore or ACT Engage Grades 6–9 scores and behavioral information results in substantial increases in accuracy (i.e., increased hit rate) for identifying students who failed one or more classes (a 39% and 49% point increase over random selection, respectively). Again, the combination of cognitive (ACT Explore) and psychosocial (ACT Engage Grades 6–9) scores resulted in the highest level of accuracy (a 53% point increase over random selection).

In summary, the results in [Table 14](#) and [Table 15](#) show that measuring psychosocial factors and behavioral data in middle school improves the prediction of high school GPA and course failure. Thus, measuring psychosocial and behavioral data also leads to improvements in early identification of students who are at risk of academic struggles. The hit rates using the combination of cognitive and psychosocial data (83% and 71%) are high and suggest that measuring academic achievement, along with psychosocial factors and behavioral information allows middle school personnel to identify with good accuracy more students who will struggle academically in the future. With this information, intervention programs can be directed toward the students at greatest risk.

Another way of presenting the same findings for GPA is shown in [Figure 3](#). To create this figure, students were classified into subgroups according to their ACT Explore Composite scores and their ACT Engage Grades 6–9 scores. ACT Explore and ACT Engage Grades 6–9 scores were used to divide students into three groups: lower quartile (lowest 25%), middle quartiles (middle 50%), and upper quartile (highest 25%).

[Figure 3](#) shows students' 9th-grade GPAs as a function of their ACT Explore Composite scores and their ACT Engage Grades 6–9 Academic Success Index score (a composite of ACT Engage Grades 6–9 scales). On the left side of this figure, the first three bars show students who scored in the lowest quartile of ACT Explore scores. Within this group, students who scored higher on ACT Engage Grades 6–9 earned higher average GPAs. This pattern is consistent across ACT Explore score groups. Thus, highly motivated students with behavior that supports academic success, as evidenced by ACT Engage Grades 6–9, tend to earn higher average GPAs (even if they score in the lowest quartile of ACT Explore). These results persisted through high school. [Figure 4](#) displays students' 12th grade GPAs as a function of their ACT Explore Composite scores and their ACT Engage Grades 6–9 Academic Success Index Score.

We also examined the extent to which the individual ACT Engage Grades 6–9 scale scores and behavioral information items/scales differentiate students who failed one or more courses from those who did not, by calculating the differences between ACT Engage Grades 6–9 and behavioral information scores of students who passed all of their courses (i.e., had zero course failures), those who failed one class, and those who failed two or more classes (each expressed as an effect size). The resulting effect sizes (using Cohen's d) are presented in [Table 16](#). As can be seen, ACT Engage Grades 6–9 scores and behavioral information had moderate effect sizes for differentiating students who failed one class (range of $d = .09$ to $.79$, median = $.34$) and strong effect sizes for differentiating students who failed two or more classes (range of $d = .30$ to 1.28 , median = $.57$). This provides additional evidence of the utility of ACT Engage Grades 6–9 for identifying students who may be at risk of failing classes and thus more likely to drop out of school.

Figure 5 shows the average on-time high school graduation by ACT Explore and Engage Grades 6–9 scores. On the left side of this figure, the first three bars show students who scored in the lowest quartile of ACT Explore scores. Within this group, students who scored higher on ACT Engage Grades 6–9 earned higher average GPAs. This pattern is consistent across ACT Explore score groups. Thus, highly motivated students with behavior that supports academic success, as evidenced by ACT Engage Grades 6–9, tend to earn higher average GPAs (even if they score in the lowest quartile of ACT Explore).

Using the ACT Engage Graduation Index and ACT Explore Composite, researchers have found promising results in better predicting high school graduation. The Advisor Report that is created from the ACT Engage and ACT Explore profile contains probability indices that can be used to estimate the likelihood of a student's GPA being below 2.0 and graduating from high school. Figure 6 illustrates how the ACT Explore Composite and the ACT Engage Graduation Index can be used to predict college enrollment. On the left side of the figure, the first three bars show students who scored in the lowest quartile of ACT Explore Composite. Within this group, students who scored higher on the ACT Engage Grade 6–9 Graduation index were more likely to enroll in college. This pattern is consistent across ACT Explore Composite groups. Again, this data is based on the sample reported in Table 1.

In 2012 and 2013, ACT Engage Grades 6–9 was compared to ACT Aspire using a study sample mainly from Alabama, Michigan, and Kentucky. Students from a wide range of ethnicities were represented in the sample. Results from these comparisons demonstrate several relationships between the subscales of each assessment. Table 17 shows the correlations between ACT Engage Grades 6–9 scales and ACT Aspire scores on English, mathematics, reading, science, and writing. In general, the magnitudes of correlation coefficients are small, with the highest between Orderly Conduct and ACT Aspire English scores ($r = .26$). This is similar to the magnitude of the correlations between ACT Engage and ACT Explore presented in Table 7. Table 18 displays the correlations between the ACT Engage Grades 6–9 success indices and ACT Aspire composite scores. The correlation between the two ACT Engage Grades 6–9 success indices and ACT Aspire scale scores are larger than those of the individual ACT Engage Grades 6–9 scales, as they are combining information from multiple ACT Engage scales, as well as some of the self-reported behavior information that respondents provide.

Norms for ACT Engage Grades 6–9

There are significant differences between ACT Engage mean scores of students in grade 6 and those of students in grades 7–9. Relative to students in grades 6–9, our data suggest that students in grade 6 have higher self-appraisals of Motivation, Social Engagement, and Self-Regulation. ACT Engage reports use separate norms for grade 6 so that the percentiles reported allow students and educators to understand

a student's scores in relation to his/her peers in the same grade level. Scale and percentile scores for ACT Engage Grades 6–9 for Grade 6 can be found in [Table 19](#), whereas scale and percentile scores for ACT Engage Grades 6–9 for grades 7–9 can be found in [Table 20](#).

The Academic Success Index scale score represents a student's estimated probability of having a high school GPA of at least 2.0. It is reported on a scale of 1 to 99. The norms for the Academic Success Index scale score are developed using the same procedure that was used for the norms for the other ACT Engage Grades 6–9 scales: The percentile for each scale score represents the percentage of students scoring at or below the scale score. Academic Success Index probability and percentile scores for ACT Engage Grades 6–9 for Grade 6 can be found in [Table 21](#), whereas Academic Success Index probability and percentile scores for ACT Engage Grades 6–9 for grades 7–9 can be found in [Table 22](#).

The Graduation Index scale score represents a student's estimated probability of graduating from high school. It is reported on a scale of 1 to 99. The norms for the Graduation Index scale score are developed using the same procedure that was used for the norms for the other ACT Engage Grades 6–9 scales: The percentile for each scale score represents the percentage of students scoring at or below the scale score. Graduation Index probability and percentile scores for ACT Engage Grades 6–9 for Grade 6 can be found in [Table 23](#), whereas Graduation Index probability and percentile scores for ACT Engage Grades 6–9 for grades 7–9 can be found in [Table 24](#).

Compliance with Guidelines and Standards

ACT Engage Grades 6–9 is in compliance with the test development guidelines recommended by the International Test Commission (2006), the Association of Test Publishers (2002), and the Joint Committee on Standards for Educational and Psychological Testing (consisting of the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education). These standards are meant to “provide criteria for the development and evaluation of tests and testing practices and to provide guidelines for assessing the validity of interpretations of tests scores for the intended uses” (p. 1) including delivery formats, administration and hardware/software requirements, and the documentation of test validity and reliability (Joint Committee on the Standards for Educational and Psychological Testing, 2014).

ACT Engage Grades 10–12

General Approach

ACT Engage Grades 10–12 was originally developed for college students and the items were later tailored for high school students. ACT Engage College and ACT Engage Grades 10–12 are almost identical in that they share the majority (92%) of their items: Only 10 of 108 items were rewritten to be more appropriate for high school students. The rewritten items consisted of rephrasing commitment to “college” items to commitment to “future college” or similar phrasing to account for the fact that high school students are not currently participating in college. The following is a summary of the development of ACT Engage Grades 10–12. A three-part process was used to develop ACT Engage Grades 10–12: (a) preparation of the initial item pool, (b) empirical item selection, and (c) evaluation of scale reliability and validity. The first two parts were accomplished as part of the development of ACT Engage College. The third part was conducted specifically for the ACT Engage Grades 10–12 instrument.

Literature Review

The search for predictors of college success has long been a research theme in the educational psychology literature (Hezlett et al., 2001; Pascarella & Terenzini, 2005). However, the sheer diversity of constructs and the lack of integrative framework have been limiting factors in the practical application of research findings.

Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004) meta-analytically examined the validities of various psychosocial and study skills constructs in predicting two important college success criteria: academic performance (i.e., college GPA) and persistence (i.e., college retention). Based on 109 studies (with a sample of more than 150,000 students), the authors identified and studied a variety of constructs derived from educational persistence and motivational models of college success, such as achievement motivation, academic goals, institutional commitment, perceived social

support, social involvement, academic self-efficacy, general self-concept, academic-related skills, and contextual influences. After controlling for the effects of traditional predictors (i.e., high school GPA, ACT/SAT assessment scores, and socioeconomic status), these researchers identified three broad psychosocial constructs that have demonstrated incremental validity in predicting the criteria of interest (i.e., academic performance and persistence): Motivation, Social Engagement, and Self-Regulation. These constructs are defined below and served as the basic foundation for the development of ACT Engage Grades 10–12.

- *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.
- *Self-regulation* includes cognitive and affective processes used to monitor, regulate, and control behavior related to learning.

Based on the results of the meta-analysis conducted by Robbins et al. (2004) and additional reviews of the educational and psychological literatures, several key constructs were identified as being critical to at-risk identification and were the focus of ACT Engage Grades 10–12 development (i.e., academic discipline, academic self-confidence, commitment to college, communication skills, general determination, goal striving, social activity, social connection, steadiness, and study skills). Interested readers should refer to the *ACT Engage User Guide* for more detailed information on the ACT Engage Grades 10–12 scales and their structure.

Preparation of the Initial Item Pool

- **Item writing.** ACT researchers wrote clear definitions of the target constructs and obtained feedback from experts in the fields of education, advising/counseling, and personality psychology. Following revision, definitions were finalized and shared with item writers. A research team comprised of three applied psychologists wrote items representing the constructs. Writers generated items independently and then met to discuss breadth of coverage and revisions. This procedure yielded an initial pool of 320 items.
- **Preliminary test of item clarity.** To ensure that the items would be understandable to high school and first-year college students, items were administered to a small group of high school students ($N = 38$). The students were asked to rate the extent to which they understood the meaning of the items using a 5-point scale ranging from very easy to understand (1) to very difficult to understand (5). Based on the mean ratings of item clarity, some items were deleted or revised. The revised items were then presented to a second group of experts in education and communication, who were asked to comment on item clarity. The items were again revised based on this feedback. The resulting item pool consisted of 305 items, which were set to a 6-point response scale ranging from strongly disagree (1) to strongly agree (6).

Empirical Item Selection Procedures

In 2005, a total of 5,970 first-year students from community college and universities as well as high school seniors were recruited to participate in an item selection study. These students were from 50 different institutions and varied in terms of gender, ethnicity, and socioeconomic background (Le, Casillas, Robbins, & Langley, 2005). Items were distributed to participants in questionnaire form in a group setting during class time.

- **Exploratory factor analysis.** In order to identify factors (scales) underlying the items and to clarify which items were most strongly associated with each scale, ACT researchers conducted both explanatory and confirmatory factor analyses. The respondent sample was randomly split into two groups, with a little more than half of the sample in the exploratory group ($N = 3,300$) and the remaining participants in the confirmatory group ($N = 2,670$). A factor analysis on the exploratory group resulted in 11 factors. Because of the uninterpretability of the 11th factor, only 10 factors were retained. A parallel analysis also yielded 10 interpretable factors. Based on these results, 145 items were tentatively selected for a confirmatory factor analysis.
- **Confirmatory factor analysis.** Subsequently, a confirmatory factor analysis specifying 10 latent factors was run on the data from the confirmatory group using the maximum likelihood estimation method. The extent to which the model fit the data was examined using a combination of several fit indices. After the completion of the exploratory and confirmatory factor analyses, approximately 10 items were selected for each of the 10 factors (scales) for a total of 108 items. For more details on the above procedures, refer to Le et al. (2005).
- **Field study.** A total of 2,912 11th- and 12th-grade students from six high schools in the South and Midwest were recruited to participate in the field study in 2006. Of these students, 53% were part of a longitudinal study of ACT Engage Grades 6–9 that began when the students were enrolled in 7th and 8th grade. Students varied in terms of demographic characteristics (see [Table 25](#)). ACT Engage Grades 10–12 was distributed to participants in a group setting during class time. Students were informed that participation was voluntary, their results would be kept confidential, and the questionnaire would require approximately 30 minutes to complete.

Since the initial data collections and analyses, more than 50,000 students have taken the ACT Engage Grades 10–12. Data from these students continues to support the initial findings. See [Table 26](#) for the demographic characteristics of the current student sample used for data analysis. Many of the analyses discussed below were completed on the current sample of students where indicated.

Scale and Test-Retest Reliability

Reliability estimates were calculated using the total sample of participating students ($N = 50,020$). ACT Engage Grades 10–12 scales are relatively short (range = 10 to 12 items) and have good to excellent internal consistency reliabilities (Cronbach's alpha range = .84 to .91; median $\alpha = .87$) (see [Table 27](#)).

Additional analyses were conducted to assess test-retest reliability of ACT Engage Grades 10–12 (see [Table 28](#)). Test-retest data were examined for four time intervals:

- 0–2 months (the short interval that is typical for assessing instrument reliability)
- 3–8 months (interval corresponding to tests given the same school year)
- 9–15 months (tests given approximately one year apart)
- 16–32 months (tests given approximately two years apart)

Results of the analyses on the test-retest data show the following:

- Test-retest reliabilities (0–2 month interval) range from $r = .81$ to $.94$ across scales (median = $.85$). The success indices are at the top of this range ($.93$ for Academic Success and $.94$ for Retention). The test-retest reliabilities for ACT Engage Grades 10–12 are higher than those for ACT Engage Grades 6–9 and ACT Engage College, but are based on smaller sample sizes (as small as $n = 107$).
- Test-retest correlations decrease as the time interval increases, suggesting that psychosocial factors are changing between grades 10 and 12.

Development of Response Pattern Indicators

When ACT Engage Grades 10–12 is scored, students with inconsistent and/or non-varied response patterns are flagged. Response inconsistency indicates that students are responding randomly to an item and without regard to the item's content. Non-varied responding indicates that students tend to use the same response option (e.g., “strongly agree”) for many of the items. Scores for students who are flagged for inconsistent and/or non-varied response patterns should be interpreted with caution. In the field study, approximately 8.5% of high school students were flagged for such types of responding. This was similar proportion to those flagged for response issues on ACT Engage College (7%; ACT, 2008).

Convergent/Discriminant Validity

Intercorrelations. [Table 29](#) features descriptive statistics and intercorrelations between ACT Engage Grades 10–12 scales. The overall set of correlations shows a good convergent/discriminant pattern, with scales that are conceptually similar more strongly correlating with one another. For example, the scales that are part of Motivation and Skills domain (i.e., Academic Discipline, Commitment to College, General Determination, Goal Striving, Communication Skills, Study Skills) are more highly correlated with each other (range $r = .48$ to $.82$, median $r = .62$) than with scales from other domains (range $r = .23$ to $.60$, median $r = .44$).

Second order structure. Based on the results of the Robbins et al. (2004) meta-analysis, as well as the structural analysis conducted during the development of ACT Engage College (Le et al., 2005), ACT Engage Grades 10–12 is expected to form three higher-order factors: Motivation and Skills (Academic Discipline, Commitment to College, General Determination, Goal Striving, Communication Skills, Study Skills), Social Engagement (Social Activity, Social Connection), and Self-Regulation (Academic Self-Confidence, Steadiness). Confirmatory factor analysis (CFA) was conducted to investigate whether the empirical structure of ACT Engage Grades 10–12 scales supports this theory. Confirmatory factor analysis allows for the testing of the adequacy of the hypothesized factor structure (Tabachnick & Fidell, 2007). Specifically, CFA tests whether the scales are in fact indicators of the higher order constructs that they are expected to measure.

The analysis was performed using the statistical software Mplus 5.21 (Muthén & Muthén, 2007). Maximum likelihood estimation was employed to estimate the model. Model fit was evaluated on the basis of several fit and residual indices, including the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). The hypothesized three-factor model showed acceptable fit. This model also was consistent with the CFA solution for ACT Engage College (Le et al., 2005).

As part of documenting the construct validity of ACT Engage Grades 10–12, we examined the relationship between ACT Engage scores and school grades, standardized tests of academic achievement, and school-level factors.

- **Behavioral information.** ACT Engage Grades 10–12 scales are correlated with a couple key behavioral information indicators that have been linked to academic success in the literature (Kaufman & Bradbury, 1992; Rumberger, 1995; Rumberger & Larson, 1998). As shown in [Table 30](#), ACT Engage Grades 10–12 scales have a mild to moderate negative relation to frequency of not having homework completed (times without homework; range $r = -.08$ to $-.37$, median $r = -.24$). Additionally, ACT Engage Grades 10–12 scales are mildly to moderately negatively related to times absent, tardy, and/or skipping class (absenteeism; range $r = -.06$ to $-.26$, median $r = -.16$).
- **Academic achievement indicators.** ACT Engage Grades 10–12 scales are moderately to strongly correlated with all indicators of academic achievement examined. [Table 31](#) shows correlations between the ACT Engage Grades 10–12 scales and school grades, as well as with having failed one or more classes in the previous academic year. As this table shows, ACT Engage scales are generally moderately to strongly related to current grades (range $r = .14$ to $.60$, median $r = .31$) and cumulative high school GPA (range $r = .14$ to $.56$, median $.29$). The scales are also mildly to moderately negatively related to having failed a class in the previous academic year (range $r = -.12$ to $-.38$, median $-.24$). These findings suggest that students with higher scores on ACT Engage Grades 10–12 are more likely to achieve higher school grades and less likely to fail classes. Based on the

literature, the associations of ACT Engage Grades 10–12 scales with standardized achievement measures, such as ACT scores, are expected to be somewhat lower. Psychosocial measures tap achievement-related content that is expected, and has generally been shown, to be distinct from most cognitive skills and standardized achievement measures (Lounsbury, Sundstrom, Loveland, & Gibson, 2003; Robbins et al., 2006; Watson & Clark, 1993). [Table 32](#) shows associations between ACT Engage Grades 10–12 scales and several standardized achievement tests. As can be seen, these relationships are generally small and provide further evidence of discriminant validity. Scales in the Motivation domain (e.g., Academic Discipline, Commitment to College) tend to have larger correlations with these outcomes than scales from the other domains, with one exception: the Academic Self-Confidence scale has much stronger associations with standardized achievement test scores, suggesting that this scale is a good measure of students' perceptions of their own abilities to perform in academic settings.

- **School factors.** As expected, ACT Engage Grades 10–12 scale scores are generally unrelated to school-level factors, including the percent of minority students in school, the percent of free- or reduced-lunch recipients, average grade size, and student-teacher ratio (range $r = -.12$ to $.10$, median $r = -.02$; see [Table 33](#)). These findings are consistent with the literature showing that psychosocial and personality measures are generally unrelated to these types of school factors (Finn & Voelkl, 1993; Glovinsky-Fahsholtz, 1992).

Predictive Validity

ACT Engage Grades 10–12 is expected to predict student academic achievement, and as shown in [Table 31](#), ACT Engage Grades 10–12 scales are related to late high school grades. In order to understand the relative contribution of ACT Engage on predicting GPA, we examined its effects after including academic achievement test scores in the predictive model.

[Table 34](#) summarizes the results of a linear regression model, including standardized beta weights, for two predictors of high school GPA: (1) ACT Plan^{®2} composite score and (2) the mean of the 10 ACT Engage Grades 10–12 scores. As this table shows, the model yielded a multiple correlation of .688, with each predictor providing statistically significant prediction. The total proportion of variance in high school GPA explained by the model (R^2) is .474. These results show that ACT Engage Grades 10–12 provides incremental validity for GPA over and above the prediction provided by standardized achievement test scores.

[Figure 7](#) shows the average high school GPA by ACT performance and ACT Engage Grades 10–12 scores. On the left side of this figure, the first three bars show students who scored in the lowest quartile of ACT Engage 10–12 scores. Within this group, students who scored higher on the ACT earned higher average GPAs. This

² ACT Plan is a discontinued academic achievement test that was replaced by ACT Aspire on June 13, 2014.

pattern is consistent across ACT Engage 10–12 score groups. Thus, highly motivated students with behavior that supports academic success, as evidenced by ACT Engage Grades 10–12, tend to earn higher average GPAs (even if they score in the lowest quartile of the ACT).

ACT researchers also conducted additional analyses using the dominance analysis technique (Azen & Budescu, 2003). [Figure 8](#) provides a graphical representation of the results of the dominance analysis, which includes additional variables of demographics and an early high school academic achievement measure (i.e., ACT Plan). The proportion of variance explained by each predictor (out of the total R^2) is represented by a piece of the pie. As this figure shows, ACT Engage Grades 10–12 accounts for a significant proportion of the explained variance in high school GPA, although prior high school grades seem to be the most important factor in determining later high school GPA. These results confirm that ACT Engage Grades 10–12: (1) is a useful predictor of academic performance and (2) explains additional variance in GPA above and beyond other measures typically used to predict academic performance. [Figure 9](#) displays how the ACT Plan and ACT Engage Grades 10–12 scores can be used as a means of predicting average high school GPA. On the left side of this figure, the first three bars show students who scored in the lowest quartile of ACT Engage 10–12 scores. Within this group, students who scored higher on the ACT Plan earned higher average GPAs. This pattern is consistent across ACT Engage 10–12 score groups.

Norms for ACT Engage Grades 10–12

Scale and percentile scores for ACT Engage Grades 10–12 can be found in [Table 35](#). The percentile for each scale score represents the percentage of students scoring at or below the scale score.

The Academic Success Index scale score represents a student's estimated probability of having a first-year college GPA of at least 2.0. It is reported on a scale of 1 to 99. The norms for the Academic Success Index scale score are developed using the same procedure that was used for the norms for the other ACT Engage Grades 10–12 scales: The percentile for each scale score represents the percentage of students scoring at or below the scale score. Academic Success Index probability and percentile scores for ACT Engage Grades 10–12 can be found in [Table 36](#).

The Retention Index scale score represents a student's estimated probability of persisting to the second year of college. It is also reported on a scale of 1 to 99. The norms for the Graduation Index scale score are developed using the same procedure that was used for the norms for the other ACT Engage Grades 10–12 scales: The percentile for each scale score represents the percentage of students scoring at or below the scale score. Retention Index probability and percentile scores for ACT Engage Grades 10–12 can be found in [Table 37](#).

Compliance with Guidelines and Standards

ACT Engage Grades 10–12 is in compliance with the test development guidelines recommended by the International Test Commission (2006), the Association of Test Publishers (2002), and the Joint Committee on Standards for Educational and Psychological Testing (consisting of the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education). These standards are meant to “provide criteria for the development and evaluation of tests and testing practices and to provide guidelines for assessing the validity of interpretations of tests scores for the intended uses” (p. 1) including delivery formats, administration and hardware/software requirements, and the documentation of test validity and reliability (Joint Committee on the Standards for Educational and Psychological Testing, 2014).

ACT Engage College

General Approach

As aforementioned, ACT Engage College was originally developed and then ACT Engage Grades 10–12 was based on this model. Therefore, much of the foundational literature on ACT Engage College is similar to that of ACT Engage Grades 10–12. However, the validity and reliability data is different due to the different sample populations used. There was a three-part process for developing ACT Engage College: (a) preparation of the initial item pool, (b) empirical item selection procedures, and (c) scale validation and reliability.

Literature Review

The search for predictors of college success has long been a research theme in the educational psychology literature (Hezlett et al., 2001; Pascarella & Terenzini, 2005). However, the sheer diversity of constructs and the lack of integrative framework have been limiting factors in the practical application of research findings.

Robbins et al. (2004) meta-analytically examined the validities of various psychosocial and study skills constructs in predicting two important college success criteria: academic performance (i.e., college GPA) and persistence (i.e., college retention). Based on 109 studies (with a sample of more than 150,000 students), the authors identified and studied a variety of constructs derived from educational persistence and motivational models of college success such as achievement motivation, academic goals, institutional commitment, perceived social support, social involvement, academic self-efficacy, general self-concept, academic-related skills, and contextual influences. After controlling for the effects of traditional predictors (i.e., high school GPA, ACT/SAT assessment scores, and socioeconomic status), these researchers identified three broad psychosocial constructs that have demonstrated incremental validity in predicting the criteria of interest (i.e., academic performance and persistence): Motivation, Social Engagement, and Self-Regulation. These constructs are defined

below and served as the basic foundation for the development of ACT Engage College.

- *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.
- *Self-regulation* includes cognitive and affective processes used to monitor, regulate, and control behavior related to learning.

Based on the results of the meta-analysis conducted by Robbins et al. (2004) and additional reviews of the educational and psychological literatures, several key constructs were identified as being critical to at-risk identification and were the focus of ACT Engage College development.

Preparation of the Initial Item Pool

- **Item writing.** Based on the results of the meta-analysis conducted by Robbins et al. (2004) and additional reviews of the educational and psychological literatures, several key constructs were identified as being critical to at-risk identification. ACT researchers wrote comprehensive definitions and obtained feedback from experts in the fields of education, advising/counseling, and personality psychology. Following revision and face validation, definitions were finalized and shared with item writers. A research team comprised of three applied psychologists wrote items representing the constructs. Writers generated items independently and then met to discuss breadth of coverage and revisions. The procedure yielded an initial pool of 320 items.
- **Preliminary test of item clarity.** To ensure that the items would be comprehensible for first-year college students, items were administered to a group of high school seniors ($N = 38$). The students were asked to rate the extent to which they understood the meaning of the items on a 5-point scale ranging from very easy to understand (1) to very difficult to understand (5). Based on the mean ratings of item clarity, items were presented to a second group of experts in education and communication, who were asked to comment on item clarity. The items were again revised based on this feedback. The resulting item pool consisted of 305 items, which were set to a 6-point response scale ranging from strongly agree (1) to strongly disagree (6).

Empirical Item Selection Procedures

In 2005, a total of 5,970 first-year students from community college and universities as well as high school seniors were recruited to participate in an item selection study. These students were from 50 different institutions and varied in terms of gender, ethnicity, and socioeconomic background. Items were distributed to participants in questionnaire form in a group setting during class time.

- **Exploratory factor analysis.** In order to identify factors (scales) underlying the items and to clarify which items were most strongly associated with each scale, ACT researchers conducted both explanatory and confirmatory factor analyses. The respondent sample was randomly split into two groups, with a little more than half of the sample in the exploratory group ($N = 3,300$) and the remaining participants in the confirmatory group ($N = 2,670$). A factor analysis on the exploratory group resulted in 11 factors. Because of the uninterpretability of the 11th factor, only 10 factors were retained. A parallel analysis also yielded 10 interpretable factors. Based on these results, 145 items were tentatively selected for a confirmatory factor analysis.
- **Confirmatory factor analysis.** Subsequently, a confirmatory factor analysis specifying 10 latent factors was run on the data from the confirmatory group using the maximum likelihood estimation method. The extent to which the model fit the data was examined using a combination of several fit indices (i.e., comparative fit index, root mean square error of approximation, and standardized root mean square residuals). After the completion of the exploratory and confirmatory factor analyses, approximately 10 items were selected for each of the 10 factors (scales). For more details on the above procedures, refer to Le et al. (2005). This process resulted in a final pool of 108 items making up 10 separate scales.

Since the initial data collection and analysis, more than 140,000 students have taken the ACT Engage College. Data from these students continues to support the initial findings. See [Table 38](#) for the demographic characteristics of the current student sample used for data analysis. Many of the analyses discussed below were completed on the current sample of students where indicated.

Scale and Test-Retest Reliability

Reliability estimates were calculated using the total sample of participating students ($N = 144,700$). [Table 39](#) features the internal consistency reliability (i.e., Cronbach's coefficient alpha) of the 10 ACT Engage College scales. As can be seen, ACT Engage College scales demonstrate moderate to high internal consistency reliabilities (Cronbach's alpha range = .81 to .88, median $\alpha = .87$).

Additional analyses were conducted to assess test-retest reliability of ACT Engage College (see [Table 40](#)).

Test-retest data were examined for four time intervals:

- 0–2 months (the short interval that is typical for assessing instrument reliability)
- 3–8 months (interval corresponding to tests given the same school year)
- 9–15 months (tests given approximately one year apart)
- 16–32 months (tests given approximately two years apart)

Results of the analyses on the test-retest data show the following:

- Test-retest reliabilities (0–2 month interval) range from $r = .70$ to $.90$ across scales (median = $.75$). The Retention Index is at the top of this range, while the Academic Success index is at $.75$. The test-retest reliabilities for ACT Engage College are consistently lower than those for ACT Engage Grades 10–12 and ACT Engage Grades 6–9.
- Test-retest correlations decrease as the time interval increases, suggesting that psychosocial factors are changing during the first two years of college.
- Mean difference scores tend to decrease with larger time intervals. This suggests that students rate their behavior lower with more exposure to college, which could be due to them developing a higher standard of comparison.

Development of Response Pattern Indicators

When ACT Engage College is scored, students with inconsistent and/or non-varied response patterns are flagged. Response inconsistency indicates that students are responding randomly to an item and without regard to the item's content. Non-varied responding indicates that students tend to use the same response option (e.g., “strongly agree”) for many of the items. Scores for students who are flagged for inconsistent and/or non-varied response patterns should be interpreted with caution. In the field study, approximately 7% of students were flagged for such types of responding.

Convergent/Discriminant Validity

Intercorrelations between the scales show a good convergent/discriminant pattern, with scales that are conceptually similar more strongly correlating with one another. For example, the General Determination, Academic Discipline, Goal Striving, and Commitment to ACT College scales correlated more highly with each other (range $r = .48$ to $.79$, median $r = .58$) than with other scales (range $r = .20$ to $.64$, median $r = .40$). This pattern was also seen in the relation between Social Activity and Social Connection scales, which correlated more highly with each other ($r = .56$) than with other scales (range $r = .20$ to $.46$, median $r = .40$) (see [Table 41](#)).

As part of documenting the construct validity of ACT Engage College, we examined the relationship between ACT Engage scores and behavioral information and personality characteristics.

- **Behavioral information.** All of the ACT Engage College scales are correlated with a couple key behavioral information indicators that have been linked to academic success in the literature (Kaufman & Bradbury, 1992; Rumberger, 1995; Rumberger & Larson, 1998). As shown in [Table 42](#), ACT Engage College scales Academic Discipline and General Determination have moderate negative relations with frequency of not having homework completed (times without homework;

$r = -.34$ and $r = -.24$ respectively). Additionally, ACT Engage College scales Academic Discipline and Steadiness have mildly negative relations to times absent, tardy, and/or skipping class (absenteeism; $r = -.14$ and $r = -.11$ respectively).

- Big Five Inventory.** The Big Five Inventory (BFI) serves as a measure of the Big Five model of personality. This model proposes that human personality can be captured by five broad personality traits: Conscientiousness, Agreeableness, Extraversion, Emotional Stability, and Openness to Experience. Table 43 features correlations between the BFI and ACT Engage College, as well as between ACT Engage College and GPA with and without effects of social desirability. As expected, there were several convergent relationships between the BFI and the ACT Engage College scales. BFI Neuroticism had a strong negative relation to ACT Engage College Steadiness ($r = -.58$). BFI Extraversion was strongly related to ACT Engage College Social Activity ($r = .72$). BFI Agreeableness was strongly related to ACT Engage College Communication Skills ($r = .57$) and, to a lesser extent, Steadiness ($r = .41$) and General Determination ($r = .35$). BFI Conscientiousness was strongly related to ACT Engage College Academic Discipline ($r = .59$), General Determination ($r = .56$), and Goal Striving ($r = .50$), and to a lesser extent, Study Skills ($r = .37$). Relations between BFI Openness and ACT Engage College scales were generally small (range = .09 to .32, median = .21). Thus, these data suggest that, with the exception of BFI Openness, ACT Engage College taps a variety of BFI personality characteristics.
- Social Desirability.** The effects of social desirability, as noted by the difference between the left (zero-order correlations) and right (social desirability partialled out) columns of each set of correlations in Table 43, are relatively small (range $r = .01$ to .21, median $r = .06$). The two scales that evidenced the highest levels of differences between the zero-order correlations and the correlations with social desirability partialled out were agreeableness (difference range $r = .06$ to .21, median $r = .14$) and neuroticism (difference range $r = -.05$ to $-.18$, median $r = -.11$), which is consistent with the literature. This suggests that social desirability had little impact on relations between the BFI and ACT Engage College. Moreover, there was no relation ($r = .01$) between social desirability and cumulative GPA. For more details, refer to Peterson, Casillas, and Robbins (2006).
- HEXACO.** The HEXACO personality model expands on the Big Five model by adding the domain of Honesty-Humility to the other five domains to form a more complete model of personality. Table 44 features correlations between the HEXACO and ACT Engage College. As expected, there were several convergent relationships between the HEXACO and ACT Engage College scales. Honesty-Humility was mildly to moderately positively related to the ACT Engage College scales (range $r = .14$ to $r = .39$, median $r = .25$). Emotionality was generally unrelated to the ACT Engage college scales with the exception of Steadiness, which had a moderate relationship ($r = -.43$). This parallels the results from the BFI concerning neuroticism, as neuroticism and emotionality overlap in their construct definitions. Extraversion had moderate to strong relations with all of the

ACT Engage College scales (median $r = .59$), with strongest of these being Social Activity ($r = .86$) and Social Connections ($r = .85$). Agreeableness was strongly related to Communication Skills ($r = .53$) and Steadiness ($r = .73$), and was also mildly to moderately positively related to the ACT Engage college scales overall (median $r = .39$). Conscientiousness was also moderately to strongly related to the ACT Engage scales (median $r = .44$), with the strongest relations being Goal Striving ($r = .66$), General Determination ($r = .76$), and Study Skills ($r = .68$). In general, Openness was mildly to moderately related to the ACT Engage scales (range $r = .00$ to $r = .40$, median $r = .012$). Thus, these data suggest that ACT Engage College taps a variety of HEXACO personality characteristics.

- **Grit.** Grit is generally defined as the combination of perseverance of effort and consistency of interest over time. There were several notable relationships between Grit and the ACT Engage College scales. Due to the overlap in construct definitions and what ACT Engage aims to measure, all ACT Engage College scales were related to Grit. Specifically, the ACT Engage College scales related to the strength and consistency of effort including Goal Striving, General Determination, Academic Discipline, Study Skills, and Steadiness strongly related to Grit (range $r = .51$ to $r = .72$, median $r = .52$) (see [Table 44](#)). Therefore, it appears that the concept of Grit is well encompassed by the ACT Engage College scales.

Predictive Validity

To validate ACT Engage College, ACT researchers developed a study to predict three types of important college outcomes: overall academic performance as evidenced by GPA, retention, and success in specific courses (e.g., English composition, college algebra) (Robbins et al., 2006). We recruited 48 postsecondary institutions (23 2-year and 25 4-year) that ranged in geographical location, demographic composition of their student bodies, and selectivity. A total of 14,464 incoming first-year students from these institutions completed ACT Engage College. In addition, ACT researchers had access to these students' ACT and/or ACT Compass® standardized test records. Further, institutions provided GPA and retention information for each student at the end of first and second semesters.

For each outcome considered, ACT Engage College scores were significant predictors, even after controlling for institution, demographic effects, and prior academic achievement. As expected, generalized motivational factors as measured by Academic Discipline, Commitment to College, and General Determination were consistently associated with one or more college outcomes. Further, Academic Self-Confidence and Social Activity were also consistently associated with outcomes. These findings were robust across institutional type and achievement level. For more details, refer to Robbins, Allen, Casillas, Peterson, and Le (2006).

Since ACT Engage College scores are important predictors of GPA and retention, they can be used in conjunction with other measures (e.g., prior academic

achievement) to help select students who have high levels of risk. This application was examined using a sample of students at four-year institutions. Specifically, the selection accuracy of different sets of predictor variables was compared. The effectiveness indicator used to assess the incremental value of measuring ACT Engage College scores was the percent of selected students accurately identified as having dropped out or experiencing academic difficulty after the first semester (defined by semester GPA < 2.0). Several procedures were compared: (1) random selection, (2) using an achievement test score (e.g., ACT Composite score), (3) using ACT Engage College scores, and (4) the combination of achievement and ACT Engage College scores.

The numbers shown in [Table 45](#) are the percentages of students who either dropped out or experienced academic difficulty. In predicting which students will experience academic difficulty, using random selection will yield accurate predictions only 20% of the time. Using ACT scores alone raises accuracy to 44%; however, the highest accuracy is attained using ACT and ACT Engage College scores together (51%). Predicting students who drop out of college follows this same trend. Thus, using ACT Engage College scores alone provides an improvement over current selection methods available to institutions. And, by using ACT Engage College scores in combination with traditional predictors, the rate of accurate identification of high-risk students is maximized for both dropout and academic difficulty.

ACT Engage College can be used to enhance predictions about college GPA, college retention, and college degree completion. [Table 46](#) displays first-year GPA, second-year retention, and degree completion from the ACT Engage College field study sample of 14,371 students who took ACT Engage College in the fall of 2003, during their first year of college. First-year GPA is based on 12,168 students for whom grades were available. As can be seen in the table, most ACT Engage College scales are significant predictors of first year GPA, second-year retention, and degree completion. Another study completed in fall 2011 on a sample of 13,965 students confirms the utility of the ACT Engage College in predicting second-year college retention (see [Table 47](#)).

[Figure 10](#) shows the percentage of students attaining a timely postsecondary degree by ACT Performance and ACT Engage College scores. On the left side of this figure, the first three bars show students who scored in the lowest quartile of ACT scores. Within this group, students who scored higher on the ACT Engage College were more likely to attain their postsecondary degree on time. This pattern is consistent across ACT Engage College score groups. As can be seen in [Figure 10](#), more highly motivated students with behavior that supports academic success, as evidenced by ACT Engage College, are more likely to earn their degree on time (even if they score in the lowest quartile of the ACT).

Norms for ACT Engage College

There are significant differences between ACT Engage mean scores of students in 4-year colleges and those of students in 2-year colleges. ACT Engage reports use separate norms for 4-year and 2-year colleges, depending on the type of institution in which the student is enrolled, so that the percentiles reported allow students and educators to understand a student's scores in relation to his/her peers. Scale and percentile scores for ACT Engage College for 4-year colleges can be found in [Table 48](#), whereas scale and percentile scores for ACT Engage College for 2-year colleges can be found in [Table 49](#).

The Academic Success Index scale score represents a student's estimated probability of having a first-year college GPA of at least 2.0. It is reported on a scale of 1 to 99. The norms for the Academic Success Index scale score are developed using the same procedure that was used for the norms for the other ACT Engage College scales: The percentile for each scale score represents the percentage of students scoring at or below the scale score. Academic Success Index probability and percentile scores for ACT Engage College for 4-year colleges can be found in [Table 50](#), whereas Academic Success Index probability and percentile scores for ACT Engage College for 2-year colleges can be found in [Table 51](#).

The Retention Index scale score represents a student's estimated probability of persisting to the second year of college. It is reported on a scale of 1 to 99. The norms for the Retention Index scale score are developed using the same procedure that was used for the norms for the other ACT Engage College scales: The percentile for each scale score represents the percentage of students scoring at or below the scale score. Retention Index probability and percentile scores for ACT Engage College for 4-year colleges can be found in [Table 52](#), whereas Retention Index probability and percentile scores for ACT Engage College for 2-year colleges can be found in [Table 53](#).

Compliance with Guidelines and Standards

ACT Engage College is in compliance with the test development guidelines recommended by the International Test Commission (2006), the Association of Test Publishers (2002), and the Joint Committee on Standards for Educational and Psychological Testing (consisting of the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education). These standards are meant to "provide criteria for the development and evaluation of tests and testing practices and to provide guidelines for assessing the validity of interpretations of tests scores for the intended uses" (p. 1) including delivery formats, administration and hardware/software requirements, and the documentation of test validity and reliability (Joint Committee on the Standards for Educational and Psychological Testing, 2014).

Glossary

1. **Beta Weights:** A standardized value of the average amount by which the dependent variable increases when the independent variable increases one standard deviation and other independent variables are held constant.
2. **Cronbach's Alpha:** An estimate of how closely a related set of items are as a group. It is a measure of a psychometric tests internal consistency.
3. **Correlation:** The degree to which two or more items, attributes, or measurements show a tendency to vary together.
4. **Cohen's d :** A standardized measure of the effect size (i.e., practical significance) of the difference between two average scores. Values of 0 to .2 indicate a small effect/difference, .2–.5 a medium effect/difference, and above .5 a large effect/difference.
5. **Effect Size:** A measure of the strength of a phenomenon.
6. **R^2 :** A statistical measure of how well a regression model fits the data. It is the percentage of the response variable variation that is explained by a linear model.
7. **Standard Error:** The accuracy with which a sample represents a population.
8. **Dominance Analysis:** An analysis based on linear regression that calculates weighted averages of how much variation a predictor accounts for in an outcome.

Tables and Figures

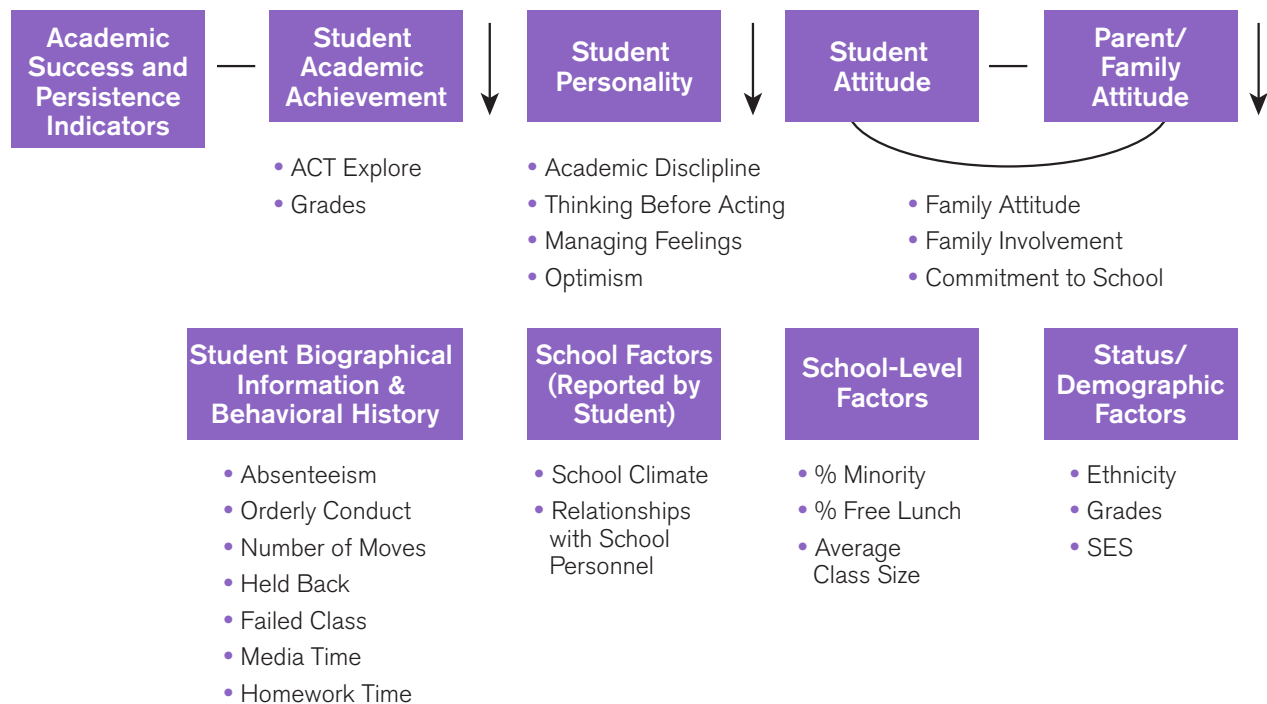


Figure 1. Expanded conceptual model of predictors of student success

Table 1. ACT Engage Grades 6–9 Field Study: Demographic Characteristics of Middle School Students

Characteristic			
Age		M = 13.5 SD = 0.7	
		Percent	
Gender	Female	49	
	Male	51	
Race/Ethnicity	American Indian, Alaskan Native	1	
	Asian	1	
	Black/African American	10	
	Native Hawaiian/Pacific Islander	1	
	White	62	
	Two or more races	3	
	Prefer not to respond	2	
	Hispanic/Latino	16	
Missing		4	
Language	English	88	
	English and another language	10	
	A language other than English	2	
Highest Education Level for Parent(s)/Guardian(s)		Mother/Guardian 1	Father/Guardian 2
	Did not complete high school	17	19
	High school diploma or equivalent	29	27
	Career/technical training (e.g., certificate program)	4	14
	Some college, but no degree	13	9
	2-year college degree (Associate's)	11	7
	4-year college degree (Bachelor's)	16	15
Some education or degree above a 4-year college degree	10	10	
Grade Level	7th	18	
	8th	82	
Held Back One or More Grades	No	88	
	Yes	12	
Failed One or More Classes in Middle School	No	80	
	Yes	20	
School Grades at Time of ACT Engage Grades 6–9 Administration	Mostly As	30	
	Mostly Bs	38	
	Mostly Cs	27	
	Mostly Ds	4	
	Below D	1	
Region	East	11	
	Midwest	51	
	South	38	

Note: N = 4,660.

Table 1. (continued)

Characteristic		
Location	Large Central City	11
	Mid-Size Central City	46
	Urban Fringe of Mid-Size City	27
	Small Town	6
	Rural	10
Percent Minority	0–25	51
	26–50	44
	51–75	6
	76–100	4
Percent Free Lunch	0–25	11
	26–50	55
	51–75	23
	76–100	11
Student-Teacher Ratio	Low (<10)	7
	Medium (10–20)	86
	Large (>20)	4
Average Class/Cohort Size	Small (<100)	7
	Medium (100–200)	21
	Large (>200)	73

Note: $N = 4,660$.

Table 2. ACT Engage Grades 6–9 Sample Demographic Characteristics

Characteristics		
Age		$M = 13.1$ $SD = 1.3$
		Percent
Gender	Female	49
	Male	51
Race/Ethnicity	African American/Black(Non-Hispanic)	12
	American Indian, Alaska Native	2
	Asian American, Pacific Islander	2
	Caucasian White (Non-Hispanic)	40
	Hispanic/Latino	32
	Native Hawaiian/Pacific Islander	1
	Prefer not to respond	6
	Two or more races	5
Grade Level	6th	23
	7th	21
	8th	26
	9th	30
Flag*	Yes	5
	No	95

Note: $N = 180,424$. * $N = 190,492$. Students with flagged responses were dropped in other analyses

Table 3. Internal Consistency Reliability of ACT Engage Grades 6–9 Scales

Scales	No. of Items	Score Range*	Alpha
Academic Discipline	11	11–66	.91
Commitment to School	10	10–60	.89
Optimism	10	10–60	.90
School Safety Climate	11	11–66	.86
Family Attitude Toward Education	10	10–60	.86
Family Involvement	9	9–54	.85
Relationships with School Personnel	12	12–72	.89
Managing Feelings	12	12–72	.89
Thinking Before Acting	12	12–72	.84
Orderly Conduct*	9	0–9	.82

Note: $N = 180,424$. Scales organized by domain. Orderly Conduct is scored on a Y/N scale. All other scales are scored on a 6-point, Likert-type scale. *The scores were transformed on a 10–60 scale in most analysis.

Table 4. Test-Retest Statistics for ACT Engage Grades 6–9

Scales	Time Interval (Months)	N	r	Test 1		Test 2		Difference	
				Mean	SD	Mean	SD	Mean	SD
Academic Discipline	0–2	980	.83	46.9	8.9	47.6	8.8	0.7	5.2
	3–8	611	.68	46.0	8.4	46.3	8.7	0.3	6.9
	9–15	10,445	.67	47.2	8.8	46.9	8.6	-0.3	7.1
	16–32	6,420	.58	47.3	8.8	46.5	8.4	-0.8	7.9
Commitment	0–2	978	.74	55.4	6.5	55.1	7.1	-0.3	5.0
	3–8	611	.54	55.2	6.2	55.1	6.7	-0.1	6.2
	9–15	10,424	.54	56.2	5.5	55.9	5.7	-0.2	5.3
	16–32	6,419	.44	56.4	5.4	55.7	5.6	-0.6	5.8
Family Attitude	0–2	976	.72	54.6	6.4	54.4	6.7	-0.2	4.9
	3–8	610	.53	54.6	5.9	54.3	6.2	-0.3	5.9
	9–15	10,401	.56	55.4	5.5	55.1	5.6	-0.3	5.2
	16–32	6,418	.49	55.7	5.3	54.9	5.6	-0.8	5.5
Family Involvement	0–2	980	.78	46.1	9.3	47.0	9.5	0.9	6.3
	3–8	611	.66	45.1	9.0	45.5	9.3	0.4	7.6
	9–15	10,434	.65	47.2	8.9	46.9	8.9	-0.3	7.5
	16–32	6,421	.56	47.6	8.8	46.7	8.9	-0.9	8.3
Managing Feelings	0–2	976	.85	41.0	10.7	42.4	10.7	1.4	5.9
	3–8	610	.73	39.3	10.1	40.9	10.2	1.6	7.5
	9–15	10,399	.69	41.7	10.6	42.2	10.3	0.5	8.3
	16–32	6,418	.58	42.5	10.6	42.7	9.8	0.2	9.4
Optimism	0–2	980	.79	48.6	8.2	48.8	8.5	0.2	5.5
	3–8	611	.67	47.2	8.9	47.7	8.9	0.6	7.3
	9–15	10,429	.60	49.2	7.8	49.1	7.9	-0.1	7.0
	16–32	6,419	.51	49.6	7.6	48.8	8.0	-0.9	7.7

Table 4. (continued)

Scales	Time Interval (Months)	N	r	Test 1		Test 2		Difference	
				Mean	SD	Mean	SD	Mean	SD
Orderly Conduct	0-2	974	.81	44.1	14.5	45.9	14.5	1.8	8.9
	3-8	609	.69	42.1	14.8	44.0	15.4	2.0	11.9
	9-15	10,363	.66	44.5	14.3	46.1	14.1	1.7	11.6
	16-32	6,414	.55	44.6	14.1	47.8	13.5	3.2	13.2
Relationships with School Personnel	0-2	979	.77	39.2	9.7	40.0	10.1	0.8	6.7
	3-8	611	.62	38.9	9.4	39.3	9.6	0.5	8.3
	9-15	10,428	.60	40.3	9.4	39.8	9.6	-0.5	8.4
	16-32	6,419	.50	41.1	9.2	39.6	9.4	-1.5	9.3
School Safety Climate	0-2	980	.76	41.1	9.0	41.7	9.3	0.6	6.4
	3-8	611	.65	40.3	9.2	40.8	9.3	0.5	7.7
	9-15	10,448	.62	41.3	8.8	40.3	8.9	-0.9	7.7
	16-32	6,421	.47	41.6	8.4	39.7	8.5	-1.9	8.7
Thinking Before Acting	0-2	980	.81	40.0	8.3	41.4	8.6	1.4	5.2
	3-8	611	.66	38.6	8.0	39.6	8.6	1.0	6.9
	9-15	10,434	.65	40.7	8.1	41.3	8.2	0.7	6.8
	16-32	6,420	.54	40.9	7.9	41.6	8.0	0.6	7.6
Academic Success Index	0-2	974	.84	71.3	19.5	72.4	19.6	1.1	11.0
	3-8	609	.74	68.2	20.2	69.2	20.8	1.1	14.7
	9-15	10,359	.71	72.4	18.6	72.3	18.6	-0.1	14.1
	16-32	6,413	.64	73.0	18.0	72.6	18.0	-0.4	15.3
Graduation Index	0-2	974	.83	82.6	19.3	82.9	19.8	0.2	11.4
	3-8	609	.72	81.3	18.5	80.9	20.4	-0.4	14.7
	9-15	10,349	.69	84.6	16.5	84.4	17.0	-0.2	13.3
	16-32	6,414	.61	85.7	15.4	85.1	16.4	-0.6	14.0

Table 5. Descriptive Statistics and Intercorrelation Matrix for ACT Engage Grades 6–9 Scales

Scales	M*	SD	1	2	3	4	5	6	7	8	9	10
Academic Discipline	48.25	8.58	–									
Commitment to School	55.96	5.79	.52	–								
Optimism	48.73	8.49	.53	.52	–							
School Safety Climate	42.69	9.13	.40	.28	.36	–						
Family Attitude Toward Education	55.38	5.63	.50	.70	.30	.26	–					
Family Involvement	47.40	9.00	.56	.48	.42	.33	.63	–				
Relationships with School Personnel	40.42	9.66	.48	.36	.42	.35	.35	.54	–			
Managing Feelings	42.49	10.53	.57	.31	.66	.66	.29	.42	.48	–		
Thinking Before Acting	40.88	8.36	.60	.33	.46	.36	.30	.42	.42	.66	–	
Orderly Conduct	46.10	13.78	.56	.28	.30	.35	.26	.33	.35	.66	.59	–

Note: $N = 180,424$. All correlations are significant ($p \leq .001$). *All scores were transformed on a 10–60 scale.

Table 6. Correlations between ACT Engage Grades 6–9 Scales and Behavioral Information

Scales	Daily Time Spent on Homework	Times without Homework	Media Time	Absenteeism	Times Changed School
Academic Discipline	.23	-.42	-.30	-.38	-.13
Commitment to School	.14	-.18	-.17	-.23	-.07
Optimism	.10	-.21	-.17	-.20	-.11
School Safety Climate	.12	-.16	-.22	-.23	-.11
Family Attitude Toward Education	.13	-.18	-.16	-.23	-.08
Family Involvement	.17	-.23	-.21	-.22	-.11
Relationships with School Personnel	.13	-.19	-.19	-.20	-.10
Managing Feelings	.18	-.24	-.32	-.29	-.15
Thinking Before Acting	.17	-.25	-.27	-.24	-.12
Orderly Conduct	.19	-.27	-.29	-.33	-.15

Note: $N = 180,424$. All correlations are significant ($p < .001$).

Table 7. Correlations between ACT Engage Grades 6–9 Scales and Academic Achievement

Scales	Achievement					
	Prior Grades	ACT Explore Composite*	ACT Explore English*	ACT Explore Mathematics*	ACT Explore Reading*	ACT Explore Science*
Academic Discipline	.51	.29	.26	.25	.25	.26
Commitment to School	.30	.23	.20	.19	.20	.20
Optimism	.28	.12	.10	.11	.10	.11
School Safety Climate	.20	.18	.15	.16	.15	.16
Family Attitude Toward Education	.28	.22	.20	.18	.20	.19
Family Involvement	.29	.14	.13	.11	.13	.12
Relationships with School Personnel	.24	.11	.08	.09	.09	.11
Managing Feelings	.31	.22	.19	.18	.20	.20
Thinking Before Acting	.31	.18	.17	.14	.17	.17
Orderly Conduct	.37	.27	.24	.22	.25	.25

Note: $N = 180,424$. * $N = 85,122$. All correlations are significant ($p < .001$).

Table 8. Correlations between ACT Engage Grades 6–9 Scales and School-Level Factors

Scales	School Characteristics			
	Percent Minority	Percent Free Lunch	Average Grade Size	Student-Teacher Ratio
Academic Discipline	-.16	-.06	-.03	-.02
Commitment to School	-.04	-.04	.01	-.02
Optimism	-.01	-.06	.02	.00
School Safety Climate	-.24	-.14	-.06	-.02
Family Attitude Toward Education	-.06	-.05	.00	-.02
Family Involvement	-.09	-.07	-.01	.00
Relationships with School Personnel	-.08	-.06	-.03	.02
Managing Feelings	-.11	-.13	.04	-.03
Thinking Before Acting	-.02	-.08	.04	-.01
Orderly Conduct	-.10	-.12	.06	-.03

Note: $N = 180,424$. * $N = 85,122$. All correlations are significant ($p < .001$).

Table 9. Comparison of ACT Engage Grades 6–9 Scales and Behavioral Information Across Middle and Alternative School Students

Variables	Middle*		Alternative**		Sig	<i>d</i>
	M	SD	M	SD		
ACT Engage Grades 6–9 Scales						
Academic Discipline	4.80	0.92	4.07	1.34	***	.77
Commitment to School	5.63	0.60	5.26	0.93	***	.59
Optimism	4.79	0.93	4.36	1.10	***	.45
School Safety Climate	4.19	0.96	3.51	1.06	***	.71
Family Attitude Toward Education	5.55	0.67	5.13	0.95	***	.62
Family Involvement	4.67	1.04	4.21	1.10	***	.44
Relationships with School Personnel	3.95	1.02	3.84	1.17	ns	.10
Managing Feelings	3.83	1.20	3.17	1.18	***	.45
Thinking Before Acting	3.91	1.10	3.20	0.95	***	.66
Orderly Conduct	0.68	0.30	0.41	0.32	***	.88
Prior Grades and Behavioral Information						
Prior Grades	3.92	0.90	3.05	1.17	***	.95
Hours of Homework	0.97	0.55	0.80	0.72	***	.31
Times without Homework	1.29	0.91	1.64	1.27	***	.31
Media Time	2.30	1.71	3.30	2.62	***	.57
Absenteeism	1.60	1.96	6.47	5.31	***	2.18
Times Changed School	1.93	1.92	3.92	2.31	***	1.02
Held Back a Grade	0.12	0.33	0.31	0.46	***	.56
Failed Class in Middle School	0.20	0.40	0.61	0.49	***	1.01

Note: **N* = 4,646. ***N* = 234. ****p* < .01. ns = not significant.

Table 10. ACT Engage Grades 6–9: Two Year Follow-Up Sample Demographic Characteristics

Characteristic		
Age	<i>M</i> = 13.52 <i>SD</i> = 0.61	
	Percentage	
Gender	Female	51
	Male	49
Race/Ethnicity	American Indian, Alaskan Native	1
	Asian	1
	Black/African American	9
	Native Hawaiian/Pacific Islander	1
	White	67
	Two or more races	3
	Prefer not to respond	2
	Hispanic/Latino	12
Missing	4	
Grade	7th	6
	8th	94

Note: *N* = 2,764

Table 11. Correlations Between ACT Engage Grades 6–9 Scales and School-Reported 9th-Grade GPA

Scales	9th-Grade GPA
Academic Discipline	.46
Commitment to School	.27
Optimism	.25
School Safety Climate	.17
Family Attitude Toward Education	.24
Family Involvement	.27
Relationships with School Personnel	.31
Managing Feelings	.33
Thinking Before Acting	.25
Orderly Conduct	.42

Note: $N = 2,269$. All correlations are significant ($p \leq .01$).

Table 12. Correlations between ACT Engage Grades 6–9 Scales, 10th-Grade GPA, and On-Time High School Graduation

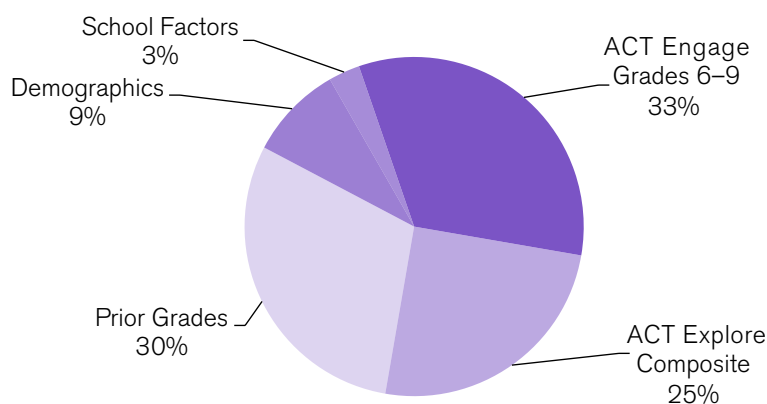
Scales	10th-Grade GPA	On-Time High School Graduation
Academic Discipline	.45	.27
Commitment to School	.28	.23
Optimism	.26	.19
School Safety Climate	.18	.10
Family Attitude Toward Education	.27	.21
Family Involvement	.27	.19
Relationships with School Personnel	.28	.17
Managing Feelings	.32	.18
Thinking Before Acting	.24	.12
Orderly Conduct	.42	.26

Note: $N = 2,764$. Correlations $> .04$ are significant at $p < .05$.

Table 13. Correlations between ACT Engage Grades 6–9 Scales, 10th-Grade GPA, and On-Time High School Graduation

Effect	10th-Grade GPA			On-Time High School Graduation		
	Beta	SE	P-value	Beta	SE	P-value
Intercept	0.027	0.108	0.805	3.904*	0.574	<.0001
School % FRL	0.075	0.064	0.244	-0.222	0.272	0.413
School % Minority	-0.101*	0.045	0.024	0.089	0.188	0.634
School Size	-0.011	0.055	0.836	0.120	0.241	0.619
Male	-0.170*	0.029	<.0001	0.052	0.161	0.747
White	0.110	0.104	0.290	-0.385	0.549	0.484
Black	0.000	0.112	0.998	-0.407	0.576	0.480
Hispanic	-0.114	0.108	0.294	-0.290	0.568	0.610
Other Race/Ethnicity	0.079	0.110	0.473	-0.106	0.584	0.856
Explore Composite	0.468*	0.015	<.0001	0.130	0.107	0.228
Academic Discipline	0.232*	0.021	<.0001	0.034	0.101	0.737
Commitment	-0.042*	0.019	0.028	0.074	0.084	0.381
Family Attitude	0.036	0.019	0.062	0.078	0.085	0.361
Family Involvement	0.019	0.020	0.348	0.040	0.103	0.697
Managing Feelings	-0.003	0.020	0.892	0.064	0.104	0.537
Optimism	0.016	0.019	0.407	0.184	0.098	0.060
Orderly Conduct	0.121*	0.020	<.0001	0.217*	0.101	0.032
Relationship w/School Personnel	0.033	0.021	0.107	-0.014	0.114	0.902
School Climate	-0.033	0.018	0.067	-0.166	0.096	0.084
Thinking Before Acting	-0.024	0.018	0.186	-0.101	0.095	0.287
10th Grade GPA	–	–	–	2.117*	0.126	<.0001

Note: $N = 2,764$. * Significant at $p < 0.05$.



Note: $N = 3,325$. Prediction based on a linear regression model ($R^2 = .55$). Mostly 10th graders, some 9th graders at time GPA data were collected (two years after assessments were given). School-reported GPA.

Figure 2. Proportion of variance predicted in early high school GPA

Table 14. Percentage of Students Accurately Identified as Having 9th-Grade GPA < 2.0

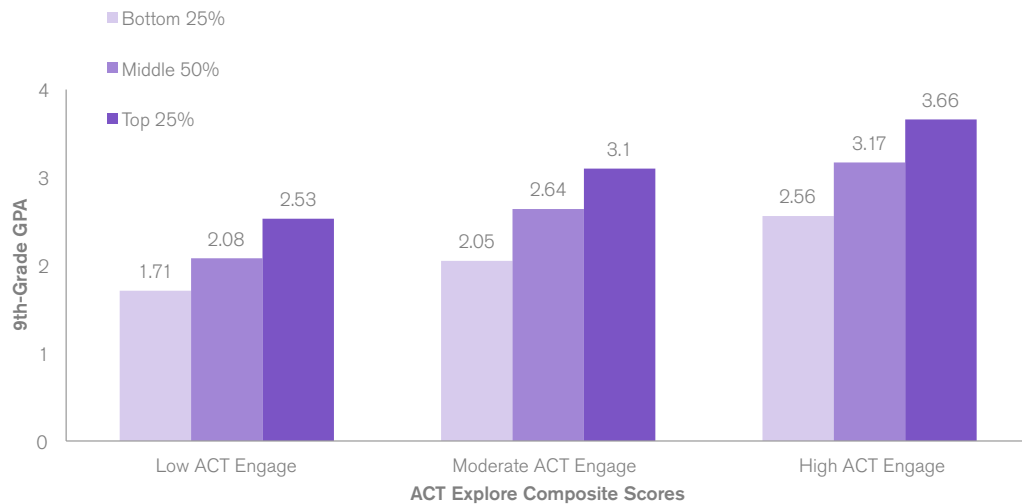
Selection Method	Hit Rate (%)
Random Selection	24
ACT Explore Composite Only	69
ACT Engage Grades 6–9 & Behavioral Information Only	80
ACT Explore Composite + ACT Engage Grades 6–9 & Behavioral Information	83

Note: The hit rate is the percentage of students, among the bottom 5% on the flagging variables, who had 9th-grade GPA < 2.0.

Table 15. Percentage of Students Accurately Identified as Having Failed a Class

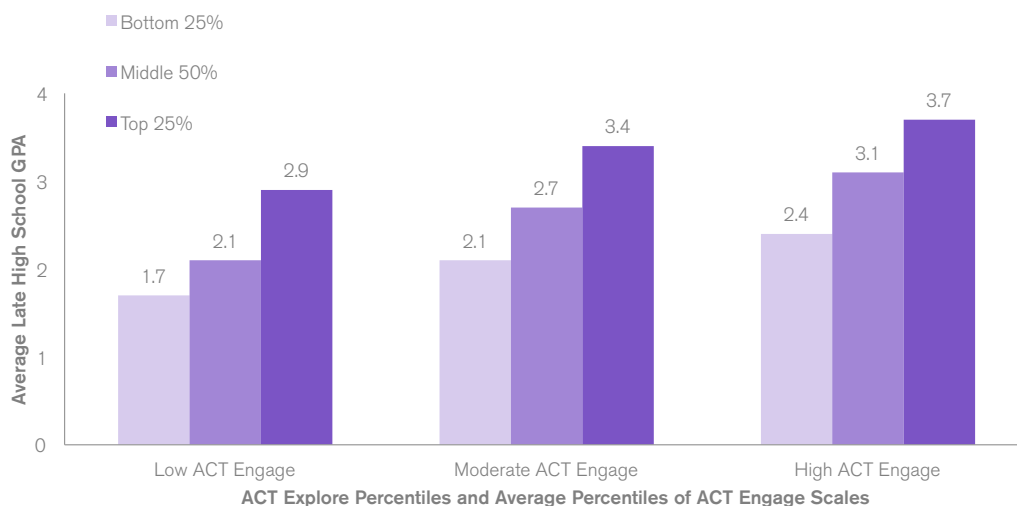
Selection Method	Hit Rate (%)
Random Selection	18
ACT Explore Composite Only	57
ACT Engage Grades 6–9 & Behavioral Information Only	67
ACT Explore Composite + ACT Engage Grades 6–9 & Behavioral Information	71

Note: The hit rate is the percentage of students, among the bottom 5% on the flagging variables, who had failed at least one class in the prior academic year.



Note: N = 3,325. Mostly 10th graders, some 9th graders at time GPA data were collected (two years after assessments were given). School-reported GPA.

Figure 3. Average 9th-grade GPA by ACT Explore and ACT Engage Grades 6–9 score groups



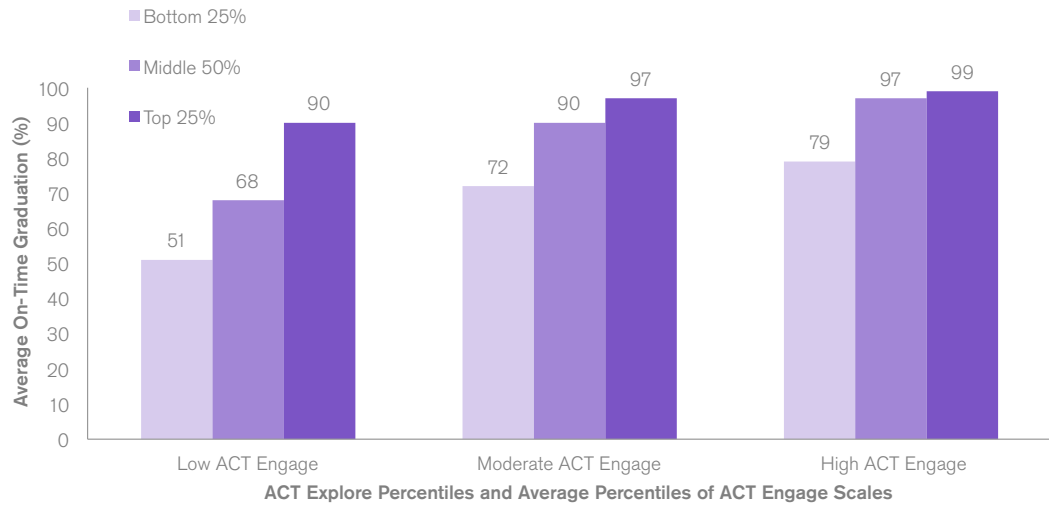
Note. *N* = 2,738. Mostly high school graduates, some 12th graders at time GPA data was collected (four years after assessments were given). School-reported GPA.

Figure 4. Average late high school GPA by ACT Explore and ACT Engage 6–9 score groups

Table 16. Effect Size (*d*) of ACT Engage Grades 6–9 Scales and Behavioral Information for Detecting Students Who Subsequently Failed One or More Classes

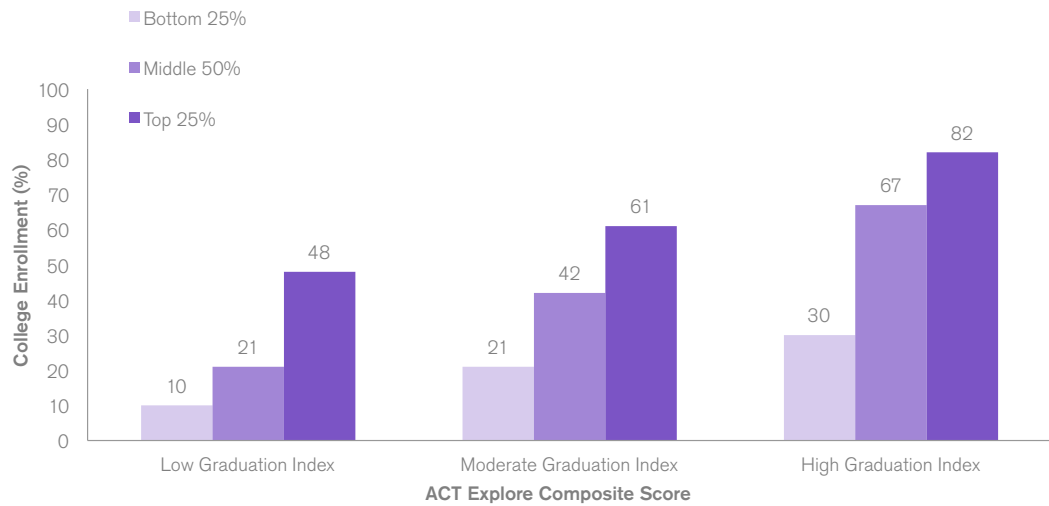
	Number of Failed Classes*	
	1	2+
ACT Engage Scales		
Academic Discipline	.53	.95
Commitment to School	.37	.66
Optimism	.26	.55
School Safety Climate	.21	.37
Family Attitude Toward Education	.36	.58
Family Involvement	.18	.39
Relationships with School Personnel	.32	.48
Managing Feelings	.41	.58
Thinking Before Acting	.37	.46
Orderly Conduct	.56	.85
Prior Grades and Behavioral Information		
Prior Grades	.79	1.20
Hours of Homework	.13	.41
Times without Homework	.52	.71
Media Time	.16	.36
Absenteeism	.28	.73
Times Changed School	.09	.30
Held Back a Grade	.29	.47
Failed Class in Middle School	.76	1.28

Note: **N* for 0 failed classes = 2,655; *N* for 1 failed class = 202; *N* for 2+ failed classes = 299.



Note: N = 2,751. School Reported Graduation.

Figure 5. Average on-time high school graduation by ACT Explore and ACT Engage Grades 6–9



Note: N = 3,356. College enrollment data from National Clearing House.

Figure 6. Fall 2011 college enrollment rates by ACT Explore and ACT Engage Grades 6–9 Graduation Index

Table 17. Correlation between ACT Engage Grades 6–9 Scales and ACT Aspire Scale Scores

Scales	ACT Aspire Scale Score					
	English (<i>N</i> = 922)	Math (<i>N</i> = 901)	Reading (<i>N</i> = 750)	Science (<i>N</i> = 707)	Writing (<i>N</i> = 398)	Composite (<i>N</i> = 642)
Academic Discipline	.20	.12	.16	.20	.13	.21
Commitment to School	.19	.16	.11	.11		.17
Optimism	.10	.07	.08	.08		.10
Family attitude toward Education	.19	.14	.13	.14		.17
Family involvement	.11					
Relationships with school Personnel			.08			
School Safety Climate	.11		.10	.15		.13
Managing Feelings	.16		.12	.14	.15	.14
Thinking before Acting	.14		.14	.13	.12	.14
Orderly Conduct	.26	.14	.20	.21		.23

Note: Only statistically significant correlation coefficients are listed ($p < .05$). The two highest correlations for each ACT Aspire subject/Composite are indicated in bold.

Table 18. Correlations of Academic Success Index and Graduation Index with ACT Aspire Scale Scores

Index	ACT Aspire Scale Score					
	English	Math	Reading	Science	Writing	Composite
Academic Success Index	.38 (<i>N</i> = 923)	.32 (<i>N</i> = 901)	.39 (<i>N</i> = 750)	.43 (<i>N</i> = 707)	.12 (<i>N</i> = 398)	.45 (<i>N</i> = 642)
Graduation Index	.36 (<i>N</i> = 918)	.31 (<i>N</i> = 898)	.35 (<i>N</i> = 747)	.40 (<i>N</i> = 704)	.28 (<i>N</i> = 394)	.42 (<i>N</i> = 640)

Note: All correlations significant at $p < .05$.

Table 19. Scale and Percentile Scores for ACT Engage Grades 6–9 Scales (Grade 6)

Score	Percentiles									
	AD	CS	FA	FI	MF	OP	OC	RSP	SSC	TBA
1	–	–	–	–	–	–	–	–	–	–
2	–	–	–	–	–	–	–	–	–	–
3	–	–	–	–	–	–	–	–	–	–
4	–	–	–	–	–	–	–	–	–	–
5	–	–	–	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–
8	–	–	–	–	–	–	–	–	–	–
9	–	–	–	–	–	–	–	–	–	–
10	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	2	1	1	1	1	1
16	1	1	1	1	2	1	4	2	1	1
17	1	1	1	1	3	1	4	2	1	1
18	1	1	1	1	4	1	4	2	2	1
19	1	1	1	1	4	1	4	3	2	2
20	1	1	1	1	5	1	4	3	2	2
21	1	1	1	1	6	1	7	4	3	2
22	1	1	1	1	6	1	7	5	3	3
23	1	1	1	1	8	1	7	6	3	4
24	1	1	1	1	9	2	7	7	4	4
25	1	1	1	1	10	2	7	7	5	5
26	1	1	1	2	11	3	7	8	6	6
27	2	1	1	2	13	3	12	10	7	7
28	2	1	1	2	15	3	12	12	7	9
29	2	1	1	3	16	3	12	14	9	11
30	2	1	1	3	18	4	12	15	10	13
31	3	1	1	3	20	4	12	17	12	15
32	4	1	1	4	22	5	20	19	15	17
33	4	1	1	5	24	6	20	25	16	23
34	5	1	1	6	27	7	20	27	18	25
35	7	1	1	6	29	8	20	30	21	28
36	8	2	1	8	30	9	20	34	23	31
37	8	2	1	8	33	11	20	36	26	34
38	9	2	1	11	37	12	28	42	29	40
39	10	3	1	13	39	14	28	45	32	44

Note: AD = Academic Discipline; CS = Commitment to School; FA = Family Attitude Toward Education; FI = Family Involvement; MF = Managing Feelings; OP = Optimism; OC = Orderly Conduct; RSP = Relationships with School Personnel; SSC = School Safety Climate; TBA = Thinking Before Acting

Table 19. (continued)

Score	Percentiles									
	AD	CS	FA	FI	MF	OP	OC	RSP	SSC	TBA
40	12	3	2	15	42	16	28	48	36	49
41	14	4	3	16	44	18	28	52	39	53
42	16	4	3	19	46	21	28	55	43	56
43	18	4	3	22	51	23	40	62	47	63
44	20	5	4	26	54	27	40	65	52	67
45	25	5	5	26	56	31	40	67	60	69
46	29	6	6	29	59	34	40	70	64	72
47	33	7	7	34	61	38	40	72	68	75
48	37	8	8	39	66	42	40	78	71	82
49	41	10	9	43	69	47	54	82	75	85
50	45	13	11	49	71	53	54	84	79	88
51	50	15	14	55	74	57	54	87	82	89
52	54	17	17	60	77	63	54	89	85	91
53	59	21	20	65	82	68	54	93	88	94
54	64	24	23	69	84	73	72	94	91	95
55	75	29	30	69	86	78	72	95	95	96
56	80	34	35	75	89	83	72	97	97	97
57	83	40	40	82	91	86	72	98	98	98
58	88	48	50	88	95	90	72	99	99	99
59	93	60	63	93	97	95	72	99	99	99
60	99	99	99	99	99	99	99	99	99	99

Note: AD = Academic Discipline; CS = Commitment to School; FA = Family Attitude Toward Education; FI = Family Involvement; MF = Managing Feelings; OP = Optimism; OC = Orderly Conduct; RSP = Relationships with School Personnel; SSC = School Safety Climate; TBA = Thinking Before Acting

Table 20. Scale and Percentile Scores for ACT Engage Grades 6–9 Scales (Grades 7–9)

Score	Percentiles									
	AD	CS	FA	FI	MF	OP	OC	RSP	SSC	TBA
1	–	–	–	–	–	–	–	–	–	–
2	–	–	–	–	–	–	–	–	–	–
3	–	–	–	–	–	–	–	–	–	–
4	–	–	–	–	–	–	–	–	–	–
5	–	–	–	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–
8	–	–	–	–	–	–	–	–	–	–
9	–	–	–	–	–	–	–	–	–	–
10	1	1	1	1	1	1	3	1	1	1
11	1	1	1	1	1	1	3	1	1	1
12	1	1	1	1	1	1	3	1	1	1
13	1	1	1	1	1	1	3	1	1	1
14	1	1	1	1	2	1	3	1	1	1
15	1	1	1	1	2	1	3	2	2	1
16	1	1	1	1	3	1	6	2	3	2
17	1	1	1	1	3	1	6	3	4	2
18	1	1	1	1	5	1	6	4	5	3
19	1	1	1	2	6	1	6	5	5	3
20	1	1	1	2	7	1	6	6	7	4
21	1	1	1	3	8	2	13	7	7	4
22	1	1	1	3	9	2	13	8	9	5
23	1	1	1	4	12	2	13	10	10	6
24	2	1	1	5	13	2	13	12	12	7
25	3	1	1	5	14	3	13	13	15	9
26	3	1	1	5	16	3	13	15	17	10
27	3	1	1	6	18	4	21	17	20	11
28	4	1	1	7	21	4	21	21	21	14
29	4	1	1	8	23	5	21	23	23	15
30	5	1	1	10	26	6	21	25	26	19
31	6	1	1	11	28	6	21	28	28	20
32	7	1	1	13	30	7	29	31	30	22
33	8	1	1	15	35	8	29	36	34	28
34	10	1	2	16	38	9	29	39	36	31
35	13	2	2	16	41	10	29	41	43	34
36	15	2	3	18	44	11	29	45	46	37
37	16	3	3	21	47	13	29	48	50	40
38	18	3	3	23	52	15	40	55	53	47
39	20	3	4	26	55	17	40	59	56	51

Note: AD = Academic Discipline; CS = Commitment to School; FA = Family Attitude Toward Education; FI = Family Involvement; MF = Managing Feelings; OP = Optimism; OC = Orderly Conduct; RSP = Relationships with School Personnel; SSC = School Safety Climate; TBA = Thinking Before Acting

Table 20. (continued)

Score	Percentiles									
	AD	CS	FA	FI	MF	OP	OC	RSP	SSC	TBA
40	23	4	5	29	58	20	40	62	60	55
41	26	4	5	32	60	23	40	65	63	58
42	29	5	6	35	63	25	40	68	66	62
43	32	6	7	40	68	29	51	74	70	67
44	36	7	8	43	70	32	51	76	72	70
45	42	8	9	43	72	35	51	79	78	74
46	45	9	11	47	74	39	51	81	80	77
47	49	11	13	51	77	43	51	84	83	79
48	53	13	15	55	80	47	51	88	86	84
49	56	14	17	59	82	52	64	90	88	86
50	61	17	21	64	85	58	64	91	91	90
51	64	19	24	68	86	63	64	92	93	91
52	68	22	26	71	88	67	64	94	94	92
53	71	25	30	76	91	72	64	96	95	94
54	76	28	34	80	92	76	76	97	96	95
55	82	32	41	80	93	80	76	97	98	96
56	86	36	45	84	94	84	76	98	99	97
57	88	42	51	88	96	89	76	98	99	97
58	91	52	59	91	98	92	76	99	99	98
59	95	63	68	94	99	96	76	99	99	98
60	99	99	99	99	99	99	99	99	99	99

Note: AD = Academic Discipline; CS = Commitment to School; FA = Family Attitude Toward Education; FI = Family Involvement; MF = Managing Feelings; OP = Optimism; OC = Orderly Conduct; RSP = Relationships with School Personnel; SSC = School Safety Climate; TBA = Thinking Before Acting

Table 21. Academic Success Index Probability and Percentile Scores for ACT Engage Grades 6–9 (Grade 6)

Probability	ASI	Probability	ASI	Probability	ASI	Probability	ASI
1	1	26	2	51	11	76	40
2	1	27	2	52	12	77	41
3	1	28	2	53	12	78	43
4	1	29	3	54	13	79	46
5	1	30	3	55	14	80	49
6	1	31	3	56	15	81	52
7	1	32	3	57	15	82	54
8	1	33	4	58	16	83	56
9	1	34	4	59	16	84	59
10	1	35	4	60	17	85	62
11	1	36	5	61	19	86	65
12	1	37	5	62	20	87	67
13	1	38	5	63	21	88	69
14	1	39	6	64	21	89	71
15	1	40	6	65	22	90	73
16	1	41	7	66	23	91	77
17	1	42	7	67	24	92	81
18	1	43	7	68	25	93	86
19	1	44	8	69	27	94	93
20	1	45	8	70	29	95	97
21	1	46	9	71	30	96	99
22	1	47	9	72	31	97	99
23	1	48	10	73	33	98	99
24	2	49	10	74	35	99	99
25	2	50	11	75	38		

Table 22. Academic Success Index Probability and Percentile Scores for ACT Engage Grades 6–9 (Grades 7–9)

Probability	ASI	Probability	ASI	Probability	ASI	Probability	ASI
1	1	26	5	51	22	76	56
2	1	27	5	52	23	77	57
3	1	28	5	53	24	78	60
4	1	29	6	54	25	79	62
5	1	30	6	55	26	80	63
6	1	31	7	56	27	81	65
7	1	32	7	57	28	82	67
8	1	33	7	58	29	83	69
9	1	34	8	59	31	84	71
10	1	35	8	60	32	85	73
11	1	36	9	61	33	86	75
12	1	37	10	62	34	87	77
13	1	38	10	63	35	88	79
14	2	39	11	64	36	89	80
15	2	40	12	65	38	90	82
16	2	41	13	66	39	91	85
17	2	42	14	67	40	92	87
18	3	43	14	68	42	93	90
19	3	44	15	69	44	94	94
20	3	45	16	70	46	95	97
21	3	46	17	71	47	96	99
22	3	47	18	72	49	97	99
23	4	48	19	73	50	98	99
24	4	49	20	74	52	99	99
25	4	50	21	75	54		

Table 23. Graduation Index Probability and Percentile Scores for ACT Engage Grades 6–9 (Grade 6)

Probability	GI	Probability	GI	Probability	GI	Probability	GI
1	1	26	1	51	5	76	16
2	1	27	1	52	5	77	16
3	1	28	1	53	5	78	17
4	1	29	2	54	5	79	18
5	1	30	2	55	6	80	20
6	1	31	2	56	6	81	21
7	1	32	2	57	6	82	22
8	1	33	2	58	7	83	24
9	1	34	2	59	7	84	25
10	1	35	2	60	7	85	27
11	1	36	2	61	8	86	29
12	1	37	2	62	8	87	31
13	1	38	2	63	9	88	33
14	1	39	2	64	9	89	36
15	1	40	3	65	9	90	40
16	1	41	3	66	10	91	44
17	1	42	3	67	10	92	48
18	1	43	3	68	10	93	53
19	1	44	3	69	11	94	60
20	1	45	4	70	11	95	65
21	1	46	4	71	12	96	73
22	1	47	4	72	13	97	83
23	1	48	4	73	13	98	99
24	1	49	4	74	14	99	99
25	1	50	4	75	15		

Table 24. Graduation Index Probability and Percentile Scores for ACT Engage
Grades 6–9 (Grades 7–9)

Probability	GI	Probability	GI	Probability	GI	Probability	GI
1	1	26	3	51	10	76	28
2	1	27	4	52	11	77	29
3	1	28	4	53	11	78	30
4	1	29	4	54	12	79	31
5	1	30	4	55	12	80	32
6	1	31	4	56	12	81	34
7	1	32	3	57	13	82	35
8	1	33	5	58	13	83	37
9	1	34	5	59	14	84	39
10	1	35	5	60	14	85	40
11	1	36	5	61	15	86	42
12	1	37	6	62	15	87	45
13	1	38	6	63	16	88	47
14	2	39	6	64	17	89	50
15	2	40	7	65	17	90	53
16	2	41	7	66	18	91	56
17	2	42	7	67	19	92	61
18	2	43	7	68	20	93	65
19	2	44	8	69	21	94	70
20	2	45	8	70	22	95	75
21	3	46	8	71	22	96	81
22	3	47	9	72	23	97	89
23	3	48	9	73	24	98	99
24	3	49	10	74	25	99	99
25	3	50	10	75	26		

Table 25. ACT Engage 10–12 Field Study Demographic Characteristics

Characteristics		
Age		M = 16.0 SD = 0.9
		Percent
Gender	Female	51.9
	Male	48.1
Race/Ethnicity	African American/Black(Non-Hispanic)	9.1
	American Indian, Alaska Native	0.6
	Asian American, Pacific Islander	3.1
	Caucasian White (Non-Hispanic)	56.8
	Hispanic/Latino	21.0
	Native Hawaiian/Pacific Islander	0.1
	Prefer not to respond	5.2
	Two or more races	4.1
Grade Level	11th	66.9
	12th	32.3

Note. N = 2,912.

Table 26. ACT Engage Grades 10–12 Sample Demographic Characteristics

Characteristics		
Age		M = 15.8 SD = 1.4
		Percent
Gender	Female	51.1
	Male	48.9
Race/Ethnicity	African American/Black(Non-Hispanic)	8.8
	American Indian, Alaska Native	1.1
	Asian American, Pacific Islander	4.6
	Caucasian White (Non-Hispanic)	45.3
	Hispanic/Latino	30.8
	Native Hawaiian/Pacific Islander	0.3
	Prefer not to respond	4.7
	Two or more races	4.3
Grade Level	10th	40.3
	11th	27.4
	12th	16.0
Flag	Yes*	8.5
	No	91.5

Note: N = 50,020. The sample size does not include students who flagged in responses. *We dropped these students in the other analysis.

Table 27. Internal Consistency Reliability of ACT Engage Grades 10–12 Scales

Scales	No. of Items	Score Range*	Alpha
Academic Discipline	10	10–60	.89
General Determination	11	11–66	.88
Goal Striving	10	10–60	.87
Commitment to College	10	10–60	.91
Study Skills	12	12–72	.89
Communication Skills	10	10–60	.84
Social Connection	11	10–60	.84
Social Activity	10	11–66	.85
Academic Self-Confidence	12	12–72	.86
Steadiness	12	12–72	.87

Note: $N = 50,020$. All scales are scored on a 6-point, Likert-type scale. The scores were transformed on a 10–60 scale in most analysis. Scales organized by domain.

Table 28. Test-Retest Statistics for ACT Engage Grades 10–12

Scales	Time Interval (Months)	N	r	Test 1		Test 2		Difference	
				Mean	SD	Mean	SD	Mean	SD
Academic Discipline	0–2	107	.84	44.9	10.8	46.1	10.3	1.2	6.1
	3–8	1,094	.69	46.9	9.3	46.7	9.1	-0.2	7.3
	9–15	602	.70	47.8	8.2	47.6	8.5	-0.2	6.5
	16–32	141	.54	44.9	9.7	45.8	8.9	0.9	9.0
Academic Self-Confidence	0–2	107	.90	43.9	9.4	45.2	9.5	1.4	4.3
	3–8	1,093	.78	43.9	8.7	44.6	8.8	0.7	5.8
	9–15	602	.71	43.9	8.1	44.1	8.4	0.1	6.2
	16–32	140	.68	42.8	9.3	43.6	9.0	0.7	7.4
Commitment to College	0–2	108	.81	50.6	9.5	50.1	10.6	-0.5	6.4
	3–8	1,094	.68	52.2	7.8	51.3	8.6	-0.9	6.6
	9–15	602	.63	53.0	7.2	51.6	8.4	-1.3	6.8
	16–32	141	.61	50.6	9.0	50.0	9.7	-0.6	8.3
Communication Skills	0–2	107	.90	48.3	8.6	48.5	9.0	0.3	4.0
	3–8	1,094	.64	49.1	7.1	48.9	7.4	-0.1	6.1
	9–15	601	.65	49.3	6.8	49.5	6.7	0.2	5.6
	16–32	140	.57	48.5	6.8	48.3	7.2	-0.2	6.5
General Determination	0–2	107	.82	50.0	8.2	50.9	9.1	0.8	5.3
	3–8	1,094	.66	51.6	6.4	51.6	6.6	0.0	5.4
	9–15	602	.64	51.7	6.1	52.1	5.6	0.4	5.0
	16–32	141	.53	49.3	7.0	50.8	6.4	1.5	6.5
Goal Striving	0–2	107	.82	48.1	8.5	49.5	9.3	1.3	5.5
	3–8	1,092	.69	49.8	7.2	49.8	7.7	0.0	5.9
	9–15	601	.69	49.8	7.1	49.9	7.0	0.1	5.6
	16–32	139	.59	47.9	8.5	48.3	7.4	0.5	7.2

Table 28. (continued)

Scales	Time Interval (Months)	N	r	Test 1		Test 2		Difference	
				Mean	SD	Mean	SD	Mean	SD
Social Activity	0–2	107	.82	39.4	10.7	41.2	11.2	1.7	6.6
	3–8	1,094	.72	41.9	9.6	42.2	9.4	0.3	7.1
	9–15	602	.74	40.8	9.3	41.1	9.8	0.3	6.9
	16–32	141	.62	41.5	9.8	41.1	10.5	-0.4	8.8
Social Connection	0–2	107	.84	42.1	10.4	42.8	10.5	0.7	5.9
	3–8	1,094	.67	44.8	8.2	44.7	8.5	0.0	6.8
	9–15	602	.70	45.3	8.1	44.3	8.8	-0.9	6.5
	16–32	141	.57	44.8	8.7	43.5	9.3	-1.4	8.3
Steadiness	0–2	107	.87	39.7	11.0	42.0	11.2	2.3	5.6
	3–8	1,094	.71	40.9	9.4	41.4	9.7	0.5	7.3
	9–15	602	.70	41.3	9.0	42.0	9.2	0.8	7.0
	16–32	141	.62	41.1	9.0	40.7	9.5	-0.4	8.1
Study Skills	0–2	107	.88	43.1	9.2	44.6	10.5	1.5	5.0
	3–8	1,092	.68	42.4	8.8	43.2	8.9	0.8	7.1
	9–15	601	.67	43.3	8.0	43.9	8.0	0.7	6.4
	16–32	139	.54	40.5	8.8	42.3	8.5	1.8	8.3
Academic Success Index	0–2	107	.93	71.9	23.2	72.9	22.4	1.0	8.4
	3–8	1,094	.71	76.3	19.1	76.7	18.2	0.4	14.2
	9–15	602	.68	79.0	15.7	78.3	16.7	-0.7	13.0
	16–32	141	.56	72.7	21.6	74.1	17.9	1.5	18.9
Retention Index	0–2	107	.94	66.8	16.6	66.9	17.1	0.1	5.7
	3–8	1,094	.75	69.6	13.0	69.4	13.3	-0.1	9.2
	9–15	602	.72	71.4	11.4	70.2	12.5	-1.2	9.0
	16–32	141	.61	67.1	14.3	67.3	13.8	0.2	12.4

Table 29. Descriptive Statistics and Intercorrelation Matrix for ACT Engage Grades 10–12 Scales

Scales	M*	SD	1	2	3	4	5	6	7	8	9	10
Academic Discipline	47.00	9.16	–									
General Determination	51.37	6.60	.73	–								
Goal Striving	49.77	7.59	.68	.82	–							
Commitment to College	51.61	8.69	.61	.60	.62	–						
Study Skills	43.43	8.80	.60	.67	.69	.50	–					
Communication Skills	48.79	7.32	.51	.68	.61	.48	.63	–				
Social Connection	44.23	8.57	.46	.52	.58	.46	.45	.60	–			
Social Activity	40.60	9.49	.23	.32	.44	.25	.25	.36	.57	–		
Academic Self-Confidence	43.67	8.71	.57	.53	.60	.44	.47	.38	.38	.35	–	
Steadiness	41.03	9.52	.45	.44	.47	.34	.46	.46	.32	.32	.44	–

Note: N = 50,020. All correlations are significant ($p \leq .001$). *All scores were transformed on a 10–60 scale.

Table 30. Correlations between ACT Engage Grades 10–12 Scales and Behavioral Information

Scales	Behavioral Information	
	Times without Homework	Absenteeism
Academic Discipline	-.37	-.26
General Determination	-.28	-.17
Goal Striving	-.25	-.16
Commitment to College	-.24	-.19
Study Skills	-.23	-.13
Communication Skills	-.19	-.14
Social Connection	-.16	-.16
Social Activity	-.08	-.06
Academic Self-Confidence	-.24	-.18
Steadiness	-.18	-.14

Note: $N = 50,020$. All correlations are significant ($p < .001$).

Table 31. Correlations between ACT Engage Grades 10–12 Scales and Behavioral Information

Scales	Current Grades*	High School GPA**	Failed Classes**
Academic Discipline	.60	.56	-.38
Academic Self-Confidence	.51	.50	-.29
Commitment to College	.42	.38	-.31
Communication Skills	.22	.26	-.21
General Determination	.35	.33	-.25
Goal Striving	.35	.31	-.25
Social Activity	.14	.14	-.12
Social Connection	.26	.27	-.22
Steadiness	.24	.24	-.14
Study Skills	.21	.19	-.13

Note: $N = 966$ to $1,491$. Correlations $\geq .07$ are significant ($p \leq .01$). *Self-reported by students; **Reported by schools.

Table 32. Correlations between ACT Engage 10–12 and Standardized Achievement Tests

Scales	Achievement		
	ACT Explore Composite	ACT Plan Composite	ACT Composite
Academic Discipline	.25	.25	.25
General Determination	.20	.19	.18
Goal Striving	.15	.15	.16
Commitment to College	.20	.19	.19
Study Skills	.09	.10	.11
Communication Skills	.20	.19	.19
Social Connection	.19	.18	.18
Social Activity	.09	.11	.10
Academic Self-Confidence	.46	.50	.51
Steadiness	.13	.14	.14

Note: $N = 13,302$ to $19,369$. All correlations are significant ($p < .001$).

Table 33. Correlations between ACT Engage Grades 10–12 Scales and School-Level Factors

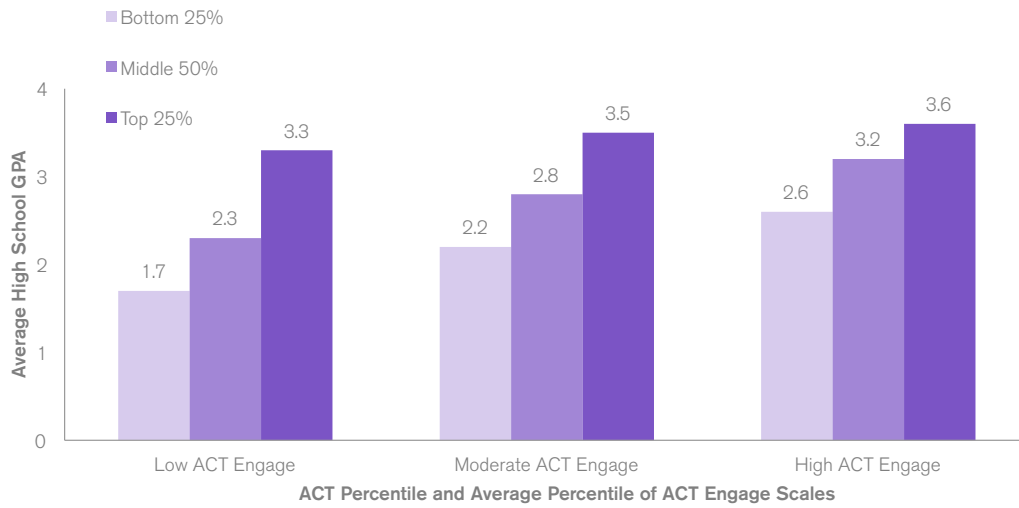
Scales	School Characteristics			
	Percent Minority	Percent Free Lunch	Average Grade Size	Student-Teacher Ratio
Academic Discipline	-.04	-.09	-.03	.01
General Determination	-.06	-.07	-.02	-.02
Goal Striving	.02	-.06	.02	.00
Commitment to College	.05	-.08	.07	-.02
Study Skills	.10	-.04	.05	-.01
Communication Skills	-.07	-.08	.00	-.05
Social Connection	-.09	-.12	-.01	.00
Social Activity	-.12	-.05	-.02	-.01
Academic Self-Confidence	-.08	-.06	-.04	-.04
Steadiness	-.01	-.06	.02	-.02

Note: $N = 50,020$. Correlations larger than .02 or less than -.02 are significant ($p < .001$).

Table 34. Linear Regression to Predict High School GPA

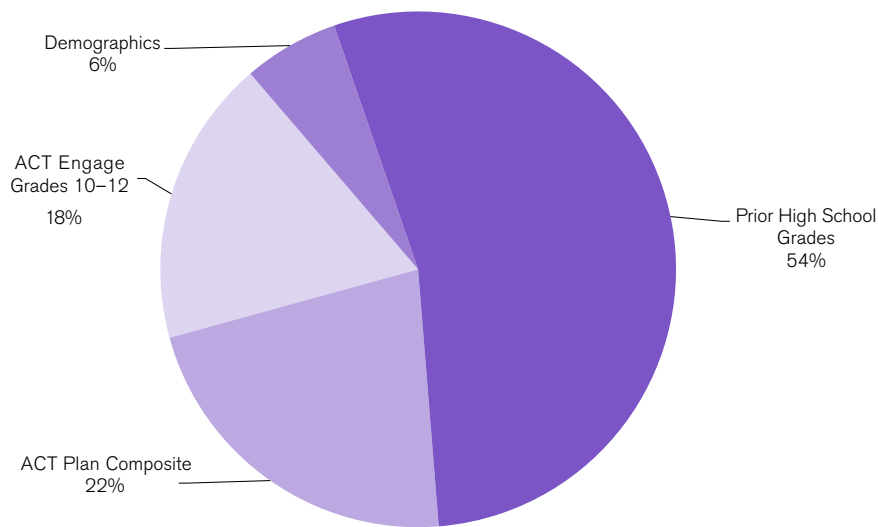
Predictor	Beta (Standardized)
ACT Plan Composite Score	0.530
ACT Engage Grades 10–12 Scales	0.300
Total R	0.688

Note: $N = 1,126$. All predictors significant at $p \leq .01$.



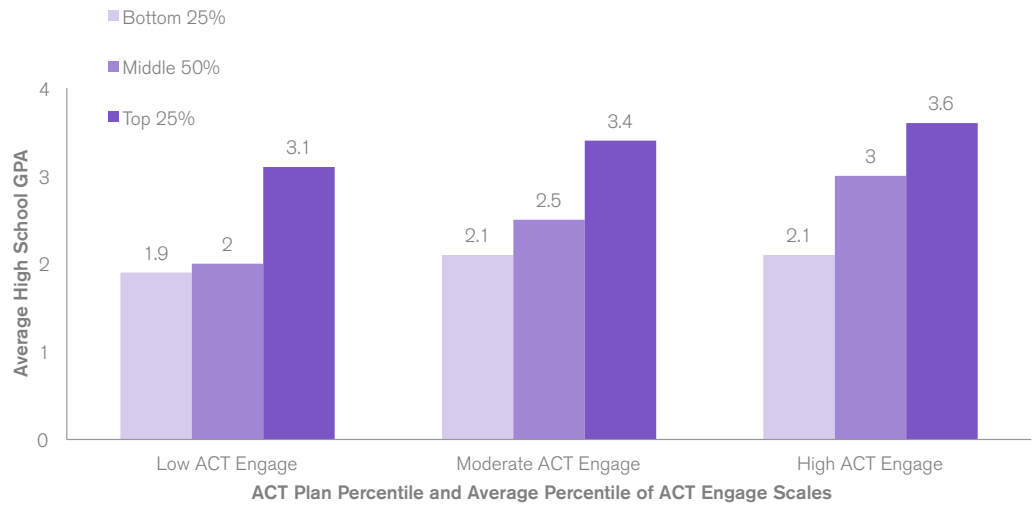
Note: $N = 1,055$.

Figure 7. Average high school GPA by ACT performance and ACT Engage Grades 10–12 scores



Note: Based on a dominance analysis ($R^2 = 55\%$). $N = 1,126$. 12th-grade GPA (school-reported).

Figure 8. Proportion of variance predicted in high school GPA



Note: N = 1,152.

Figure 9. Average high school GPA by ACT Plan performance and ACT Engage Grades 10–12 scores

Table 35. Scale and Percentile Scores for ACT Engage Grades 10–12 Scales

Score	Percentiles									
	AD	ASC	CC	CS	GD	GS	SA	SC	S	SS
1	–	–	–	–	–	–	–	–	–	–
2	–	–	–	–	–	–	–	–	–	–
3	–	–	–	–	–	–	–	–	–	–
4	–	–	–	–	–	–	–	–	–	–
5	–	–	–	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–
8	–	–	–	–	–	–	–	–	–	–
9	–	–	–	–	–	–	–	–	–	–
10	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	2	1
20	1	1	1	1	1	1	2	1	2	2

Note: AD = Academic Discipline; ASC = Academic Self-Confidence; CC = Commitment to College; CS = Communication Skills; GD = General Determination; GS = Goal Striving; SA = Social Activity; SC = Social Connection; S = Steadiness; SS = Study Skills

Table 35. (continued)

Score	Percentiles									
	AD	ASC	CC	CS	GD	GS	SA	SC	S	SS
21	1	1	1	1	1	1	3	2	2	2
22	2	1	1	1	1	1	3	2	3	3
23	2	2	1	1	1	1	4	2	5	3
24	2	2	2	1	1	1	4	3	6	4
25	3	3	2	1	1	1	5	4	7	4
26	4	3	2	1	1	1	6	5	8	5
27	4	4	3	1	1	1	8	5	9	6
28	5	6	3	1	1	1	9	6	12	8
29	6	7	4	2	1	1	11	7	14	9
30	8	8	5	2	1	1	13	8	16	1
31	9	9	5	2	1	1	15	9	17	12
32	11	11	6	3	1	2	17	10	20	14
33	13	15	7	3	1	3	20	11	25	19
34	15	18	8	4	2	4	22	12	27	21
35	17	20	8	6	2	5	25	17	30	24
36	19	22	10	6	3	6	28	19	33	26
37	23	24	11	8	4	7	31	22	36	30
38	26	29	12	10	5	9	34	25	42	38
39	29	32	13	11	5	11	37	29	44	41
40	32	35	15	13	7	14	41	32	48	45
41	35	39	16	16	8	16	44	36	50	50
42	37	42	17	19	10	19	48	39	53	54
43	40	49	18	23	11	22	52	43	60	60
44	44	52	20	27	15	25	55	47	63	63
45	47	55	21	30	20	28	60	55	66	68
46	51	59	24	34	24	32	64	58	69	71
47	55	62	26	39	27	36	67	62	72	73
48	59	69	28	43	31	40	70	66	77	78
49	63	72	31	48	36	45	73	70	80	81
50	67	75	35	53	40	50	77	74	83	84
51	71	78	38	59	45	54	80	79	86	86
52	75	81	42	64	50	59	83	81	88	88
53	78	87	46	71	54	64	86	85	92	91
54	82	89	51	74	59	68	89	88	94	92
55	85	91	59	78	71	73	92	92	96	94
56	88	94	64	83	76	77	94	94	97	95
57	91	95	72	88	81	83	96	96	97	96
58	94	97	79	92	86	87	97	97	99	98
59	97	99	88	95	93	93	99	98	99	99
60	99	99	99	99	99	99	99	99	99	99

Note: AD = Academic Discipline; ASC = Academic Self-Confidence; CC = Commitment to College; CS = Communication Skills; GD = General Determination; GS = Goal Striving; SA = Social Activity; SC = Social Connection; S = Steadiness; SS = Study Skills

Table 36. Academic Success Index Probability and Percentile Scores for ACT Engage Grades 10–12

Probability	ASI	Probability	ASI	Probability	ASI	Probability	ASI
1	1	26	3	51	16	76	47
2	1	27	3	52	17	77	48
3	1	28	4	53	18	78	50
4	1	29	4	54	19	79	52
5	1	30	4	55	20	80	54
6	1	31	4	56	21	81	56
7	1	32	5	57	21	82	58
8	1	33	5	58	23	83	61
9	1	34	5	59	24	84	63
10	1	35	6	60	25	85	66
11	1	36	6	61	26	86	69
12	1	37	6	62	27	87	72
13	1	38	7	63	28	88	74
14	1	39	7	64	29	89	78
15	1	40	8	65	30	90	80
16	1	41	9	66	31	91	84
17	1	42	9	67	32	92	87
18	1	43	10	68	34	93	91
19	1	44	11	69	36	94	94
20	1	45	12	70	37	95	97
21	1	46	12	71	37	96	98
22	2	47	13	72	39	97	99
23	2	48	13	73	41	98	99
24	2	49	14	74	43	99	99
25	3	50	15	75	45		

Table 37. Retention Index Probability and Percentile Scores for ACT Engage Grades 10–12

Probability	RI	Probability	RI	Probability	RI	Probability	RI
1	1	26	1	51	14	76	71
2	1	27	1	52	16	77	75
3	1	28	1	53	17	78	78
4	1	29	1	54	19	79	80
5	1	30	1	55	20	80	83
6	1	31	2	56	22	81	86
7	1	32	2	57	24	82	89
8	1	33	2	58	25	83	92
9	1	34	2	59	28	84	95
10	1	35	3	60	29	85	96
11	1	36	3	61	31	86	98
12	1	37	4	62	33	87	99
13	1	38	4	63	35	88	99
14	1	39	4	64	37	89	99
15	1	40	5	65	40	90	99
16	1	41	6	66	42	91	99
17	1	42	6	67	45	92	99
18	1	43	7	68	47	93	99
19	1	44	7	69	49	94	99
20	1	45	8	70	52	95	99
21	1	46	9	71	54	96	99
22	1	47	10	72	57	97	99
23	1	48	11	73	61	98	99
24	1	49	12	74	64	99	99
25	1	50	13	75	68		

Table 38. ACT Engage College Sample Demographic Characteristics

Characteristics		
Age		M = 18.9 SD = 3.4
		Percent
Gender	Female	54.9
	Male	45.1
Race/Ethnicity	African American/Black(Non-Hispanic)	14.1
	American Indian, Alaska Native	0.8
	Asian American, Pacific Islander	3.5
	Caucasian White (Non-Hispanic)	41.2
	Hispanic/Latino	34.9
	Native Hawaiian/Pacific Islander	0.3
	Prefer not to respond	2.1
	Two or more races	3.2
Grade Level	Freshman	92.7
	Sophomore	4.0
	Junior	2.2
	Senior	1.1
Flag	Yes*	3.8
	No	96.2

Note: N = 144,700. The sample size does not include students whose responses were flagged. *We dropped these students in the other analysis.

Table 39. Internal Consistency Reliability of ACT Engage College Scales

Scales	No. of Items	Score Range*	Alpha
Academic Discipline	10	10–60	.88
General Determination	11	11–66	.87
Goal Striving	10	10–60	.86
Commitment to College	10	10–60	.88
Study Skills	12	12–72	.88
Communication Skills	10	10–60	.82
Social Connection	11	11–66	.81
Social Activity	10	10–60	.88
Academic Self-Confidence	12	12–72	.85
Steadiness	12	12–72	.87

Note: N = 144,700. All scales are scored on a 6-point, Likert-type scale. The scores were transformed on a 10–60 scale in most analysis. Scales organized by domain.

Table 40. Test-Retest Statistics for ACT Engage College

Scales	Time Interval (Months)	N	r	Test 1		Test 2		Difference	
				Mean	SD	Mean	SD	Mean	SD
Academic Discipline	0–2	2,379	.75	50.2	7.3	50.2	8.0	0.0	5.4
	3–8	1,402	.63	48.8	8.0	47.4	8.6	-1.4	7.2
	9–15	431	.67	48.2	8.2	46.9	8.5	-1.2	6.7
	16–32	262	.59	50.2	7.2	47.0	8.3	-3.2	7.1
Academic Self-Confidence	0–2	2,357	.78	44.8	7.6	45.5	7.8	0.6	5.1
	3–8	1,397	.70	43.8	7.6	44.2	8.0	0.3	6.1
	9–15	429	.70	45.1	8.0	45.0	8.4	-0.1	6.3
	16–32	261	.65	45.6	7.4	45.3	8.1	-0.4	6.5
Commitment to College	0–2	2,381	.70	55.7	5.8	55.3	6.5	-0.4	4.8
	3–8	1,402	.56	55.4	5.9	53.7	7.5	-1.7	6.4
	9–15	431	.50	55.4	5.3	53.9	6.9	-1.5	6.3
	16–32	264	.44	56.0	4.7	53.6	8.0	-2.4	7.3
Communication Skills	0–2	2,371	.70	51.3	6.2	51.5	6.4	0.3	4.9
	3–8	1,402	.66	50.8	6.1	50.7	6.6	-0.1	5.3
	9–15	431	.61	51.3	6.0	51.0	6.2	-0.3	5.4
	16–32	262	.51	51.2	6.0	50.8	6.2	-0.3	6.1
General Determination	0–2	2,373	.70	54.3	5.3	54.4	5.8	0.1	4.3
	3–8	1,402	.62	53.6	5.4	53.3	6.0	-0.4	5.0
	9–15	431	.63	53.5	5.2	53.3	5.4	-0.2	4.5
	16–32	262	.59	53.9	5.1	53.1	5.8	-0.8	5.0
Goal Striving	0–2	2,360	.73	53.0	6.2	53.2	6.5	0.3	4.7
	3–8	1,397	.66	52.1	6.3	51.9	6.6	-0.2	5.3
	9–15	429	.60	52.0	6.0	51.8	6.2	-0.2	5.4
	16–32	261	.59	52.2	5.5	51.6	6.5	-0.6	5.5
Social Activity	0–2	2,376	.82	41.8	9.5	42.2	9.5	0.4	5.7
	3–8	1,402	.74	42.3	9.7	42.0	9.3	-0.3	6.9
	9–15	431	.75	42.7	9.2	43.1	8.9	0.4	6.5
	16–32	264	.67	40.8	10.9	41.2	10.1	0.3	8.5
Social Connection	0–2	2,372	.76	45.3	7.4	45.8	7.9	0.5	5.4
	3–8	1,402	.65	45.5	7.4	45.0	8.1	-0.4	6.5
	9–15	431	.63	46.3	7.3	46.4	7.2	0.1	6.2
	16–32	263	.56	45.1	7.8	43.9	7.5	-1.2	7.1
Steadiness	0–2	2,377	.80	45.4	8.9	46.0	9.1	0.6	5.7
	3–8	1,401	.69	44.2	8.5	43.7	8.7	-0.5	6.7
	9–15	431	.66	43.7	8.5	43.7	8.9	0.0	7.2
	16–32	263	.62	43.6	8.6	43.2	9.2	-0.4	7.8
Study Skills	0–2	2,366	.75	47.9	7.6	48.7	7.9	0.8	5.5
	3–8	1,398	.64	46.4	7.7	46.7	8.1	0.3	6.8
	9–15	429	.63	46.1	7.3	46.7	7.4	0.7	6.4
	16–32	260	.47	46.7	7.1	46.7	7.3	0.0	7.4

Table 40. (continued)

Scales	Time Interval (Months)	N	r	Test 1		Test 2		Difference	
				Mean	SD	Mean	SD	Mean	SD
Academic Success Index	0–2	2,376	.75	80.6	11.7	80.6	12.1	0.0	8.5
	3–8	1,402	.63	79.7	12.7	79.0	13.4	-0.6	11.2
	9–15	431	.66	82.3	13.8	81.1	13.9	-1.2	11.4
	16–32	262	.57	83.1	11.9	81.6	14.2	-1.4	12.3
Retention Index	0–2	2,372	.90	61.1	12.7	60.7	12.9	-0.4	5.7
	3–8	1,402	.77	69.0	11.5	68.3	12.0	-0.7	8.1
	9–15	431	.74	74.1	10.5	72.5	11.7	-1.6	8.0
	16–32	262	.64	73.3	9.7	71.3	12.2	-2.0	9.6

Table 41. Descriptive Statistics and Intercorrelation Matrix for ACT Engage College Scales

Scales	M*	SD	1	2	3	4	5	6	7	8	9	10
Academic Discipline	49.25	7.73	–									
General Determination	53.91	5.23	.71	–								
Goal Striving	52.22	6.15	.62	.79	–							
Commitment to College	55.32	5.84	.48	.54	.55	–						
Study Skills	46.57	7.58	.55	.63	.64	.37	–					
Communication Skills	51.29	6.01	.41	.59	.53	.40	.54	–				
Social Connection	45.78	7.42	.30	.37	.45	.35	.33	.51	–			
Social Activity	42.04	9.67	.20	.31	.45	.28	.25	.34	.56	–		
Academic Self-Confidence	45.13	7.69	.42	.40	.52	.34	.39	.28	.25	.33	–	
Steadiness	44.12	8.54	.41	.42	.48	.30	.42	.41	.23	.34	.41	–

Note: N = 144,700. All correlations are significant ($p \leq .001$). *All scores were transformed on a 10–60 scale.

Table 42. Correlations between ACT Engage College Scales and Behavioral Information

Scales	Behavioral Information	
	Times without Homework	Absenteeism
Academic Discipline	-.34	-.14
General Determination	-.24	-.09
Goal Striving	-.18	-.07
Commitment to College	-.15	-.08
Study Skills	-.19	-.05
Communication Skills	-.12	-.06
Social Connection	-.08	-.08
Social Activity	-.06	-.02
Academic Self-Confidence	-.13	-.08
Steadiness	-.16	-.11

Note: N = 144,700. All correlations are significant ($p < .001$).

Table 43. Correlations of ACT Engage College with the Big Five Inventory and Cumulative GPA with and without Social Desirability

Scales	BFI					GPA*
	N	E	O	A	C	
Commitment to College	-.20 (-.12)	.16 (.12)	.14(.10)	.31(.22)	.44(.38)	.27(.27)
Goal Striving	-.43 (-.31)	.26 (.21)	.31 (.27)	.44 (.27)	.60 (.50)	.25 (.27)
Academic Discipline	-.26 (-.11)	.16 (.10)	.15 (.09)	.41 (.24)	.66 (.59)	.50 (.55)
General Determination	-.20(-.04)	.13 (.07)	.20 (.14)	.50 (.35)	.64 (.56)	.30 (.33)
Study Skills	-.20 (-.02)	.18 (.12)	.33 (.29)	.39 (.17)	.50 (.37)	.17 (.18)
Communication Skills	-.27 (-.11)	.20 (.14)	.26 (.21)	.67 (.57)	.37 (.21)	.11 (.12)
Social Activity	-.51 (-.45)	.73 (.72)	.30 (.27)	.35 (.22)	.33 (.23)	.06 (.06)
Social Connection	-.36 (-.30)	.45 (.42)	.25 (.22)	.39 (.34)	.26 (.18)	.09 (.09)
Academic-Confidence	-.36 (-.31)	.17 (.14)	.34 (.32)	.16 (.05)	.43 (.38)	.34 (.34)
Steadiness	-.67 (-.58)	.17 (.09)	.23 (.16)	.61 (.41)	.47 (.27)	.08 (.09)

Note: N = 468. *N = 359. Social desirability has been partialled out from correlations in parentheses. Correlations $\geq .13$ are significant ($p \leq .01$). Correlations $\geq |.50|$ are in bold.

Table 44. Correlations of ACT Engage College with the HEXACO and Grit

Scales	H	E	X	A	C	O	Grit*
Commitment to College	.26	-.01	.39	.21	.44	.07	.44
Goal Striving	.26	-.13	.76	.38	.66	.14	.70
Academic Discipline	.23	-.04	.40	.28	.43	.00	.52
General Determination	.38	-.02	.58	.41	.76	.19	.72
Study Skills	.14	-.01	.54	.27	.68	.40	.52
Communication Skills	.34	.07	.65	.53	.47	.31	.47
Social Activity	.17	-.19	.86	.41	.36	.10	.47
Social Connection	.16	-.02	.85	.48	.38	.03	.45
Academic-Confidence	.25	-.13	.41	.15	.40	.23	.39
Steadiness	.39	-.43	.61	.73	.44	.07	.51

Note: N = 178. *N = 238. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience. Correlations $\geq .17$ are significant ($p \leq .01$). Correlations $\geq |.50|$ are in bold.

Table 45. Percent of 4-Year Students Accurately Identified as At Risk per 100 Students

Selection Method	Drop-Out	Academic Difficulty
Random Selection	10%	20%
ACT Composite Score Only*	16%	44%
ACT Engage College Only*	24%	46%
ACT Composite Score + ACT Engage College*	25%	51%

*Students scoring in the bottom 5% of these populations were flagged.

Table 46. Correlations between ACT Engage College Scales, First-Year Cumulative College GPA, Second-Year College Retention, and 4-Year Degree Completion

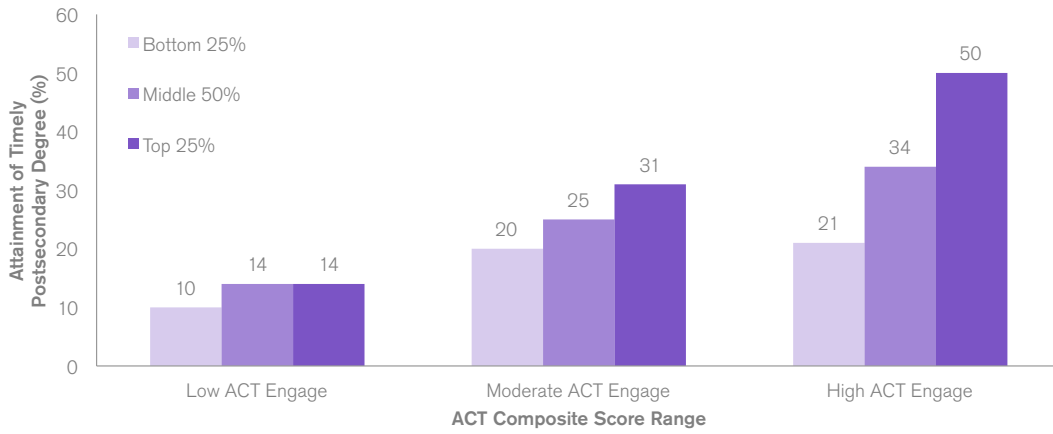
Scales	First-Year GPA	Year 2 Retention	Degree Completion
Academic Discipline	0.23	0.04	0.13
General Determination	0.10	-0.03	0.04
Goal Striving	0.03	-0.04	-0.01
Commitment to College	0.08	0.01	0.05
Study Skills	0.03	-0.06	0.00
Communication Skills	0.05	-0.03	0.01
Social Connection	0.02	0.03	0.04
Social Activity	-0.01	-0.03	0.01
Academic Self-Confidence	0.16	-0.01	0.05
Steadiness	0.05	-0.04	0.01

Note: N = 14,371. Correlations of 0.02 or greater are significant at $p < .05$. Correlations of 0.04 or greater are significant at $p < .0001$. Degree completion is 4-year degree completion.

Table 47. Correlations between ACT Engage College Scales and Second-Year College Retention

Scales	Year 2 Retention
Academic Discipline	0.13
General Determination	0.06
Goal Striving	0.03
Commitment to College	0.07
Study Skills	0.05
Communication Skills	0.05
Social Connection	0.04
Social Activity	-0.04
Academic Self-Confidence	0.05
Steadiness	0.02

Note: N = 13,965. Correlations of 0.03 or greater are significant at $p < .05$. Correlations of 0.04 or greater are significant at $p < .0001$.



Note: N = 3,360.

Figure 10. Percentage attaining a timely postsecondary degree by ACT and ACT Engage College scores

Table 48. Scale and Percentile Scores for ACT Engage College 4-Year

Score	Percentiles									
	AD	ASC	CC	CS	GD	GS	SA	SC	ST	SS
1	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-
10	1	-	1	1	-	1	1	-	-	-
11	1	-	1	1	1	1	1	1	-	-
12	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	2	1	1	1
21	1	1	1	1	1	1	2	1	1	1
22	1	1	1	1	1	1	2	1	1	1
23	1	1	1	1	1	1	3	1	1	1
24	1	1	1	1	1	1	4	1	1	1
25	1	1	1	1	1	1	4	1	1	1
26	1	1	1	1	1	1	5	1	1	1
27	1	1	1	1	1	1	6	1	1	1
28	2	1	1	1	1	1	7	1	2	1
29	2	1	1	1	1	1	9	1	2	1
30	3	1	1	1	1	1	10	1	3	1
31	3	1	1	1	1	1	12	2	3	1
32	4	1	1	1	1	1	14	2	4	2
33	5	1	1	1	1	1	16	2	5	2
34	6	2	1	1	1	1	18	3	5	2
35	7	2	1	2	1	1	21	3	6	3
36	9	3	2	2	1	2	24	4	8	4
37	11	4	2	2	1	2	27	5	9	4
38	12	4	3	3	1	3	30	6	10	5
39	14	5	3	4	1	4	33	7	12	7
40	17	7	4	5	1	5	37	8	14	8
41	19	8	4	6	1	6	41	10	16	10
42	22	10	5	8	2	8	44	12	18	11

Table 48. (continued)

Score	Percentiles									
	AD	ASC	CC	CS	GD	GS	SA	SC	ST	SS
43	25	12	6	10	2	10	48	14	21	13
44	29	14	7	13	3	12	52	16	23	16
45	32	16	8	16	4	15	56	19	26	18
46	36	19	9	19	4	18	60	22	29	21
47	41	21	10	23	6	22	64	26	32	24
48	45	24	12	28	7	26	67	30	36	28
49	50	27	14	34	8	31	71	34	39	31
50	55	31	16	40	10	37	75	39	43	35
51	60	34	19	47	12	43	78	44	47	39
52	65	38	22	53	15	48	81	49	51	43
53	70	42	26	59	18	54	85	54	55	47
54	75	46	30	66	22	61	88	59	58	51
55	80	50	36	72	27	67	90	65	62	56
56	84	55	43	78	32	74	93	70	66	60
57	88	59	51	84	37	80	95	75	70	64
58	92	63	61	90	43	87	97	80	73	68
59	96	67	75	95	48	93	98	84	77	72
60	99	71	99	99	54	99	99	88	80	76
61	–	75	–	–	61	–	–	91	83	79
62	–	78	–	–	68	–	–	94	86	82
63	–	82	–	–	75	–	–	96	89	85
64	–	85	–	–	83	–	–	98	91	88
65	–	88	–	–	91	–	–	99	93	90
66	–	90	–	–	99	–	–	99	95	92
67	–	93	–	–	–	–	–	–	96	94
68	–	95	–	–	–	–	–	–	97	95
69	–	96	–	–	–	–	–	–	98	97
70	–	98	–	–	–	–	–	–	99	98
71	–	99	–	–	–	–	–	–	99	99
72	–	99	–	–	–	–	–	–	99	99

Table 49. Scale and Percentile Scores for ACT Engage College 2-Year

Score	Percentiles									
	AD	ASC	CC	CS	GD	GS	SA	SC	ST	SS
1	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-
10	1	-	1	1	-	1	1	-	-	-
11	1	-	1	1	1	1	1	1	-	-
12	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	2	1	1	1
22	1	1	1	1	1	1	2	1	1	1
23	1	1	1	1	1	1	3	1	1	1
24	1	1	1	1	1	1	3	1	1	1
25	1	1	1	1	1	1	4	2	1	1
26	1	1	1	1	1	1	5	2	1	1
27	2	1	1	1	1	1	7	3	2	1
28	2	1	1	1	1	1	8	3	2	1
29	3	1	1	1	1	1	10	4	3	1
30	3	2	1	1	1	1	11	4	3	1
31	4	2	1	1	1	1	13	5	4	2
32	5	3	1	1	1	1	15	6	5	2
33	6	4	1	2	1	1	18	7	6	3
34	7	5	2	2	1	1	20	9	6	3
35	9	6	2	2	1	2	23	11	8	3
36	10	7	3	3	1	3	26	12	9	4
37	12	8	3	4	1	3	30	14	11	5
38	14	10	4	4	1	4	34	17	12	6
39	17	12	5	6	1	5	38	19	14	7
40	19	14	6	7	2	7	41	22	16	8
41	22	17	7	9	2	8	45	25	19	10
42	25	20	8	11	3	10	49	28	21	11

Table 49. (continued)

Score	Percentiles									
	AD	ASC	CC	CS	GD	GS	SA	SC	ST	SS
43	29	23	9	14	3	13	53	32	23	13
44	33	26	10	17	4	15	57	36	26	15
45	37	29	12	20	5	18	60	40	29	18
46	41	32	14	24	6	21	64	45	32	21
47	46	36	16	28	7	25	68	50	35	23
48	50	39	18	32	8	30	71	54	38	26
49	55	43	21	38	10	35	75	59	41	29
50	59	46	24	44	12	39	78	64	45	32
51	64	50	27	50	14	45	81	68	48	36
52	69	54	31	56	17	50	84	73	51	39
53	74	58	35	62	20	55	87	77	55	43
54	79	61	39	68	24	62	89	81	58	47
55	83	65	46	74	29	68	92	84	62	51
56	86	68	52	79	34	74	94	88	65	54
57	90	72	58	85	38	80	96	90	68	58
58	93	74	66	90	43	86	97	92	71	62
59	96	78	76	94	49	91	98	94	75	65
60	99	81	99	99	55	99	99	95	78	69
61	–	83	–	–	61	–	–	97	81	72
62	–	85	–	–	67	–	–	98	83	76
63	–	88	–	–	74	–	–	99	86	79
64	–	90	–	–	81	–	–	99	88	82
65	–	92	–	–	89	–	–	99	91	85
66	–	94	–	–	99	–	–	99	93	88
67	–	95	–	–	–	–	–	–	95	90
68	–	97	–	–	–	–	–	–	96	92
69	–	97	–	–	–	–	–	–	97	94
70	–	99	–	–	–	–	–	–	98	96
71	–	99	–	–	–	–	–	–	99	98
72	–	99	–	–	–	–	–	–	99	99

Table 50. Academic Success Index Probability and Percentile Scores for ACT Engage College 4-Year

Probability	ASI	Probability	ASI	Probability	ASI	Probability	ASI
1	1	26	1	51	4	76	26
2	1	27	1	52	4	77	28
3	1	28	1	53	4	78	30
4	1	29	1	54	5	79	32
5	1	30	1	55	5	80	35
6	1	31	1	56	6	81	37
7	1	32	1	57	6	82	40
8	1	33	1	58	7	83	43
9	1	34	1	59	8	84	46
10	1	35	1	60	8	85	49
11	1	36	1	61	9	86	52
12	1	37	1	62	10	87	56
13	1	38	1	63	10	88	60
14	1	39	1	64	11	89	64
15	1	40	1	65	12	90	68
16	1	41	1	66	13	91	72
17	1	42	2	67	14	92	77
18	1	43	2	68	15	93	82
19	1	44	2	69	16	94	86
20	1	45	2	70	17	95	90
21	1	46	2	71	18	96	94
22	1	47	3	72	20	97	97
23	1	48	3	73	21	98	99
24	1	49	3	74	23	99	99
25	1	50	3	75	24		

Table 51. Academic Success Index Probability and Percentile Scores for ACT Engage College 2-Year

Probability	ASI	Probability	ASI	Probability	ASI	Probability	ASI
1	1	26	1	51	4	76	38
2	1	27	1	52	5	77	41
3	1	28	1	53	5	78	44
4	1	29	1	54	6	79	47
5	1	30	1	55	6	80	51
6	1	31	1	56	7	81	55
7	1	32	1	57	8	82	59
8	1	33	1	58	9	83	63
9	1	34	1	59	10	84	67
10	1	35	1	60	11	85	71
11	1	36	1	61	12	86	75
12	1	37	1	62	12	87	79
13	1	38	1	63	14	88	83
14	1	39	1	64	15	89	86
15	1	40	1	65	16	90	90
16	1	41	1	66	17	91	93
17	1	42	2	67	19	92	95
18	1	43	2	68	20	93	97
19	1	44	2	69	22	94	98
20	1	45	2	70	24	95	99
21	1	46	2	71	26	96	99
22	1	47	3	72	28	97	99
23	1	48	3	73	31	98	99
24	1	49	3	74	33	99	99
25	1	50	4	75	35		

Table 52. Retention Index Probability and Percentile Scores for ACT Engage College 4-Year

Probability	RI	Probability	RI	Probability	RI	Probability	RI
1	1	26	1	51	2	76	51
2	1	27	1	52	2	77	56
3	1	28	1	53	3	78	60
4	1	29	1	54	3	79	65
5	1	30	1	55	4	80	70
6	1	31	1	56	4	81	75
7	1	32	1	57	5	82	79
8	1	33	1	58	6	83	83
9	1	34	1	59	7	84	87
10	1	35	1	60	8	85	90
11	1	36	1	61	9	86	92
12	1	37	1	62	10	87	94
13	1	38	1	63	12	88	96
14	1	39	1	64	13	89	97
15	1	40	1	65	15	90	98
16	1	41	1	66	17	91	99
17	1	42	1	67	20	92	99
18	1	43	1	68	22	93	99
19	1	44	1	69	25	94	99
20	1	45	1	70	28	95	99
21	1	46	1	71	31	96	99
22	1	47	1	72	35	97	99
23	1	48	1	73	38	98	99
24	1	49	1	74	42	99	99
25	1	50	2	75	46		

Table 53. Retention Index Probability and Percentile Scores for ACT Engage College 2-Year

Probability	RI	Probability	RI	Probability	RI	Probability	RI
1	1	26	1	51	51	76	99
2	1	27	1	52	58	77	99
3	1	28	1	53	64	78	99
4	1	29	1	54	70	79	99
5	1	30	1	55	76	80	99
6	1	31	1	56	81	81	99
7	1	32	2	57	86	82	99
8	1	33	2	58	89	83	99
9	1	34	2	59	92	84	99
10	1	35	3	60	95	85	99
11	1	36	4	61	97	86	99
12	1	37	5	62	98	87	99
13	1	38	6	63	99	88	99
14	1	39	7	64	99	89	99
15	1	40	9	65	99	90	99
16	1	41	10	66	99	91	99
17	1	42	13	67	99	92	99
18	1	43	15	68	99	93	99
19	1	44	18	69	99	94	99
20	1	45	22	70	99	95	99
21	1	46	25	71	99	96	99
22	1	47	29	72	99	97	99
23	1	48	34	73	99	98	99
24	1	49	40	74	99	99	99
25	1	50	45	75	99		

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