The ACT®

ACT® Writing Test

Technical Report

ACT®

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The ACT® Writing Test

Beginning in February 2005, students taking the ACT have had the option of adding a 30-minute direct writing test to their examination. For an overview of the test, please refer to the *Educator's Guide to the ACT Writing Test*; for information about how the test was developed, please see *Developing the ACT Assessment Writing Test*. The present report provides a description of the population taking the ACT Writing Test and summarizes technical research ACT has conducted to date.

Early Research

In the fall of 2003 and 2004, prior to the national implementation of the ACT Writing Test, three different research studies were conducted in support of the ACT Writing Test. The first was a scaling study designed to finalize the combined English/Writing Test scale. The second was a test-retest study designed to estimate the score reliability of the Writing Test. The third was a course placement study to help collect information on the value of using the ACT Writing Test in placing students into composition and related courses. A brief description of each study is provided below.

Scaling Study

In September 2003, a sample of ACT testing centers were invited to participate in a special scaling study that would help to establish the combined English/Writing Test score scale. More than 3,500 students from 38 ACT national testing sites completed the ACT Writing Test as part of their operational test administration in September 2003 and were included in the study.

A combined English/Writing score scale was created by standardizing the English score (1–36) and the Writing score (2–12), weighting them 2/3 and 1/3 respectively, and using a linear transformation to map these combined scores onto a scale that ranged from 1 to 36. These transformed scores were then rounded to integers to form the reported score scale.

Reliability Study

A special administration of the ACT Writing Test was conducted in September 2003 to collect data on the score reliability of the Writing Test. Two forms of the ACT Writing Test were administered to students at an ACT national testing site. The forms were administered under standardized and secure conditions on consecutive days. The two forms of the Writing Test were counterbalanced to control for order effects. Highlights of this reliability study are shown on the next page.

Highlights of the Reliability Study

- The rater-agreement reliability for the essay test was estimated using multiple pairs of raters and ranged from .92 to .94.
- The generalizability coefficient was .64 (a reliability-like estimate of score consistency), which is very high for a writing assessment. The standard error of measurement was 1.23.
- The variance component for persons (analogous to true score variance in classical test theory) represented 63% of the total variance.
- Prompts and raters contributed negligible amounts to the total variance, which means the level of student achievement, not the particular prompt asked or the particular raters doing the scoring, is what most strongly determines the reported score.
- The reliability for the combined English/Writing score was .91 with a standard error of measurement of 1.67.

Course Placement Study

To estimate the effectiveness of the ACT Writing Test score and other variables for placing students in typical first-year English courses in college, course placement studies were conducted in 2003 and 2004. ACT worked with 10 selected postsecondary institutions to collect validity evidence. The institutions were selected to provide a representative sample of public and private institutions that varied in geographic location and size. The study required students to take the ACT English and Writing Tests prior to completion of their first month of classes. The testing experience was conducted under standard and secure conditions as directed by ACT. Institutions supplied ACT with course grade information for students participating in the study following the fall 2003 and 2004 semesters. Table 1 shows the results of these studies. Highlights of these studies are provided on the next page.

Table 1. Course Placement Validity Statistics for ACT Writing, English, and English/Writing Scores in English Composition
(Success criterion = B-or-higher grade)

ACT score	Number of institutions	Median cutoff score	Median maximum accuracy rate[a]	Median increase in accuracy rate[b]	Median success rate[c]
Writing	10	6	65	7	66
English	10	18	67	5	67
English/Writing	10	17	69	6	69

[a] Accuracy rate refers to the percentage of students who would be placed into the appropriate class (standard or remedial) using the optimal cutoff score calculated from the data.

[b] Increase in accuracy rate refers to the increased percentage of students who would be placed in the appropriate class using the test score, as opposed to placing all students into the standard course.

[c] Success rate refers to the percentage of students who would earn a grade of B or better if the test score is used for placement.

Highlights of the 2003 and 2004 Course Placement Studies

- The increase in variance accounted for by adding the Writing Test is .03.
- The median increase in variance accounted for by the combined English and Writing Test scores over and above that provided by the English Test alone is .04.
- The Writing Test score is adding value to the accuracy of course placement decisions over and above the ACT English Test.
- The median accuracy rate for placement into a standard English composition course for the combined ACT English and Writing Test scores was 69% for the sample of institutions studied, which represents an increase in accuracy of 2% over and above the accuracy rate of the English Test score alone.
- The median accuracy rate for placement into a standard English composition course for the ACT English Test score alone was 67% for the sample of institutions studied.
- The median accuracy rate for placement into a standard English composition course for the ACT Writing Test score alone was 65% for the sample of institutions studied.

Conclusion of Early Research

Based on these early research results, it appears that the new ACT Writing Test increases course placement accuracy over and above the ACT English Test. It contributes positively to the prediction of English composition course grades and produces reliable test scores. Furthermore, when its score is combined with the English Test score, the ACT Writing Test produces a new scaled score that meets all prespecified scaling characteristics.

Demographic Analysis of the Population Taking the ACT Writing Test

The following analyses were conducted on the data in the 2008 ACT National Data Release. The students in this data file (N = 1,421,941) represent the high school graduating class of 2008. These are ACT-tested students who took the ACT either as sophomores, juniors, or seniors, and who self-reported that they would graduate in 2008. For any student who took the ACT more than once, only his or her most recent scores are included in this data file. If those scores reflect taking the ACT Plus Writing, the student will hereafter be referred to as an ACT Plus Writing student. If they reflect taking the ACT without the Writing Test, the student will be referred to as an ACT-only student.

Gender

Table 2 shows the number and percentage of ACT-tested high school graduates in 2008 who took the ACT Plus Writing and the ACT only, by gender. A total of 774,040 students–54% of the class of 2008–took the Writing Test. Of these, approximately 54.7% were females and 42.6% were males. Proportionately fewer females (52.6%) and more males (45.7%) took only the ACT.

Table 2. Number of Students Taking the ACT Plus Writing and the ACT Only, by Gender

	ACT Plus Writing		ACT Only		Total	
Gender	**N**	**%**	**N**	**%**	**N**	**%**
Female	423,463	54.7	340,819	52.6	764,282	53.7
Male	329,571	42.6	296,316	45.7	625,887	44.0
No response	21,006	2.7	10,766	1.7	31,772	2.2
Total	774,040		647,901		1,421,941	

Race/Ethnicity

Table 3 shows the number and percentage of students taking the ACT Plus Writing and the ACT only, by self-reported race/ethnicity. African Americans, American Indians/Alaska Natives, and Caucasian Americans made up a proportionately smaller segment of the ACT Plus Writing population than the ACT-only population. Together, these three groups comprised about 72.1% of the ACT Plus Writing students in the class of 2008, and 81.9% of the ACT-only students. Mexican Americans/Chicanos, Asian Americans/Pacific Islanders, and Puerto Ricans/Cubans/Hispanics were a proportionately larger segment of the ACT Plus Writing population than the ACT-only population.

Table 3. Number of Students Taking the ACT Plus Writing and the ACT Only, by Race/Ethnicity

	ACT Plus Writing		ACT Only		Total	
Race/Ethnicity	**N**	**%**	**N**	**%**	**N**	**%**
African American/ Black (non-Hispanic)	86,685	11.2	91,732	14.2	178,417	12.5
American Indian, Alaska Native	5,192	0.7	9,188	1.4	14,380	1.0
Caucasian American/ White (non-Hispanic)	466,190	60.2	429,398	66.3	895,588	63.0
Mexican American/Chicano	45,497	5.9	22,940	3.5	68,437	4.8
Asian American, Pacific islander	37,434	4.8	13,934	2.2	51,368	3.6
Puerto Rican, Cuban, Other Hispanic Origin	25,874	3.3	20,386	3.1	46,260	3.3
Multiracial	16,634	2.1	9,510	1.5	26,144	1.8
Other	18,134	2.3	11,684	1.8	29,818	2.1
I prefer not to respond/ No response	72,400	9.4	39,129	6.0	111,529	7.8
Total	774,040		647,901		1,421,941	

Geographic Location

Table 4 shows the number and percentage of students taking the ACT Plus Writing and the ACT only by geographic region, and Table 5 breaks this information down further by state of residence. Nearly half (49%) of ACT Plus Writing students were from the Midwest, and most of those were from Illinois and Michigan. (Both Michigan and Illinois administer the ACT Plus Writing statewide each year to their Grade 11 students.) The East was the next most highly represented region (25.7%), with most of those students coming from Florida and New York. The West (15.6%) was the next most highly represented, with most of those students coming from California. The largest percentage of ACT-only students were from the East (36.5%), followed by the Midwest (25.6%) and then the West (22.3%).

Table 4. Number of Students Taking the ACT Plus Writing and the ACT Only, by Region

	ACT Plus Writing		ACT Only		Total	
Region[a]	**N**	**%**	**N**	**%**	**N**	**%**
East	199,233	25.7	236,752	36.5	435,985	30.7
Midwest	378,999	49.0	166,135	25.6	545,134	38.3
Southwest	74,774	9.7	100,301	15.5	175,075	12.3
West	120,870	15.6	144,589	22.3	265,459	18.7
Other/unknown	164	0.0	124	0.0	288	0.0
Total	774,040		647,901		1,421,941	

[a] East: AL, CT, DC, DE, FL, GA, KY, MA, MD, ME, MS, NC, NH, NJ, NY, PA, RI, SC, TN, VA, VT
Midwest: IA, IL, IN, MI, MN, MO, OH, WI, WV
Southwest: AR, LA, NM, OK, TX
West: AK, AZ, CA, CO, HI, ID, KS, MT, ND, NE, NV, OR, SD, UT, WA, WY

Table 5. Number of Students Taking the ACT Plus Writing and the ACT Only, by State of Residence

		ACT Plus Writing		ACT Only		Total	
Region	**State**	**N**	**%**	**N**	**%**	**N**	**%**
East	AL	5,512	0.7	30,109	4.6	35,621	2.5
	CT	6,354	0.8	1,677	0.3	8,031	0.6
	DC	703	0.1	405	0.1	1,108	0.1
	DE	620	0.1	250	0.0	870	0.1
	FL	44,670	5.8	48,944	7.6	93,614	6.6
	GA	18,724	2.4	14,659	2.3	33,383	2.3
	KY	5,115	0.7	26,621	4.1	31,736	2.2
	MA	10,145	1.3	2,165	0.3	12,310	0.9
	MD	7,858	1.0	3,174	0.5	11,032	0.8
	ME	1,162	0.2	340	0.1	1,502	0.1
	MS	2,003	0.3	23,668	3.7	25,671	1.8
	NC	9,836	1.3	3,273	0.5	13,109	0.9
	NH	1,866	0.2	538	0.1	2,404	0.2
	NJ	11,302	1.5	3,407	0.5	14,709	1.0
	NY	30,635	4.0	13,913	2.1	44,548	3.1
	PA	11,700	1.5	7,683	1.2	19,383	1.4
	RI	984	0.1	236	0.0	1,220	0.1
	SC	10,256	1.3	6,278	1.0	16,534	1.2

Table 5. Number of Students Taking the ACT Plus Writing and the ACT Only, by State of Residence (continued)

		ACT Plus Writing		ACT Only		Total	
Region	**State**	**N**	**%**	**N**	**%**	**N**	**%**
East	TN	7,926	1.0	42,126	6.5	50,052	3.5
	VA	10,139	1.3	6,746	1.0	16,885	1.2
	VT	1,713	0.2	540	0.1	2,253	0.2
Midwest	IA	5,378	0.7	17,489	2.7	22,867	1.6
	IL	124,388	16.1	19,412	3.0	143,800	10.1
	IN	10,925	1.4	5,084	0.8	16,009	1.1
	MI	115,933	15.0	7,988	1.2	123,921	8.7
	MN	30,671	4.0	14,144	2.2	44,815	3.2
	MO	7,569	1.0	39,493	6.1	47,062	3.3
	OH	52,373	6.8	35,779	5.5	88,152	6.2
	WI	26,369	3.4	20,574	3.2	46,943	3.3
	WV	5,393	0.7	6,172	1.0	11,565	0.8
Southwest	AR	2,668	0.3	19,878	3.1	22,546	1.6
	LA	10,023	1.3	24,272	3.7	34,295	2.4
	NM	4,463	0.6	7,426	1.1	11,889	0.8
	OK	3,274	0.4	23,892	3.7	27,166	1.9
	TX	54,346	7.0	24,833	3.8	79,179	5.6
West	AK	1,036	0.1	1,014	0.2	2,050	0.1
	AZ	5,580	0.7	6,074	0.9	11,654	0.8
	CA	60,724	7.8	11,725	1.8	72,449	5.1
	CO	6,272	0.8	44,177	6.8	50,449	3.5
	HI	2,585	0.3	597	0.1	3,182	0.2
	ID	3,067	0.4	7,034	1.1	10,101	0.7
	KS	4,533	0.6	19,295	3.0	23,828	1.7
	MT	3,818	0.5	2,471	0.4	6,289	0.4
	ND	2,151	0.3	3,992	0.6	6,143	0.4
	NE	2,327	0.3	14,244	2.2	16,571	1.2
	NV	2,977	0.4	3,331	0.5	6,308	0.4
	OR	9,257	1.2	1,309	0.2	10,566	0.7
	SD	1,605	0.2	5,362	0.8	6,967	0.5
	UT	4,899	0.6	17,625	2.7	22,524	1.6
	WA	9,129	1.2	2,856	0.4	11,985	0.8
	WY	910	0.1	3,483	0.5	4,393	0.3
Other/unknown		174	0.0	124	0.0	298	0.0
Total		774,040		647,901		1,421,941	

Students Who Take the Writing Test Multiple Times

Students may take the ACT as many times as they wish. Table 6 breaks down the class of 2008 by the number of times tested. Approximately 69% of students took the ACT (with or without the Writing Test) just once, while slightly more than 1% took the ACT five or more times.

Table 6. Number of 2008 Graduates Taking the ACT Multiple Times, by Number of Times Tested

	Total	
Number of times tested	**N**	**%**
1	979,433	68.9
2	304,869	21.4
3	91,676	6.4
4	28,810	2.0
5 or more	16,960	1.2
Total	1,421,941	

Each time a student registers for the ACT, he or she can choose to take the ACT only or the ACT Plus Writing. For the 774,040 ACT Plus Writing students in the class of 2008, Table 7 shows the number of times the ACT Plus Writing was taken. Approximately 81.5% of these students took the ACT Plus Writing only once, approximately 15.5% took it twice, and approximately 3% took it three or more times. Table 7 also shows the mean and standard deviation of the Writing scores of each of these groups. (Recall that, for students who tested multiple times, these scores represent their most recent testing.) Average Writing scores increased slightly as the number of testing occasions increased, going from 7.2 for one-time testers to 8.1 for four-time testers.

Table 7. Number of 2008 ACT Plus Writing Graduates Taking the ACT Plus Writing Multiple Times and Their Mean Scores, by Number of Times Tested

Number of times tested	**N**	**%**	**Mean Score**	**SD**
1	630,624	81.5	7.2	1.7
2	120,330	15.5	7.7	1.5
3	18,502	2.4	7.9	1.5
4	3,806	0.5	8.1	1.5
5 or more	1,098	0.1	8.1	1.5
Total	774,040			

Table 8 examines the degree to which retaking the ACT Plus Writing affected students' Writing scores. For all students in the class of 2008 who took the ACT Plus Writing multiple times, Table 8 shows the average change in their Writing scores from the first testing to the second testing, from the second testing to the third, from the third to the fourth, and from the fourth to the last. (This last group includes all students who tested five or more times.) On average, taking the Writing Test a second time resulted in a score increase of just 0.2 points, and the amount of score change dropped slightly as the number of testing occasions increased.

Table 8. Change in Writing Test Scores for Writing Retesters

		Score change (latter score – former score)	
From...	**To...**	**Mean**	**SD**
1st testing	2nd testing	0.2	1.3
2nd testing	3rd testing	0.1	1.3
3rd testing	4th testing	0.0	1.3
4th testing	last testing	0.1	1.3

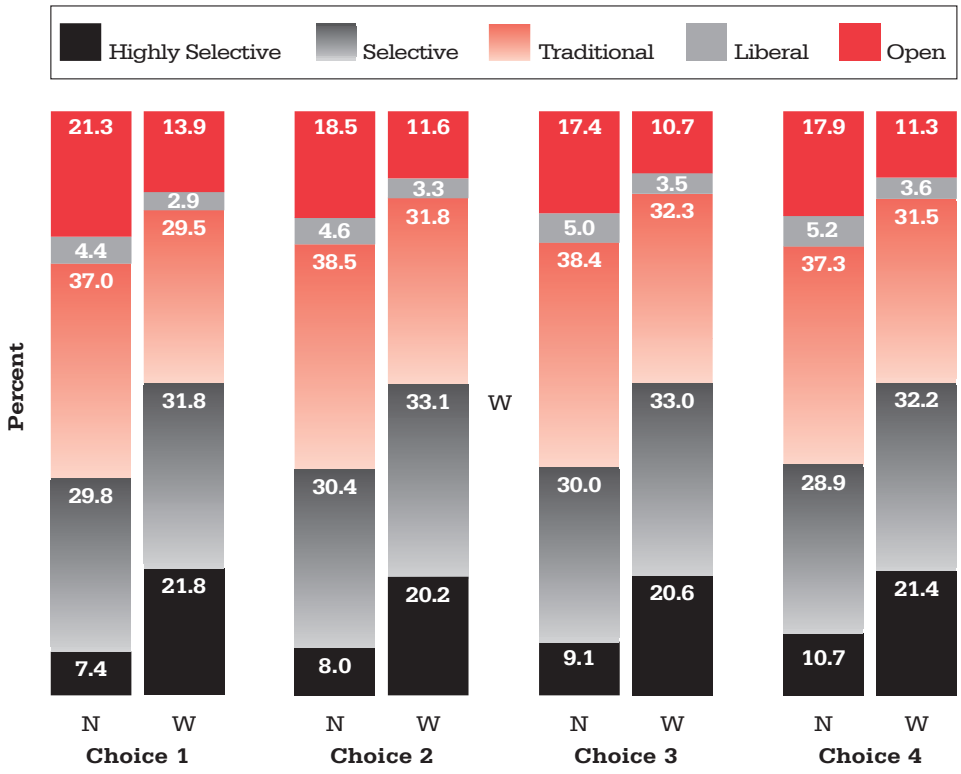
Taking the ACT Writing Test and Selectivity of Preferred Institutions

One difference between students who take the ACT Writing Test and those who do not is the type of institution to which they send their scores. Each time a student takes the ACT, he or she may send scores to up to four institutions for no extra charge. Sending ACT scores is often part of the admissions process. At the least, it indicates a student's interest in an institution. An important factor in the choice of ACT score recipients can be an institution's level of admissions selectivity.

For the ACT-tested students who graduated in 2008, the selectivity of postsecondary ACT score recipients from their most recent test date was categorized as highly selective, selective, traditional, liberal, or open. (Note that an institution's selectivity level is reported by the institution through ACT's Institutional Data Questionnaire.) Fifty-four percent of the sample took the ACT Writing Test and 68% had at least one institution choice. For each possible choice (1–4), the selectivity breakdown by writing status (N: ACT only, W: ACT Plus Writing) was determined.

The results, shown in Figure 1, suggest that students who take the ACT Writing Test tend to send their scores to more selective institutions than do those who do not take the Writing Test. Across the four choices, 20.2–21.8% of the writing group chose highly selective institutions as compared to 7.4–10.7% of the non-writing group. Although not as extreme, the same difference occurred for the selective category (W: 31.8–33.1% vs. N: 28.9–30.4%). In the three lower selectivity categories, the non-writing group percentages were consistently higher than the writing group percentages. The group differences for the traditional and open categories were all between 5.8% and 7.5%.

Figure 1. Selectivity of score recipients: Percentage in each selectivity category by recipient number and ACT Writing Test status (N: ACT only; W: ACT Plus Writing)



Relationships Between ACT Writing Test Scores and ACT English Scores and Subscores

Table 9 shows the distribution of Writing Test scores for the class of 2008, and the means and standard deviations of English Test scores and Usage/Mechanics and Rhetorical Skills subscores for the class of 2008. Overall, 770,529 students had reportable Writing Test scores, with a mean of 7.3, a mode of 8, and a standard deviation of 1.7. Their mean English score was 21.4, slightly higher than the average score (19.7) of ACT-only students. The mean subscores of the ACT Plus Writing students (10.7 and 11.0, respectively) were likewise higher than the means subscores of the ACT-only students (9.7 and 10.2). For ACT Plus Writing students, there was a clear positive relationship between their Writing scores and their ACT English scores and subscores; as English scores and subscores go up, so do Writing scores. This is also evidenced by Table 10, which shows the inter-test correlations for the Writing scores and the three multiple-choice scores. Writing Test scores correlated moderately with the other scores; attenuated correlation coefficients ranged from 0.46 to 0.48. When corrected for the reliability of the four sets of scores, the correlations were all 0.63. Among students who took the Writing Test, the correlations between the multiple-choice test scores were slightly higher than those for the ACT-only students. Table 10 shows that these attenuated correlations ranged from 0.84 to 0.96 for ACT Plus Writing students, while Table 11 shows that, for ACT-only students, they ranged from 0.81 to 0.95.

Table 9. ACT English Test Scale Scores and Usage/Mechanics and Rhetorical Skills Scale Subscores by Writing Test Score

Writing score	N	%	English score		Usage/Mechanics subscore		Rhetorical Skills subscore	
			Mean	SD	Mean	SD	Mean	SD
2	8,243	1.1	12.5	4.6	5.6	2.8	6.5	2.6
3	6,330	0.8	13.6	4.9	6.2	2.9	7.1	2.7
4	30,211	3.9	15.4	5.1	7.2	3.1	8.0	2.8
5	32,048	4.2	16.3	5.3	7.7	3.3	8.5	2.9
6	173,392	22.5	19.0	5.5	9.3	3.5	9.9	3.0
7	107,747	14.0	20.6	5.7	10.3	3.6	10.7	3.0
8	260,094	33.8	22.6	5.6	11.5	3.6	11.7	2.9
9	79,323	10.3	24.6	5.6	12.6	3.5	12.6	2.9
10	61,147	7.9	26.3	5.3	13.7	3.2	13.4	2.7
11	9,922	1.3	28.4	4.9	14.9	2.9	14.4	2.4
12	2,072	0.3	29.7	4.4	15.6	2.5	15.0	2.1
Total	770,529[a]		21.4	6.3	10.7	3.9	11.0	3.3
Mean = 7.3 SD = 1.7 ACT-only	647,901		19.7	5.7	9.7	3.6	10.2	3.1

[a] Does not include students whose Writing Tests could not be scored, or who did not receive a score on the English Test.

Table 10. Correlations Between ACT English Test Scale Scores, Usage/Mechanics and Rhetorical Skills Scale Subscores, and Writing Test Scores

(Disattenuated correlations are in italics; N = 770,529.)

Content Area	English	Usage/Mechanics	Rhetorical Skills
Writing	0.48	0.47	0.46
	0.63	*0.63*	*0.63*
English		0.96	0.95
		—	—
Usage/Mechanics			0.84
			0.99

Table 11. Correlations Between ACT English Test Scale Scores and Scale Subscores for ACT-Only Examinees
(Disattenuated correlations are in italics; N = 647,901.)

Content Area	Usage/Mechanics	Rhetorical Skills
English	0.95	0.94
	—	—
Usage/Mechanics		0.81
		0.95

Reliability of the ACT Writing Test

Reliability analyses were conducted using data from a 2005 field test study, in which new prompts were administered to students prior to operational use, to examine how well they worked. In the field test study, each examinee responded to two prompts on successive days. The prompts were spiraled to control for sampling error and were administered in counterbalanced order to control for order effects. To carry out these reliability analyses, several prompts were scored in a students x prompts x raters, completely crossed design. There were six prompts, each administered to 20 examinees, and scored by two raters on a 1–6 scale. The prompts and examinees were chosen randomly from those in the field test study. Generalizability Theory analyses produced G-coefficients (internal consistency indices of score consistency) for each prompt pair.

A second reliability study was conducted using field test data from 2008. This analysis used all of the field test data on prompts that met ACT's statistical criteria for use in operational testing. For these data, there were two sets of prompts, and every examinee took one prompt from each set on successive days. There were 25 prompts in one set, and 15 in the other. These 375 prompt pairs were administered in counterbalanced order to 6,346 examinees. Since the prompts are written and selected (through the statistical criteria) to yield comparable scores, all prompt pairs were used together in a single Pearson correlation analysis. The resulting correlation coefficient is the alternate forms reliability estimate for Writing scores, reported on a scale of 2–12 (the sum of the two rater scores).

Highlights of the Reliability Studies

- The median inter-rater reliability was .94 over the 12 prompts in the Generalizability study.
- The median G-coefficient for the Writing Test was .70 over the six prompt pairs.
- The median proportion of person variance to total variance was .70 over the six prompt pairs.
- Prompts and raters contributed negligible amounts to the total variance, which means the level of student achievement, not the particular prompt asked or the particular raters doing the scoring, is what most strongly determines the scores.
- The alternate forms reliability was found to be .67, which is somewhat higher than commonly seen on single prompt tests. The standard error of measurement was 1.01.

Predictive Validity of the ACT Writing Test and ACT English Subscores: A Study of Performance in Writing-Intensive College Courses

Introduction

The purpose of this study was to examine the validity of ACT Writing scores and ACT English subscores as predictors of grades in writing-intensive college courses. The following questions were addressed in this study:

1. Do students with higher ACT Writing scores perform better in writing-intensive courses in college?
2. Do ACT Writing scores enhance the prediction of grades in writing-intensive courses, above ACT English scores?
3. Do ACT Writing scores enhance the prediction of grades in writing-intensive courses, above ACT English scores and high school English grades?
4. Does using ACT English subscores (Usage/Mechanics, Rhetorical Skills) in place of the ACT English score enhance the prediction of grades in writing-intensive courses?

Methods

To address these questions, course grades from 147 writing-intensive courses across 36 postsecondary institutions were collected and matched to ACT data archives to obtain students' ACT test scores and self-reported high school English grades. Specific courses were classified as *writing-intensive* by virtue of the course's title. Appendix A lists the specific course titles and the number of students per course title used in the analyses. A total of 4,598 students had writing-intensive course grade records and matching ACT data and were used for the analyses. Fifteen of the postsecondary institutions were four-year institutions and 21 were two-year institutions; 85.6% of the student sample was from a four-year institution and 14.4% was from a two-year institution.

Hierarchical linear regression models that relate the explanatory variables (ACT Writing score, ACT English score, and high school English grade average) were fit to the criterion (grade in writing-intensive course). The hierarchical linear regression models allow us to account for variation in grading standards and difficulty across specific writing-intensive courses within institutions.

Results

We first address question 1: Do students with higher ACT Writing scores perform better in writing-intensive courses in college? Figure 2 presents the ACT Writing score distribution for the 4,598 students in the sample. Figure 3 presents the average grade for each level of the ACT Writing Test score scale (2–12). The numeric grade values are defined as A = 4, B = 3, C = 2, D = 1, and F or withdrawal = 0.

Figure 2. Frequency distribution of ACT Writing scores

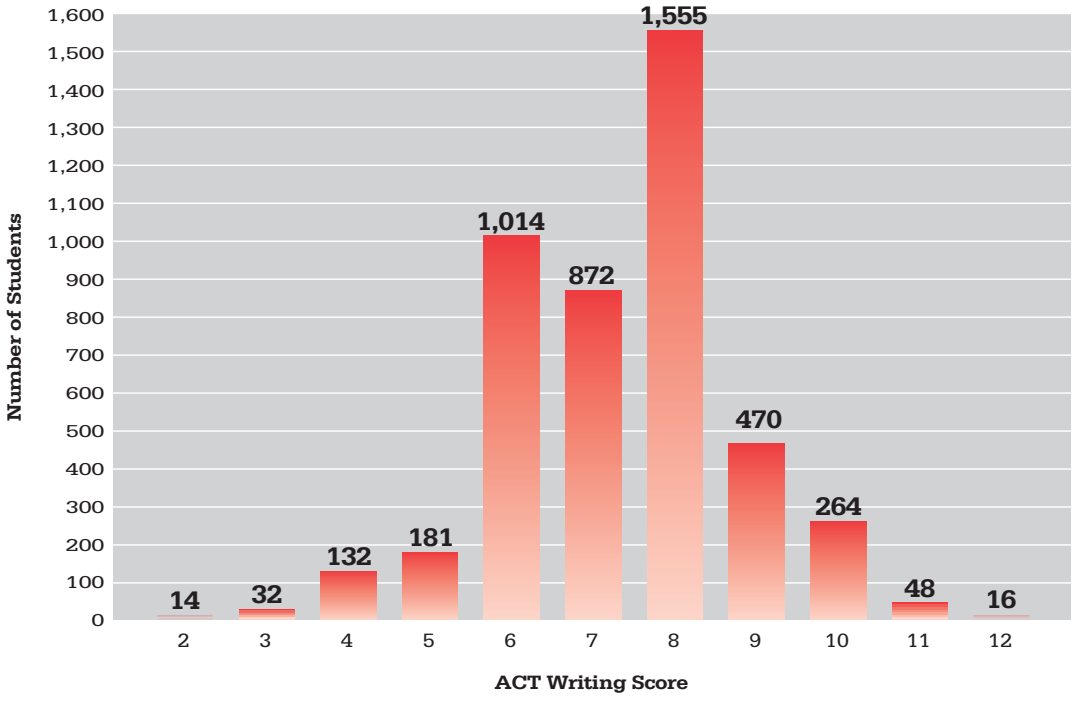
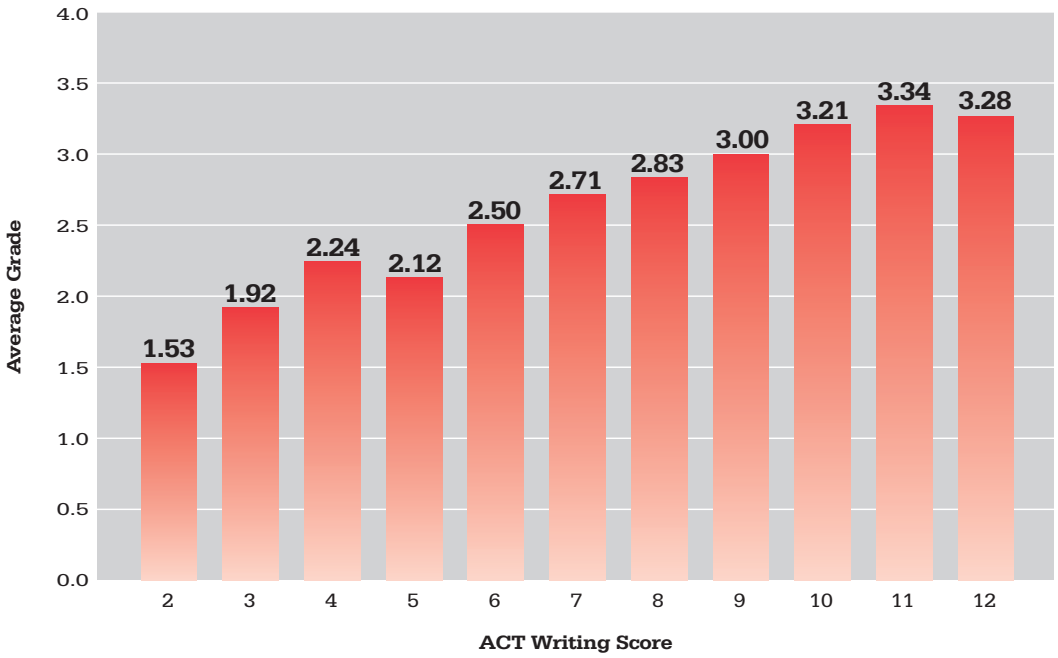


Figure 3. Average grade in writing-intensive course, by ACT Writing score



As expected, grades in writing-intensive courses increase with increases in ACT Writing scores. Note that some of the average grade values in Figure 3 are based on small sample sizes, which may cause some imprecision in the average grade values. For example, the average grade for students with the highest writing score (12) is 3.28, slightly lower than the average for students with the next-highest writing score. However, only 16 students in our sample had an ACT Writing score of 12, so the average is less precise than averages at lower score points.

Next, we address question 2: Do ACT Writing scores enhance the prediction of grades in writing-intensive courses, above ACT English scores? A hierarchical linear regression model was used to regress course grade on ACT English score and ACT Writing score, controlling for variation in grading standards and difficulty across specific writing-intensive courses within institutions. Table 12 (Model 2) presents the results for this regression model. The results show that ACT English Score and ACT Writing Score were jointly predictive of grades in writing-intensive courses, with ACT English score carrying more weight (.240) than ACT Writing score (.150). The practical implication of this finding is that ACT Writing scores help predict students' academic performance, over and beyond what is predicted by the ACT English score. For example, a group of students with an ACT English score of 25 and an ACT Writing score of 6 would be expected to earn grades of 2.74, on average (see Table 13, Model 2). Meanwhile, another group of students with the same ACT English score of 25 but with an ACT Writing score of 10 would be expected to earn grades of 3.24, on average. Comparing the model using ACT English and ACT Writing scores (Table 12, Model 2) to a model using only ACT English score (Table 12, Model 1), we see that the overall predictive strength measured by Multiple R increases by 0.020 points (from 0.373 to 0.393) when the ACT Writing score is used in addition to the ACT English score. The standardized regression weights for ACT English (.240) and

ACT Writing (.150) in Model 2 lend support for the ACT English/Writing score, which is a combination of the two scores with greater weight given to the ACT English score.

Table 12: Results of Hierarchical Linear Regression Models

Model	Predictor	Regression Weight	Standardized Weight	Multiple R
1	ACT English	.068	.284	0.373
2	ACT English	.057	.240	0.393
	ACT Writing	.125	.150	
3	ACT English	.036	.153	0.448
	ACT Writing	.098	.118	
	HS English GPA	.559	.254	
4	ACT Usage/Mechanics	.053	.143	0.393
	ACT Rhetorical Skills	.049	.109	
	ACT Writing	.124	.149	
5	ACT Usage/Mechanics	.032	.088	0.448
	ACT Rhetorical Skills	.032	.072	
	ACT Writing	.098	.118	
	HS English GPA	.558	.254	

Table 13: Predicted Course Grade for Given Predictor Values, by Model

	ACT Score				HS English GPA	Predicted course grade
Model	English	Writing	UM	RS		
1	25	—	—	—	—	2.92
2	25	6	—	—	—	2.74
	25	10	—	—	—	3.24
3	25	6	—	—	3.50	2.78
	25	10	—	—	3.50	3.18
4	—	6	13	13	—	2.76
	—	10	13	13	—	3.25
5	—	6	13	13	3.50	2.80
	—	10	13	13	3.50	3.19

Now we address question 3: Do ACT Writing scores enhance the prediction of grades in writing-intensive courses, above ACT English scores and high school English grades? Again, a hierarchical linear regression model was used to regress course grade on ACT English score, ACT Writing score, and high school English grade average, controlling for variation in grading standards and difficulty across specific writing-intensive courses within institutions. Table 12 (Model 3) presents the results for this regression model. The results show that all three predictors were jointly predictive of grades in writing-intensive courses. High school English grade average carried the most weight (.254), followed by ACT English score (.153), and ACT Writing score (.118). The practical implication of this finding is that ACT Writing scores help predict students' academic performance, over and beyond what is predicted by the combination of high school English grade average and ACT English score. For example, a group of students with a high school English grade average of 3.50, an ACT English score of 25, and an ACT Writing score of 6 would be expected to earn grades of 2.78, on average (Table 13, Model 3). Meanwhile, another group of students with the same high school English grades and ACT English scores, but with an ACT Writing score of 10, would be expected to earn grades of 3.18, on average.

Finally, we address question 4: Does using ACT English subscores (Usage/Mechanics, Rhetorical Skills) in place of the ACT English score enhance the prediction of grades in writing-intensive courses? Using the same type of hierarchical linear regression model, two different models were fit. In the first model (Table 12, Model 4), course grades were regressed on the two ACT English subscores (Usage/Mechanics and Rhetorical Skills) and the ACT Writing score. In the second model (Table 12, Model 5), course grades were regressed on the two ACT English subscores (Usage/Mechanics and Rhetorical Skills), the ACT Writing score, and high school English grade average. As shown in Table 12 (Model 5), the ACT English subscores were jointly predictive of grades in writing-intensive courses. High school English grade average carried the most weight (.254), followed by ACT Writing score (.118), ACT Usage/Mechanics subscore (.088), and ACT Rhetorical Skills subscore (.072). The weights for the two ACT English subscores were quite similar (.088 and .072). If using ACT English subscores in place of the ACT English score does indeed enhance the prediction of grades in writing-intensive courses, we would expect to see an increase in overall predictive strength (Multiple R) when comparing Model 4 to Model 2 and also when comparing Model 5 to Model 3. However, we found that the overall predictive strength did not change when using the ACT English subscores in place of the ACT English score. In fact, the multiple Multiple R statistics were identical to three decimal places for Models 2 and 4 ($R = 0.393$) and Models 3 and 5 ($R = 0.448$). Thus, the results suggest that using ACT English subscores in place of the ACT English score does not enhance the prediction of grades in writing-intensive courses.

Appendix A:
Course Titles Used in Analyses

Course title	Number of students
COMPOSITION I	12
2-CREATIVE WRITING: POETRY-W	3
ACADEMIC WRITING & RESEARCH	170
ACADEMIC WRITING AND RESEARCH	37
ADV GRAMMAR AND COMPOSITION I	9
ADVANCED COMPOSITION	20
ADVANCED GRAMMAR COMPOSITION	4
ADVANCED WRITING	1
ADVANCED WRITING-W	1
ANALYTICAL READING AND WRITING	4
BASIC WRITING	2
BASIC WRITING I	1
BASIC WRITING II	5
BEGINNING COMPOSITION	1
BEGINNING WRITING	11
BEGINNING WRITING-SPRINGDALE	1
BUSN COMM: ORAL AND WRIT-HON-W	22
BUSN COMM: ORAL AND WRITTEN-W	7
COLLEGE WRITING I	186
COLLEGE WRITING SKILLS	1
COMPOSITION FUNDAMENTALS	9
COMPOSITION I	1,542
COMPOSITION II	286
COMPOSITION II-HONORS	1
COMPOSITN & READ IN WORLD LIT	12
COMPUTERS AND WRITING-W	5
CONVERSATION AND COMPOSITION	1
CREATIVE WRITING	7
CREATIVE WRITING I	23
CRIT READ & PERSUASIVE WRIT-W	42

Course title	Number of students
CRIT READ/PERSUASV WRIT-HON-W	11
CRIT READ/PERSUASV WRIT-NSDS-W	2
CRIT READ/PERSUASV WRIT-PREV-W	1
DEVELOPMENTAL WRITING	1
ENG COMPOSITION I	117
ENG COMPOSITION II	11
ENGLISH COMPOSITION FUNDAMENTA	12
ENGLISH COMPOSITION I	412
ENGLISH COMPOSITION I(CAV-R)	1
ENGLISH COMPOSITION II	34
ENGLISH COMPOSITION II(WK-END)	1
ENGLISH COMPOSITION II, HONORS	1
ENGLISH WRITING II	2
ESSAY WRITING	2
ESSENTL OF COLL RHETORIC	405
FOUNDATIONAL COMPOSITION	2
FUNDAMENTALS OF COMPOSITION	1
FUNDAMENTALS OF WRITING	4
FUNDAMENTALS OF WRITING I	2
FUNDAMENTALS OF WRITING II	7
FUNDAMENTALS/WRITING	9
GRAMMAR AND COMPOSITION I	1
HNRS COMPOSITION I	14
HNRS COMPOSITION II	2
HON JOUR WRITING REQUIRE	3
HONORS COMPOSITION	16
HONORS COMPOSITION I	64
HONORS COMPOSITION II	12
IMAGINATIVE WRITING	1
INTENSIVE WRITING LAB I	1
IINTERMED EXPOSITORY WRITING-W	2
INTERMEDIATE WRITING	6
INTERMEDIATE WRITING-S`DALE	2
INTRO CREATIVE WRITING	1

Course title	Number of students
INTRO TO COLLEGE WRITING	38
INTRO TO CREATIVE WRITING	12
INTRO/CREATIVE WRITING	1
INTRODUCTION TO CREATIVE WRIT	1
INTRODUCTION TO COLLEGE WRITIN	227
INTRODUCTION TO WRITING	6
INVST REPORT WRITING	1
NEWS MEDIA WRITING & EDITING-W	2
NEWS WRITING	7
PLAYWRITING I	3
PRACTICAL WRITING	1
PRINCIPLES OF RHETORIC-W	1
RHETORIC AND COMPOSITION	454
RHETORIC AND COMPOSITION-PREV	7
RHETORIC AND WRITING	115
RHETORIC COMMUNICATION I	11
RSCH & WRITING ABOUT CULTURE-W	3
SOCL CRIT WRIT OF GEO ORWELL-W	4
TECHNICAL COMPOSITION	7
TECHNICAL COMPOSITION II	4
TECHNICAL COMPOSITION WEB	3
TECHNICAL WRITING	4
TECHNICAL WRITING-W	1
TECHNICAL/REPORT WRITING	2
TECHNIQUES WRITING MASS MEDIA	1
TOPICS IN WRITING-W	81
TRANSITIONAL WRITING	1
WRITING FOR PUBLIC RELATIONS	1
WRITING FUNDAMENTALS	2
WRITING SKILLS	5
WRITING TUTORIAL	3