ACT Research Report Series 87-1

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November 1986

ACT

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ABSTRACT

In order to examine the accuracy with which secondary school students report their high school courses and grades, self-reported course and grade information for 21 "academic" high school courses was obtained from 1,100 students at the time they registered for the ACT Assessment. This information was compared with corresponding data from the students' high school transcripts. In nearly 95% of the cases, the courses the students reported as having taken matched the information from the transcripts. The correlation between the student-reported grades and transcript grades (across all individuals and types of courses) was .87. Given this degree of accuracy, several potential uses of the student-reported information are presented and discussed.

THE ACCURACY OF SELF-REPORTED HIGH SCHOOL COURSE AND GRADE INFORMATION

During recent years, officials at colleges and universities have become increasingly interested in the high school course-taking patterns of their prospective and entering students. Information related to high school preparation has been heavily used in the college admissions process and for course placement decisions. Institutions have also used such information to plan appropriate curricular offerings for their future students. Guidance and counseling personnel have utilized high school course pattern information in academic counseling at both the precollege and college levels.

College officials' interest in the secondary school curricular backgrounds of their entering students has also increased because of recent changes in college entrance requirements. During the past 5 years, many states have adopted more extensive high school curriculum requirements for students entering public colleges. For example, beginning in the fall of 1988, all 19 campuses in the California State University System will require first-year students to have completed 4 years of high school English, 3 years of mathematics, a year of United States history, a year of laboratory science, 2 years of a foreign language, a year of visual and performing arts, and 3 years of elective subjects ("California State U. System Adopts," 1985). In a 1985 research report, Goertz and Johnson reported that "sixteen states have recently enacted, or are proposing, more stringent statewide admissions policies. . . . In all of the states making changes, the new or proposed policies involve either imposing (14) or strengthening (2) a prescribed pattern of high school coursework for entering freshmen." These new requirements have placed increased informational demands on college admission and academic officers.

To assist colleges in identifying and/or documenting the high school courses taken by prospective students, the American College Testing Program (ACT) added, during the fall of 1985, a section to the ACT Assessment registration document designed to collect self-reported data on the particular courses taken and grades earned by students during secondary school. Because it was expected that this information would be used in planning and decision making related to college admission, it was essential that the data be highly accurate. Therefore, prior to the addition of the new High School Course/Grade Information section to the ACT registration materials, the ACT Research Division conducted a pilot study examining the accuracy with which students report their high school courses and grades. The purpose of this report is to summarize the findings of that study.

Earlier Findings

Numerous research studies have examined the accuracy of self-reported student data. For example, in a study that compared student-reported data with corresponding data from high school transcripts, Armstrong, Jensen, McCaffrey, and Reynolds (1976) concluded that "students report their rank in class with a fairly high degree of accuracy, and that most discrepancies in reporting could be accounted for by confusion generated by SDQ (Student Descriptive Questionnaire) directions and individual school policies." McMorris and Ambrosino (1973) found that "self-reported academic performance generally predicted future academic performance about as well as did school-reported academic performance and, in some studies, better than did test scores." In a monograph examining the utility of self-reported student data, Baird (1976) reviewed the results of several hundred studies and concluded that "one can

believe and make decisions based on self-report information in a wide variety of areas as much as one can believe and use test information."

A limited number of studies have dealt specifically with the accuracy of student-reported high school grades. Maxey and Ormsby (1971), for example, compared student-reported grades with school-reported grades for a sample of 5,755 students who registered to take the ACT Assessment examination during 1970. The authors found that 78.0% of all self-reported grades agreed exactly with those reported by high school personnel, and 97.8% of all these grades were accurate within one grade point (on a 4.0 grading scale). Sixteen percent of students were found to have overreported their grades, while 6 percent underreported their grades. The authors reported correlations between student- and school-reported grades of .86, .86, .85, and .81 for the subject areas of English, mathematics, social studies, and natural sciences, respectively. In a similar study, Davidsen (1963) compared student-reported and school-reported grades for a large number of college-bound students; he observed correlations that ranged from .91 to .93.

Armstrong and Jensen (1974) examined the accuracy of grades reported on the Student Descriptive Questionnaire by 2,775 randomly selected students who applied to colleges in the Massachusetts State College System. The authors found that nearly 72% of the student-reported grades agreed exactly with transcript grades, and over 97% of all student responses agreed within one grade. As was the case in the previously cited study by Maxey and Ormsby, Armstrong and Jensen found that more students overreported than underreported their high school grades (21 percent vs. 7 percent). The authors reported a correlation of .74 between the grades provided by the students and those obtained from high school transcripts.

In a more recent study, Armstrong, Jensen, Doyle, and Reynolds (1976) examined the relationship between the mean of six student-reported grades (in English, mathematics, foreign languages, physical sciences, biological sciences, and social studies) and the mean of six corresponding grades from each student's high school transcript. The authors found a correlation of .82 between these two sets of means for 2,659 students for the Massachusetts State College System, and concluded that the mean of the student-reported grades provided a "rather good estimate" of the corresponding mean from the transcript grades.

In a study of the accuracy of data obtained during the High School and Beyond study sponsored by the National Center for Educational Statistics, Fetters, Stowe, and Owings (1984) compared student-reported grades (on an 8-point scale) with transcript grades and with grades reported by students' parents. Despite differences in the coding scales used, "the responses of students correlated fairly highly (.77) with grade averages derived from their transcripts." The correlation between the student- and parent-reported data was found to be .76.

These findings suggest that students report their grades with a moderately high degree of accuracy. Very little published research, however, is available concerning the accuracy with which students report the number and types of courses they completed during secondary school. One of the few studies to address this topic was conducted to examine the quality of the data collected through the National Center for Education Statistics (NCES) High School and Beyond research program (Fetters et al., 1984). High school seniors participating in the project were asked to report (using eight answer categories ranging from "None" to "More than 3 years" in half-year intervals) the amount of coursework they had completed

in a series of subject areas for the period "starting with the beginning of tenth grade and through the end of this school year." When the data were compared with corresponding transcript information, the authors reported that:

> The quality of student reports on amount of coursework was found to vary considerably by subject area: from highs of about .87 for French, German, and Spanish; to .70 and .66 for science and mathematics, respectively; to .39 for history or social studies and .28 for English or literature. It should be noted that all students, regardless of their academic skills and other characteristics, tend to take about the same amount of coursework in the areas that have the lowest coefficients; but students vary considerably more in the amount of coursework taken in areas that have high coefficients (p. 22).

The study also investigated (again using transcript information as a criterion measure) the accuracy of student-reported data concerning whether or not the particular senior had ever taken (counting the current semester) each of six specific courses in mathematics and science. The authors found Pearson product-moment correlation coefficients "in the .80's for chemistry (.87), physics (.80), and geometry (.85) and in the .60's for second-year algebra (.68), calculus (.67) and trigonometry (.63)." The authors noted that certain students may have taken some of these courses before the ninth grade, and since the transcripts contained only high school information (grades 9 through 12), the reported coefficients were likely to be "underestimates of the quality of student reports. . . . the true quality of student reports of coursework in these areas undoubtedly is somewhat higher than indicated by the coefficients estimated in this study."

Taken collectively, the above studies suggest that student-reported course and grade information is reasonably accurate and valid. However, because the number of courses/subjects of interest in this study was greater than that examined in any of the previously cited research and because the data were to be collected in a unique situation (at the time of registration for the ACT Assessment), it was decided that the accuracy of the student-reported information of interest required further study.

Method

Subjects and Instrumentation

Student-reported course and grade data were collected from 1,109 high school juniors and seniors who registered to take the ACT Assessment during April or June of 1983. These students were from 26 secondary schools located in the states of Illinois and Kentucky, and included all test registrants (up to a maximum of 125 students per school) for the given test dates. The schools represented in the study were selected to include public and private, large and small, and rural, urban, and suburban institutions at which a significant number of students registered to take the ACT examination. (Selection of the schools for the study was accomplished with the assistance of college admission officers and state officials from the states included in the study.) Because of this selection process, the individuals included in the study were representative of the spring test-taking populations from the two states selected for the study.

Counselors at each participating secondary school were asked to distribute special ACT registration packets to their students. These packets contained the standard ACT registration materials as well as a special instruction sheet and a

high school course and grade information form designed specifically for the study. (See the copies of these forms included in the Appendix.) The course/grade information form, which was designed to resemble an optical mark-readable data form, listed 21 academic high school courses often of interest in the college admissions process. Students receiving the special packets were instructed to provide information concerning the courses they had taken, the grades they had earned in these courses, and the number of years they had studied each subject. To aid in the completion of the form, it was suggested that students refer to their high school grade reports and their high school transcripts or seek assistance from high school counselors. All forms were to be completed by students and returned to ACT with the standard test registration materials.

Two different course and grade information forms were used during the study. For one form (used by approximately 60% of all respondents) no review by high school personnel of the student-reported information was requested; students returned this form directly to ACT. The second form (used by the remaining 40% of respondents) included a section in which a high school official (counselor, principal, etc.) was required to sign the form certifying that the student information was "accurate and correct." For this form, school personnel were instructed to make a brief check of the student-reported information (using a copy of the student's academic record) and to note any erroneous information. After the form was certified, it was returned to ACT.

Procedure

After the High School Course and Grade Information Forms were returned to ACT, secondary school officials were asked to provide a high school transcript for each student who participated in the study. During July and August of 1983, ACT received a total of 1,100 student transcripts including records for all coursework taken through the spring semester of the 1982-83 academic year. (Transcripts were not available for 9 of the 1,109 participating students because they had left school or changed institutions during the study.) The data from both the transcripts and student self-report forms were subsequently coded and entered in machine-readable form for analysis.

When coding the transcript data, it was necessary to determine the content of all the courses listed on each transcript form. In many cases, interpretation of the transcript information required repeated telephone conversations with high school personnel and/or examinations of the high school catalogs. After the content of each course was determined, ACT staff members coded the data using the following coding options:

1. Student <u>has</u> taken the course.
2. Student has <u>probably</u> taken the course.
3. Student has not taken, but <u>will</u> take the course.
4. Student has <u>not</u> taken the course.

The second coding option ("student has probably taken the course") was required to deal with basic/prerequisite courses (such as Algebra 1) for students with incomplete transcripts who had taken advanced courses in the same academic area (such as Trigonometry). This option was used primarily when coding data for senior high schools with transcript data listing only grades 10-12. The third coding option ("student has not taken, but will take the course") was used to classify the next-term data provided by three of the participating institutions. Transcripts from

these schools included each student's course schedule for the following academic term (fall 1983).

On a number of student transcripts, several courses were listed that appeared to match a particular subject/course area from the High School Course and Grade Information Form (e.g., "Computer Programming" and "Introduction to Computers" for the subject area of computer science/computer mathematics). In these cases, ACT staff members selected and coded for analysis the transcript course that was judged to be the closest match (in terms of content) to the course/subject of interest. The remaining courses were coded as "alternate" courses and were considered in the analyses only if problems of correspondence or accuracy were found with the course/subject that had been judged to be the "closest." (Problems of this type were seldom encountered during the final analyses.) Similarly, ACT staff members occasionally encountered transcript courses that did not appear to correspond exactly to any of the 21 courses under consideration but might reasonably have been considered a match by the student for one of the subjects/courses. These courses were also coded as "alternates," and were again used in analyses only if problems of correspondence were discovered.

To evaluate whether the students accurately reported the courses they had taken, it was necessary to define which combinations of student responses and coded transcript information constituted a "hit" (or match). Table 1 summarizes the decision rules/assumptions used in analyzing the level of agreement between the two data sets.

In addition to these decision rules, two assumptions made during the analyses affected whether each data pair was classified as a hit or a miss:

1. If a student reported taking a particular course and the ACT staff had not found an exact match on the transcript, but had found an alternate course (as defined above) that could reasonably have been considered a match by the student, it was assumed that the student-reported and transcript information agreed. For example, if a transcript listed no 10th-grade English course but did list a "Speech and Literature" course, and if the student indicated he or she had taken 10th-grade English, the data pair was considered a "hit." (This assumption affected only 18 [0.1%] of the 23,100 data pairs in the study.)

2. If a student did not indicate whether or not he/she had taken a particular course (i.e., left the item blank) but <u>did</u> report a grade, it was assumed that the student had taken the course. This assumption was necessary because several students indicated that they had both taken and would again take the particular course and all double responses were key entered as blanks. (This assumption added 55 "hits" [0.2%] to the final results.)

The second phase of the study involved an examination of the accuracy of the grades reported by the students. Because the ACT staff coded all transcript grades for each student in each of the courses of interest (including quarter grades, trimester grades, semester grades, etc.), and because grades for alternate matching courses were also available, some decision rules were necessary to determine the "correct" grade to use in each of the comparisons. These decision rules were as follows:

TABLE 1

Decision Rules Used in Determining Agreement Between Student-Reported and High School Transcript Data

		Transcript Information Coded by the ACT Staff			
		1. Student has taken the course.	2. Student has probably taken course.	3. Student has not, but will take the course.	4. Student has not taken the course.
Student Responses from High School Course and Grade Information Form	1. I have completed or am enrolled in the course.	HIT	HIT	MISS	MISS
	2. I have not taken the course, but will before graduation.	MISS	MISS	HIT	HIT
	3. I have not and will not take the course.	MISS	MISS	MISS	HIT
	BLANK	MISS	MISS	MISS	HIT

1. Only courses for which both student-reported letter grades and transcript grades were available for a given student were included in this phase of the analysis. Ideally, since the student-reported data were collected late in the academic year, nearly all cases in which a student indicated that he/she had taken or was currently taking a particular course (11,212 potential cases) should have generated a grade-pair for this analysis. Some courses, however, were taken pass/fail or were graded as "incomplete." Other courses were taken by students for only one term (with no grade available at the time the form was completed by the student). In addition, several students failed to complete the grade section of the form as instructed. Thus, a total of 10,380 grade-pairs were available for this phase of the analysis.

2. For all courses taken prior to the 1982-83 academic year, the last course grade reported on the transcript was used in the analyses.

3. For courses taken during the year of the study (the 1982-83 academic year), the first semester or second trimester grade was utilized unless the final or third quarter grade was closer to the student-reported grade, in which case the closer grade was used. This was done to give the students the benefit of the doubt, since it was impossible to determine the exact date that each student had completed the registration form. (It was necessary to use the final or third quarter grades from the transcripts for fewer than 0.5% of the grade pairs.)

4. If an alternate course was available for a particular subject area and it provided a grade (determined using assumptions B and C above) that was closer to the student's reported grade, the alternate grade was used in the analyses. (Fewer than 25 alternate grades were used as a result of this decision rule.)

Results

Table 2 presents a summary of the study results concerning the accuracy with which students reported the courses they had and had not taken. Of the 23,100 data pairs (1,100 students x 21 courses), 21,895 (94.8%) were classified as "hits" using the decision rules employed in the study. This overall hit rate should be interpreted with caution, however, due to relatively large observed variations by certification status and type of course.

The percentage of non-matches (or "misses") between the student-reported and transcript data varied considerably by type of course. Table 3 presents the percent of non-matches observed for each of the 21 courses included in the study. These percentages ranged from 0.5, 0.6, and 0.7 for German, Spanish, and French, respectively, to 13.7% and 14.7% for American Government and World History. The error rates tended to be the lowest for courses taken by very few students (e.g., the languages, physics, and chemistry) and for courses taken by almost all students (e.g., 9th- and 10th-grade English and U.S. History). Error rates tended to be the highest for courses that were the most difficult to define in a clear and specific

TABLE 2

Frequencies and Percentages of Agreement Between Student-Reported and Transcript Data Concerning Courses Taken During High School

		Transcript Information Coded by the ACT Staff			
		1. Student has taken the course.	2. Student has probably taken course.	3. Student has not, but will take the course.	4. Student has not taken the course.
Student Responses from High School Course and Grade Information Form	1. I have completed or am enrolled in the course.	11,212 48.5% (HIT)	93 0.4% (HIT)	14 0.1% (MISS)	593 2.6% (MISS)
	2. I have not taken the course, but will before graduation.	170 0.7% (MISS)	1 0.0% (MISS)	263 1.1% (HIT)	2,175 9.4% (HIT)
	3. I have not and will not take the course.	210 0.9% (MISS)	21 0.1% (MISS)	24 0.1% (MISS)	6,692 29.0% (HIT)
	BLANK	147 0.6% (MISS)	14 0.1% (MISS)	11 0.0% (MISS)	1,460 6.3% (HIT)

Total Number of Responses = 23,100 (1,100 respondents x 21 courses)
Total Number of "Hits" = 21,895 (94.8%)
Total Number of "Misses" = 1,205 (5.2%)

manner (e.g., Physical/Earth/General Science, Advanced Mathematics, and World History/World Civilization).

TABLE 3

Percentage of "Misses" by Course Type

9th-Grade English	1.2	Physical/Earth Science	11.5
10th-Grade English	1.4	Biology	2.1
11th-Grade English	0.9	Chemistry	2.1
12th-Grade English	5.7	Physics	2.5
Beginning Algebra	10.9	U.S. History	2.1
Advanced Algebra	6.9	American Government	13.7
Geometry	2.3	World History/Civilization	14.7
Trigonometry	10.4	Spanish	0.6
Computer Science	4.8	French	0.7
Advanced Mathematics	13.2	German	0.5
		Other Foreign Language	1.4
		All Courses	5.2

The percentage of non-match cases also varied depending on whether or not the special ACT registration form had been certified (signed) by high school officials (see Table 4). Only slightly over a third (33.9%) of the noncertified forms matched the corresponding transcripts perfectly, while this figure was 55.0% for the certified forms. Similarly, only 5 of the certified forms (1.3%) as compared with 43 (6.0%) of noncertified forms had more than 3 (of a possible 21) non-matches. The average number of non-matches was nearly twice as high for the noncertified forms (1.32 of a possible 21) as it was for the certified forms (0.69). Note, however that the "hit" rates for both the certified and noncertified forms were well over 90% (96.7% and 93.7%, respectively).

Because the non-match percentages were also found to vary considerably among the 26 schools participating in the study (regardless of certification status), the author contacted several institutions with particularly high non-match rates to explore the reasons for the discrepancies. Many of the non-matches were due to omissions and/or confusing entries on the high school transcript or to errors in ACT's interpretation of the transcript data. In other words, many of the non-matches were found to result from difficulties in interpreting the high school transcripts rather than from errors in the student-reported information. For example, at one school 58 students reported having taken World History, but no corresponding course entries were found on their transcripts. Upon further investigation, it was discovered that these students had all taken courses in Western Civilization and in the history of Southeast Asia, India, and Japan (titled "People and Culture"). While neither of these courses was labeled "World History," their combined content appeared to have covered a wide range of world history topics. For this reason, the author concluded that the student-reported data were, in fact,

TABLE 4

Number and Percentage of "Misses" for Individual Students by Certification Status

Number of Misses (for the 21 courses examined)	Certified Forms	Noncertified Forms	Total
0	214 (55.0%)	241 (33.9%)	455 (41.4%)
1	111 (28.5%)	198 (27.9%)	309 (28.1%)
2	41 (10.5%)	164 (23.1%)	205 (18.6%)
3	18 (4.6%)	65 (9.1%)	83 (7.6%)
4	3 (0.7%)	25 (3.5%)	28 (2.5%)
5	1	4 (0.6%)	5 (0.5%)
6	1	7 (1.0%)	8 (0.7%)
7	0	4 (0.6%)	4 (0.4%)
8	0	1	1
9	0	2	2
Total	389	711	1,100
Average Number of Misses (for the 21 courses examined)	.69	1.32	1.10

accurate. As a second example, another high school included trigonometry as part of a course labeled "Pre-Calculus"; since ACT staff members coded this course as "Advanced Mathematics" and the students reported the course as "Trigonometry," approximately 30 non-matches occurred. In this case, as in the previous example, the student-reported data were determined to be accurate. The six high schools with the highest non-match rates offered 13 courses that accounted for over 300 of the 1,205 total "misses" reported in Table 2. For nearly all of the non-matches observed in these courses, the student-reported information was determined to be accurate. Because of this finding, it is hypothesized that between one-quarter and one-half of all non-matches observed were due to difficulties in interpreting the transcripts rather than to errors by the students. (Note: none of the statistics presented in this report have been adjusted to reflect the additional "matches" discovered during the discrepancy investigations outlined above; the transcript data as originally coded by ACT personnel were used in all analyses.)

During the second phase of the analyses, the correspondence between the grades reported by the respondents and the grades obtained from the high school transcripts was examined. (Because 8 of the 1,100 students included in the study reported no grades, they were eliminated from this part of the analyses.) Of the 10,380 available grade-pairs (an average of 9.5 courses for each of the 1,092 students included in this phase of the study), 80.4% were found to have exact grade matches. In 98.4%

of the cases the grades were within one grade value. The overall Pearson product-moment correlation between the individual grades from the transcripts and those from the special ACT registration form was .87. Table 5 presents a crosstabulation of the student-reported and transcript grades (across all courses) collected for the study. Note that the student-reported grades (with a mean of 3.06 on a 4.0 grading scale) were, on the average, 0.14 higher than were those obtained from the transcripts (with a mean of 2.92).

TABLE 5

Crosstabulation of Student-Reported and Transcript Grades

		Transcript Grades (Grade Average = 2.92)					
		A	B	C	D	F	TOTAL
Grades from Student Forms (Grade Average = 3.06)	A	3,206	509	55	9	0	3,779
	B	192	3,129	626	58	4	4,009
	C	10	134	1,551	332	24	2,051
	D	1	3	32	430	32	498
	F	0	3	1	5	34	43
	TOTAL	3,409	3,778	2,265	834	94	10,380

As was the case with the "hit" rates reported in the first phase of the study, the relationship between student-reported grades and transcript grades varied considerably by certification status (whether or not a high school official had signed the form) and by type of course (see Table 6). The Pearson product-moment correlations between the student-reported and transcript grades were .89 for the certified forms and .85 for the noncertified forms. For the 21 academic courses in the study, these correlations ranged from .75 through .92 with a median value of .86. The range of correlations was, surprisingly, somewhat higher for the certified than for the noncertified forms. This was possibly due to the lower student frequencies for the certified forms.

TABLE 6

Grade-Pair Correlations by Course Type and Certification Status

	Certified Forms	Noncertified Forms	Total
9th-Grade English	.89	.76	.81
10th-Grade English	.86	.83	.84
11th-Grade English	.94	.91	.92
12th-Grade English	.72*	.78*	.76*
Beginning Algebra	.88	.84	.86
Advanced Algebra	.89	.88	.89
Geometry	.93	.88	.89
Trigonometry	.85*	.80*	.82
Computer Science	.65*	.85*	.75*
Advanced Math	.94*	.86*	.88*
Physical/Earth/General Science	.89	.80	.83
Biology	.90	.85	.86
Chemistry	.89	.89	.89
Physics	.81*	.89	.88
U.S. History	.93	.89	.90
American Government (Civics)	.87	.83	.85
World History/World Civilization	.86	.87	.86
Spanish	.93	.82	.86
French	.86*	.87	.86
German	.93*	.90*	.90*
Other Foreign Language	.98*	.80*	.87*
Median Correlation (across courses)	.89	.85	.86
Correlation for all grade pairs	.89	.85	.87

*Correlations based on fewer than 100 cases.

Grade averages computed using all grades reported by each individual student (for up to 21 courses) were also examined. The correlations between the averages based on each student's reported grades and the comparable grade averages (for the same courses) computed using the transcript data were as follows:

Certified Forms	Non-certified Forms	Total
.965	.931	.941

The student averages used in computing the above correlations were based on an average of 9.5 course grades.

In addition to examining the correlations between the student-reported and transcript grades, the average differences and average absolute differences between the grades were also examined. For these analyses, the average difference was defined as follows:

$$\text{Average difference (for each individual)} = \frac{\Sigma\ (\text{student-reported grade} - \text{transcript grade})}{\text{number of grades reported}}$$

The average absolute difference was defined in the same manner as the above difference, except that the absolute value of each observed difference was utilized.

For the 1,092 individual students included in this phase of the study, the average differences ranged from -0.44 to +1.70, with a median value of +0.084 and a mean value of +0.142. (In other words, the students overreported their grades by an average of 0.142 on a 4.0 grade scale.) The comparable median and mean values for the average absolute differences were 0.152 and 0.220, respectively. As was the case in the previous analyses, these figures varied considerably by type of course and certification status.

Table 7 presents the average differences observed by type of course. These differences ranged from 0.023 and 0.045 for advanced math and trigonometry to 0.225 for German. The median average difference for the 21 courses was 0.131. The average differences tended to be the highest for the languages, and the lowest for relatively recent mathemathics and English courses.

Table 8 lists the average differences and average absolute differences for all respondents and for student subgroups based on certification status. Slightly over one-third (36.9%) of all students had average differences of 0.000; 1.0% reported grades that averaged more than a full grade point higher than the comparable transcript grades. The observed grade differences varied considerably by certification status (whether or not a high school official had signed the student form). The average difference was 0.084 for certified forms and 0.174 for noncertified forms. Similarly, none of the students with certified forms, but eleven (1.5%) of the students with noncertified forms, reported a set of grades that averaged more than a full grade point above the average for the transcript grades.

Discussion

The results of this study support previous research findings that indicate that student-reported information is reasonably accurate and valid. Nearly 95% of the students' responses concerning which courses they had or had not taken matched the corresponding data obtained from high school transcripts. In addition, more than one-quarter of all non-matches observed were found to be due to difficulties in the interpretation of the transcript data. Indeed, it seems probable that, for certain high schools, the student-reported data were more accurate than those obtained through ACT's interpretation of the school transcripts.

Although the information collected using data forms certified by high school officials was found to be more accurate than that collected using noncertified forms (97% and 94% agreement with courses listed on transcripts, respectively), the noncertified data were, nevertheless, quite accurate. Averages of the grades reported

TABLE 7

Average Differences by Type of Course

9th-Grade English	.121	Physical/Earth Science	.197
10th-Grade English	.131	Biology	.154
11th-Grade English	.082	Chemistry	.138
12th-Grade English	.092	Physics	.113
Beginning Algebra	.203	U.S. History	.116
Advanced Algebra	.148	American Government	.097
Geometry	.132	World History/Civilization	.094
Trigonometry	.045	Spanish	.201
Computer Science	.132	French	.165
Advanced Mathematics	.023	German	.225
		Other Foreign Language	.074

Median Average Difference = .131

TABLE 8

Average Differences and Average Absolute Differences by Certification Status

	Certified Forms	Non-certified Forms	Total
Average difference	+.084	+.174	+.142
Average absolute difference	+.167	+.250	+.220
Percent of students with average differences of 0	44.6%	32.7%	36.9%
Frequency and percentage of students with average difference > .50	14/3.6%	71/10.0%	85/7.8%
Frequency and percentage of students with average difference > .75	5/1.3%	29/4.1%	34/3.1%
Frequency and percentage of students with average difference > 1.00	0/0.0%	11/1.5%	11/1.0%

by students on noncertified forms correlated highly with the averages of comparable grades obtained from high school transcripts (r = .93). The average overreporting of grades on the noncertified forms was 0.17 (on a 4.0 scale).

Relatively large variations were observed in the accuracy of the student-reported data by type of course. Very few non-matches (concerning whether or not a student had taken a particular course) were found for the foreign language, English, and advanced physical science courses. In contrast, relatively large numbers of non-matches between student-reported and transcript data were observed for Beginning Algebra, Trigonometry, Advanced Mathematics, American Government, and World History. Although many of the observed non-matches for certain courses were subsequently found to be due to ambiguities in the high school transcripts or to difficulties in ACT's interpretation of the transcript data, the results of the study appear to indicate that students were confused about what constituted "Beginning" Algebra, "World" History, and "Advanced" Mathematics. For other subjects, students appeared to be less able and/or less willing to accurately report their course-taking patterns and grades. Because of these observed inter-course variations, college personnel using student-reported information may wish to consider the validity of the data on a course-by-course basis.

During the study, a number of weaknesses in the course titles used on the pilot form became evident. Students were occasionally confused about the meanings of "Beginning" Algebra and "Advanced" Mathematics. The distinction between World History and European or Asian History was not clear to a number of students. The lack of subject listings for such courses as Speech, Calculus, Geography, and Economics also affected the accuracy of student responses in certain related subject areas. Based on these findings, the list of 21 course/subjects from the pilot High School Course and Grade Information Form was revised to provide more precise course titles and was expanded to include additional social studies and fine arts courses. The resulting list of 30 courses was introduced in the High School Course/Grade Information section of the 1985-86 ACT Assessment National Registration Folder.

Given the increased interest in the academic preparation of college-bound high school students, the need for information concerning courses taken and grades earned by students during high school is likely to increase. Because of the difficulties associated with obtaining and decoding transcript information, student-reported information similar to that reported in this study may prove practical and useful at various points during the high school/college transition. For example, course and grade information collected from students through the college admissions testing program could assist college officials with their preliminary admission decisions, with initial recruiting contacts, and with counseling of prospective students. These data could also be used to help college curriculum planners get an early estimate of the level of academic preparation of their future students.

Note that student-reported information is not proposed as an alternative to use of the high school transcript--the two sources of information could, ideally, be used to complement one another. For example, students could tentatively be admitted to college on the basis of test scores and self-reported high school courses and grades. Final admission could be made contingent on receipt of an official transcript in the spring of the senior year of high school. Because of the relatively high degree of accuracy observed in the data, the student-reported course/grade information could also provide the basis of a student data system (to be updated/augmented at a later time using an official high school transcript).

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Appendix

a. High School Course and Grade Information Form (version requiring high school certification

b. Student Instruction Note (for the version of the course/grade information form requiring high school certification)

c. High School Course and Grade Information Form (version not requiring high school certification)

d. Student Instruction Note (for the version of the course/grade information form not requiring high school certification)

HIGH SCHOOL COURSE AND GRADE INFORMATION FORM

SIDE 1

A NAME

Last Name | First Name | MI

B SOCIAL SECURITY NUMBER

C DATE OF BIRTH

Mo. / Day / Yr.

D HIGH SCHOOL NAME

INSTRUCTIONS: This form is a supplement to the 1982-83 ACT Assessment Registration Folder. When you have completed the form and it has been certified by a high school official, return it with the registration folder, in the envelope provided. Be careful to follow the instructions provided for each question. All information that you supply to ACT will be kept confidential and will be released only to the institutions you indicate on the registration folder.

Use a soft-lead pencil to fill in the information requested. DO NOT use a ball-point pen, nylon-tip or felt-tip pen, fountain pen, marker, or colored pencil.

Begin by printing your name, Social Security number, date of birth, and high school name in blocks A, B, C, and D. Print only one letter or number in each of the spaces provided. If appropriate, leave one empty space between the separate parts of your last name, first name, and high school name. In block C, enter the numeric value for the month, day, and year in which you were born. (For example, August 29, 1965 would be entered as 08/29/65.)

In blocks E, F, and G, provide the course and grade information requested for **EACH** of the 21 courses listed. To assist you in completing these sections, you may wish to examine your previous high school grade reports or obtain a copy of your high school transcript.

E COURSES TAKEN OR PLANNED

Indicate whether or not you have taken each of the high school subjects listed below, and if not, whether you plan to take the subject before you finish high school. (Blacken one oval for EACH subject.)

F GRADES EARNED

For each subject you have completed or taken for a **full term** (semester, quarter, etc.) indicate the **FINAL** grade you received. If you took the course for more than one term report only the **LAST** term grade you received. Round to the closest letter grade if necessary. (Leave blank if you have not yet completed a full term of the subject or if a letter grade was not awarded for the course.)

G NUMBER OF YEARS PLANNED

Indicate the number of years of each subject that you **will complete before you graduate** from high school. Round to the closest half-year. (Leave blank if you will not take the subject.)

	HIGH SCHOOL COURSE OR SUBJECT AREA	*I HAVE COMPLETED* **OR** *AM NOW ENROLLED* **IN THIS SUBJECT**	**I HAVE NOT TAKEN THIS SUBJECT, BUT** *PLAN TO TAKE IT* **PRIOR TO GRADUATION**	*I HAVE NOT TAKEN* **AND DO NOT PLAN TO TAKE THIS SUBJECT**	A	B	C	D	F	½	1	1½	2	2½	3	3½	4 or More
ENGLISH	English taken during 9th grade	O	O	O	O	O	O	O	O	O	O						
	English taken during 10th grade	O	O	O	O	O	O	O	O	O	O						
	English taken during 11th grade	O	O	O	O	O	O	O	O	O	O						
	English taken during 12th grade	O	O	O	O	O	O	O	O	O	O						
MATHEMATICS	Beginning Algebra (not pre-Algebra)	O	O	O	O	O	O	O	O	O	O						
	Advanced Algebra	O	O	O	O	O	O	O	O	O	O						
	Geometry	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Trigonometry	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Computer Science/Computer Mathematics	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Advanced Mathematics (Calculus, Analysis, etc.)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
SCIENCES	Physical Science/Earth Science/General Science	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Biology	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Chemistry	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Physics	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
SOC. SCI.	U.S. History	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	American Government (Civics, Political Science)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	World History (World Civilization)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
LANG.	Spanish	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	French	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	German	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Other Foreign Language	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

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TURN TO SIDE 2.

SIDE 2

H Which of the following sources of information did you use when you completed blocks E, F, and G of this form (Course and Grade Information)? **Mark all that apply.**

- ○ Your high school grade reports or course grade slips
- ○ A copy of your high school transcript
- ○ Special assistance from high school personnel (your counselor, principal, etc.)
- ○ None of the above

I At the present time, what is your cumulative high school grade average? (Use A=4 points, B=3 points, etc.) Round this average to one decimal place (e.g., 2.7). If your grade average has never been determined, mark the "Grade Average Not Available" oval.

[.]

○ Grade Average Not Available

J How many students are there in your high school class? (Note: Include only those students **in your class**—not all students in the school.)

[ ]

Of this number, what is your rank **from the top** of the class? (For example, you may rank 20th from the top in a class of 183 students. If so, you would print "0020" in the spaces below.) If your class rank has never been determined, mark the "Class Rank Not Available" oval.

[ ]

○ Class Rank Not Available

K Approximately how long (in minutes) did it take you to complete this form?

[ ] Minutes

L In order to verify certain portions of the data you have provided, ACT or one of the colleges that you indicated on your ACT Registration Folder may need to obtain a copy of your high school transcript directly from your high school. If you give your high school permission to release your transcript to ACT or college personnel, sign your name in the space provided.

Signature: _____

This form MUST be certified by an official at your high school. After you have completed this form, take it to your high school guidance office (or principal's office) for certification. When the form has been certified, return it with the ACT Registration Folder, in the envelope provided.

Note: Allow at least ONE WEEK for high school officials to certify this form.

HIGH SCHOOL CERTIFICATION

I certify that the course and grade information provided by this student is accurate and correct.

Signature: _____

Title: _____

Date: _____

COMMENTS

Use the space below, if you feel any explanation is necessary concerning the information you provided on this form.

_____

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_____

• • NOTE • •

In addition to the ACT Assessment 1982-83 National Registration Folder and a copy of *Taking the ACT Assessment,* this packet contains a new form, the *High School Course and Grade Information Form.* This form is a supplement to the ACT Registration Folder, and collects information to assist colleges in better meeting the needs of entering students.

Notice that the *High School Course and Grade Information Form* must be certified (on side 2) by a high school official before you return it to ACT. Be sure to allow **at least one week** for this certification process. (The registration deadline for the April 16 test date is **March 18,** and the deadline for the June 11 test date is **May 13**.) Return this form with the ACT Registration Folder (and the appropriate fee) in the envelope provided.

HIGH SCHOOL COURSE AND GRADE INFORMATION FORM

SIDE 1

A NAME

Last Name | First Name | MI

B SOCIAL SECURITY NUMBER

C DATE OF BIRTH

Mo. / Day / Yr.

D HIGH SCHOOL NAME

INSTRUCTIONS: This form is a supplement to the 1982-83 ACT Assessment Registration Folder. When you have completed the form, return it with the registration folder, in the envelope provided. Be careful to follow the instructions provided for each question. All information that you supply to ACT will be kept confidential and will be released only to the institutions you indicate on the registration folder.

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SOC. SCI.	U.S. History	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	American Government (Civics, Political Science)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	World History (World Civilization)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
LANG.	Spanish	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	French	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	German	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Other Foreign Language	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

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TURN TO SIDE 2.

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