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ABSTRACT

This study examines the correlation between absence, cognitive skills index (CSI), and various achievement indicators such as the Indiana Statewide Testing for Educational Progress (ISTEP) test scores, discrepancies, and school-based English and mathematics tests for 64 seventh-grade students from one middle school. Scores for each of the subtests of the ISTEP (reading vocabulary, comprehension, and total; language mechanics, expression, and total; and mathematics concepts/applications, computation, and total) as well as the math and English tests given at the end of sixth grade and beginning of seventh grade are examined for individual correlation with both school absence and CSI. Results show a significant negative correlation between absence and achievement on the following scores: discrepancy of reading total, math 6, reading comprehension, reading vocabulary, and reading total. There is a significant positive correlation between CSI and achievement indicators at every level (excluding discrepancies). The correlation between two discrepancies is significant and mostly positive as is the correlation between two achievement indicators. (Contains six tables and six references.) (Author/SLD)

Effects of Absence and Cognitive Skills Index on Various Achievement Indicators

A Study of ISTEP Scores, Discrepancies, and School-based Math and English Tests of 1997-1998 Seventh Grade Students at Sarah Scott Middle School, Terre Haute, Indiana

by: Holly S. Davis

ABSTRACT

This study examines the correlation between absence, cognitive skills index (CSI), and various achievement indicators such as ISTEP scores, discrepancies, and school-based English and math tests. Scores for each of the sub-tests of the ISTEP (reading vocabulary, comprehension, and total; language mechanics, expression, and total; and mathematics concepts/applications, computation, and total) as well as the math and English tests given at the end of sixth grade and beginning of seventh grade are examined for individual correlation with both absence and CSI. Results showed a significant negative correlation between absence and achievement on the following scores: discrepancy of reading total, math 6, reading comprehension, reading vocabulary, and reading total. There is a significant positive correlation between CSI and achievement indicators at every level (excluding discrepancies). The correlation between two discrepancies is significant and mostly positive as is the correlation between two achievement indicators.

BACKGROUND OF THE PROBLEM

The idea behind this study originated with the administration at Sarah Scott Middle School, Terre Haute, Indiana. It has been documented that absences play a large role in determining a students' achievement on both standardized tests and classroom performance. The administration was interested in the correlation between students' discrepancies scores on the ISTEP and absence. A discrepancy is figured by converting the Normal Curve Equivalent to a Standard Score and finding the difference between the Standard Score and their Cognitive Skills Index (CSI). Any achievement area which provides a discrepancy of at least eighteen (18) points below the CSI indicates a severe incongruity between achievement and ability. This article also examines the correlation between CSI

and the various achievement indicators (for example, the sub-tests on the ISTEP as well as the school-based math and English tests) in effort to determine whether students' achievement matches their supposed ability due to intelligence. Finally, a comparison between sets of two achievement indicators is explored.

The correlation between absence and achievement has been the focus of many earlier studies. In a manual entitled, All About Attendance, Carruthers stated, "Published reports indicate that there is a high correlation between excellent school attendance and academic success" (xiii). Carruthers' results were additionally described numerically by statistics in Herberling and Shaffer (1995) which indicate, "The rate at which children are absent from school has continued to rise from 1979 when it was 8% nationally (Bamber 1979) to 10% in 1994 (National Center for Education Statistics, 1994). This increasing rate of absenteeism has had its effect on academic achievement of students in our schools" (3). In effort to explain this profound impact absenteeism has on academic achievement of students in our schools, the National Center for Education Statistics (1996) concluded,

> "An important aspect of students' access to education is the amount of time actually spent in the classroom. When students are absent from school, arrive late, or cut class, they forgo opportunities to learn. Furthermore, when students disrupt classes by being late or frequently absent, they interfere with other students' opportunities to learn" (1).

Duckworth (1988) addressed the problem of absence, tardies, and cutting class as being of similar importance as did the National Center for Education Statistics by saying, "Many administrators discover that the official figures on daily absenteeism, compiled on the basis of whole-day absences, seriously underestimate the actual problem. In some instances, twice as many students are missing particular classes as are absent for the whole day" (1). Heberling and Shaffer (1995) quote Brodbelt (1985) as suggesting "the basic ingredient of learning is the availability of the learner" (5).

Another issue of concern is the impact of attendance not just on classroom

academic achievement, but the correlation between attendance and standardized test scores. McGee (1997) in a study of the Illinois Goal Assessment Program (IGAP) test found the test "to a large measure are stronger indicators of poverty and mobility rate than achievement. To a lesser extent, the tests are indicators of the ratio of students to teacher, attendance rates, and cost variables" (20). In this same study, it was found that

> "... mobility rate is highly intercorrelated with poverty rate and also significantly... correlated with attendance. Districts with the highest poverty rate, then, also face the challenge of having the highest percentage of students moving in or out of their schools each year and lower attendance rates. These schools will have substantially lower scores" (10).

Several studies provided suggestions for administrators in dealing with the notion of student absenteeism. The New Orleans Public Schools (1993) conveyed, "Improvement will only occur through concerted efforts on the part of the parents, District, city government and the community-at-large to develop, implement, and monitor strategies that are designed to reinforce attendance and improve achievement" (2). In similarity to the New Orleans Public Schools, McGee (1997) concluded, "If a goal is to improve test scores, the battle to get students to school will be worth fighting" (20).

This study explores the relationship between attendance and it's effect on achievement, the effect of CSI on various achievement indicators, and the correlation between two discrepancies or two scores on standard national tests. If a student is absent frequently, then it follows that the student's scores would be lower than those of a student who is not absent frequently. Furthermore, if given a student's CSI, then that student's scores should indicate a level of equivalent ability and achievement. Finally, if a student is deficient in one area, then the student is deficient in other areas as well.

STATEMENT OF THE PROBLEM

Is there a relationship between the number of days absent of students at Sarah Scott Middle School and their achievement on the ISTEP? Are students functioning to their highest level due to cognitive skills index? If a student does well (or shows discrepancy) in one area of the test, will that student have similar results in other areas of the test?

Specifically, the study of Sarah Scott Middle School investigated the following hypothesis: First, there is no relationship between number of days absent and achievement. Secondly, a student with high CSI score does no better on the ISTEP than a student with low CSI score. Finally, a student who is discrepant in one sub-test of the ISTEP will not be discrepant in other sub-tests.

METHODOLOGY

This study included sixty-four seventh grade students from Sarah Scott Middle School in Terre Haute, Indiana. These students were selected for participation in the study because the had scores on file for all of the variables studied. Although there are methods that would allow use of students with missing scores, because of time constraints only these students were involved. Seventh graders were used because they had taken the ISTEP last year and were the class to have most recent scores already on file. This inner city school serves a population in which approximately 70% are at or below poverty level. 25% of the students are minority with a 17% African American population. There is a large portion of the student body which is biracial. More than half of the students are in single-parent families, most often living with mother. This setting is a reflection of the world in that the school has students enrolled which represent ten foreign countries due to it's location near ISU's married student housing complex. Because the students involved in the study were an available sample, it may not be representative of the entire population. Of the sixty-four

students involved, the sample included 31 females and 33 males. CSI scores of the sample ranged from 70 to 127. Number of absences ranged from zero to 25 with an average of 7.875 days absent per student.

Materials used included student's cumulative records from which was gathered CSI scores and normal curve equivalents (NCE) for each of the following ISTEP scores: language expository writing, language mechanics, language total, math concepts/applications, math computation, math total, reading vocabulary, reading comprehension, reading total, and total battery. The school also provided copies of the student attendance report, sixth grade post-tests scores for math and English, and the seventh grade pre-test scores for math and English. The administration also provided a form, "Use of ISTEP Scores," which provided instruction in changing NCE scores to standard scores which could then be compared to CSI for discrepancies. Any difference in which the standard score is at least 18 points below the CSI is suggestive of a severe discrepancy between achievement and ability. Thus, discrepancy scores were computed for each of the nine sub-tests as well as the total battery of the ISTEP for each student involved in the study. A correlation between discrepancies was examined and will be discussed later.

In order to study the relationships between variables, a Pearson r continuous test was used to analyze correlation between each of the twenty-seven variables in pairs. The results of this analysis is provided in the next section.

RESULTS

Table 1

Significant Relationships Between Absence and Achievement

Variable 1	Variable 2	Correlation	Significance Level
Absent	Rdg. Discrepancy Total	-0.2581	.05 negative
Absent	Math 6	-0.3044	.05 negative
Absent	Rdg. Comprehension	-0.2518	.05 negative
Absent	Rdg. Total	-0.2942	.05 negative
Absent	Rdg. Vocabulary	-0.3035	.05 negative

Table 1 shows only the significant correlations between absence and any of the various achievement indicators. Each of the tests indicated (ISTEP scores: discrepancy of the reading total score, reading comprehension, reading vocabulary, and reading total; school-based sixth grade math post test) indicated a negative correlation at the .05 level.

Table 2

Significant Relationships between CSI and Discrepancy Scores

Variable 1	Variable 2	Correlation	Significance Level
CSI	Total Battery	-0.3617	.01 negative
CSI	Language Expository	-0.4465	.01 negative
CSI	Language Mechanics	-0.4565	.01 negative
CSI	Language Total	-0.5221	.01 negative
CSI	Math Concept/Application	-0.278	.05 negative
CSI	Math Comprehension	-0.6617	.01 negative
CSI	Math Total	-0.395	.01 negative
CSI	Reading Vocabulary	-0.5522	.01 negative

Table 2 displays only significant relationships between CSI and discrepancies on sub-tests of the ISTEP. Of the tests listed, all show negative correlations with Math Concepts/Applications Discrepancy being significant at the .05 level. All other discrepancies are significant at the .01 level.

Table 3

Significant Relationships between CSI and Various Achievement Indicators including ISTEP and School-Based Tests

Variable 1	Variable 2	Corr.	Sig. Level
CSI	English 6	0.6824	.01 positive
CSI	English 7	0.5598	.01 positive
CSI	Language Expository	0.5385	.01 positive
CSI	Language Mechanical	0.5291	.01 positive
CSI	Language Total	0.5945	.01 positive
CSI	Math 6	0.6238	.01 positive
CSI	Math 7	0.4703	.01 positive
CSI	Math Concept/App.	0.6096	.01 positive
CSI	Math Computation	0.2649	.05 positive
CSI	Math Total	0.5904	.01 positive
CSI	Reading Comprehension	0.653	.01 positive
CSI	Reading Vocabulary	0.6491	.01 positive
CSI	Reading Total	0.709	.01 positive
CSI	Total Battery	0.7591	.01 positive

This table shows the significant relationships between CSI and various indicators of achievement. All sub-tests of the ISTEP, total battery, and school-based test scores show a positive correlation with the cognitive skills index. All are significant at the .01 level excluding math computation which is significant at the .05 level.

Table 4

Significant Relationships between Discrepancies on Sub-Tests of ISTEP

Variable 1	Variable 2	Correlation	Significance Level
Total Battery	Language Expository	0.6009	.01 positive
Total Battery	Language Mechanical	0.6785	.01 positive
Total Battery	Language Total	0.7648	.01 positive
Total Battery	Math Concepts/Applications	0.6781	.01 positive
Total Battery	Math Computation	0.6636	.01 positive
Total Battery	Math Total	0.648	.01 positive
Total Battery	Reading Comprehension	0.6559	.01 positive
Total Battery	Reading Vocabulary	0.6669	.01 positive
Total Battery	Reading Total	0.6369	.01 positive
Lang. Expository	Language Mechanical	0.5046	.01 positive
Lang. Expository	Language Total	0.7613	.01 positive
Lang. Expository	Math Concepts/Applications	0.2492	.05 positive
Lang. Expository	Math Computation	0.3555	.01 positive
Lang. Expository	Reading Comprehension	0.3662	.01 positive
Lang. Expository	Reading Vocabulary	0.4564	.01 positive
Lang. Expository	Reading Total	0.3887	.01 positive
Lang. Mechanical	Language Total	0.891	.01 positive
Lang. Mechanical	Math Computation	0.5706	.01 positive
Lang. Mechanical	Math Total	0.3786	.01 positive
Lang. Mechanical	Reading Vocabulary	0.2906	.05 positive
Language Total	Math Concepts/Applications	0.309	.05 positive
Language Total	Math Computation	0.5417	.01 positive
Language Total	Math Total	0.3691	.01 positive
Language Total	Reading Comprehension	0.3517	.01 positive
Language Total	Reading Vocabulary	0.4431	.01 positive
Language Total	Reading Total	0.3168	.05 positive
Math Concept/App.	Math Computation	0.4804	.01 positive
Math Concept/App.	Math Total	0.8042	.01 positive
Math Concept/App.	Reading Comprehension	0.4478	.01 positive
Math Concept/App.	Reading Vocabulary	0.4084	.01 positive
Math Concept/App.	Reading Total	0.4943	.01 positive
Math Computation	Math Total	0.7775	.01 positive
Math Computation	Reading Vocabulary	0.4716	.01 positive
Math Total	Reading Comprehension	0.2606	.05 positive
Math Total	Reading Vocabulary	0.2749	.05 positive
Math Total	Reading Total	0.3097	.05 positive
Reading Comp.	Reading Vocabulary	0.736	.01 positive
Reading Comp.	Reading Total	0.4529	.01 positive
Rdg. Vocabulary	Reading Total	0.7305	.01 positive

Table 3 shows the correlation between discrepancies on sub-tests of the ISTEP. All relationships are significantly positive with seven of the thirty-nine being significant at the .05 level.

Table 5

Significant Results of Correlation Between Various Achievement Indicators of both ISTEP and School-Based Test Scores

Variable 1	Variable 2	Corr.	Sig. Level
English 6	English 7	0.7349	.01 positive
English 6	Language Expository	0.4657	.01 positive
English 6	Language Mechanical	0.6006	.01 positive
English 6	Language Total	0.6116	.01 positive
English 6	Math 6	0.6298	.01 positive
English 6	Math 7	0.4461	.01 positive
English 6	Math Concept/Application	0.5194	.01 positive
English 6	Math Computation	0.3949	.01 positive
English 6	Math Total	0.6133	.01 positive
English 6	Reading Comprehension	0.5537	.01 positive
English 6	Reading Vocabulary	0.5197	.01 positive
English 6	Reading Total	0.6227	.01 positive
English 6	Total Battery	0.6926	.01 positive
English 7	Language Expository	0.4786	.01 positive
English 7	Language Mechanical	0.5759	.01 positive
English 7	Language Total	0.6018	.01 positive
English 7	Math 6	0.595	.01 positive
English 7	Math 7	0.5003	.01 positive
English 7	Math Concepts/Application	0.5929	.01 positive
English 7	Math Computation	0.3996	.01 positive
English 7	Math Total	0.6596	.01 positive
English 7	Reading Comprehension	0.5436	.01 positive
English 7	Reading Vocabulary	0.5814	.01 positive
English 7	Reading Total	0.6773	.01 positive
English 7	Total Battery	0.7525	.01 positive
Lang. Expository	Language Mechanical	0.5114	.01 positive
Lang. Expository	Language Total	0.8505	.01 positive
Lang. Expository	Math 6	0.4283	.01 positive
Lang. Expository	Math 7	0.2853	.01 positive
Lang. Expository	Math Concepts/Application	0.4258	.01 positive
Lang. Expository	Math Computation	0.2592	.01 positive
Lang. Expository	Math Total	0.4785	.01 positive
Lang. Expository	Reading Comprehension	0.5571	.01 positive
Lang. Expository	Reading Vocabulary	0.6004	.01 positive
Lang. Expository	Reading Total	0.5436	.01 positive

Table 5 (Continued)

Variable 1	Variable 2	Corr.	Sig. Level
Lang. Expository	Total Battery	0.703	.01 positive
Lang. Mechanical	Language Total	0.8627	.01 positive
Lang. Mechanical	Math 6	0.5503	.01 positive
Lang. Mechanical	Math 7	0.5212	.01 positive
Lang. Mechanical	Math Concepts/Application	0.3749	.01 positive
Lang. Mechanical	Math Computation	0.4911	.01 positive
Lang. Mechanical	Math Total	0.5443	.01 positive
Lang. Mechanical	Reading Comprehension	0.4693	.01 positive
Lang. Mechanical	Reading Vocabulary	0.4043	.01 positive
Lang. Mechanical	Reading Total	0.529	.01 positive
Lang. Mechanical	Total Battery	0.7482	.01 positive
Language Total	Math 6	0.5578	.01 positive
Language Total	Math 7	0.4528	.01 positive
Language Total	Math Concepts/Application	0.4472	.01 positive
Language Total	Math Computation	0.4347	.01 positive
Language Total	Math Total	0.5769	.01 positive
Language Total	Reading Comprehension	0.5738	.01 positive
Language Total	Reading Vocabulary	0.5307	.01 positive
Language Total	Reading Total	0.6282	.01 positive
Language Total	Total Battery	0.8091	.01 positive
Math 6	Math 7	0.6142	.01 positive
Math 6	Math Concepts/Application	0.4846	.01 positive
Math 6	Math Computation	0.328	.01 positive
Math 6	Math Total	0.5265	.01 positive
Math 6	Reading Comprehension	0.512	.01 positive
Math 6	Reading Vocabulary	0.4732	.01 positive
Math 6	Reading Total	0.5744	.01 positive
Math 6	Total Battery	0.6407	.01 positive
Math 7	Math Concepts/Application	0.3788	.01 positive
Math 7	Math Computation	0.3121	.05 positive
Math 7	Math Total	0.5022	.01 positive
Math 7	Reading Comprehension	0.3238	.01 positive
Math 7	Reading Vocabulary	0.441	.01 positive
Math 7	Reading Total	0.344	.01 positive
Math 7	Total Battery	0.5513	.01 positive
Math Con./Applic.	Math Computation	0.4136	.01 positive
Math Con./Applic.	Math Total	0.8288	.01 positive
Math Con./Applic.	Reading Comprehension	0.553	.01 positive

Table 5 (Continued)

Variable 1	Variable 2	Corr.	Sig. Level
Math Con./Applic.	Reading Vocabulary	0.518	.01 positive
Math Con./Applic.	Reading Total	0.6494	.01 positive
Math Con./Applic.	Total Battery	0.7312	.01 positive
Math Computation	Math Total	0.7761	.01 positive
Math Computation	Reading Comprehension	0.2517	.05 positive
Math Computation	Reading Vocabulary	0.283	.05 positive
Math Computation	Reading Total	0.36	.01 positive
Math Computation	Total Battery	0.5739	.01 positive
Math Total	Reading Comprehension	0.5437	.01 positive
Math Total	Reading Vocabulary	0.5125	.01 positive
Math Total	Reading Total	0.6537	.01 positive
Math Total	Total Battery	0.8341	.01 positive
Rdg Comprehension	Reading Vocabulary	0.6197	.01 positive
Rdg Comprehension	Reading Total	0.856	.01 positive
Rdg Comprehension	Total Battery	0.7499	.01 positive
Reading Vocabulary	Reading Total	0.8851	.01 positive
Reading Vocabulary	Total Battery	0.7799	.01 positive
Reading Total	Total Battery	0.9073	.01 positive

Table 4 shows the significant positive correlations between achievement indicators both from the ISTEP and school-based scores. Only three are significant at the .05 level (Math Computation with Reading Vocabulary; Math Computation with Reading Comprehension; and Math 7 with Math Computation) while the rest of the ninety-one are significant at the .01 level.

Table 6

Significant Results in Correlating Discrepancy Scores and Various Achievement Indicators including both ISTEP and School-Based Scores

Variable 1	Variable 2	Corr.	Sig. Level
Total Battery Discrepancy	English 7	0.2689	.05 positive
Total Battery Discrepancy	Language Mechanical	0.3123	.05 positive
Total Battery Discrepancy	Language Total	0.2959	.05 positive
Total Battery Discrepancy	Math Computation	0.4602	.01 positive
Total Battery Discrepancy	Math Total	0.3496	.01 positive
Total Battery Discrepancy	Total Battery	0.3293	.01 positive
Lang. Expos. Discrepancy	English 6	-0.2674	.05 negative
Lang. Expos. Discrepancy	Language Expository	0.3439	.01 positive
Lang. Mech. Discrepancy	Language Mechanical	0.507	.01 positive
Lang. Mech. Discrepancy	Language Total	0.2972	.05 positive
Lang. Mech. Discrepancy	Reading Vocabulary	-0.2584	.05 negative
Lang. Total Discrepancy	Language Mechanical	0.3506	.01 positive
Lang. Total Discrepancy	Language Total	0.3156	.05 positive
Math C/A Discrepancy	English 7	0.2478	.05 positive
Math C/A Discrepancy	Math Concept/App.	0.4792	.01 positive
Math C/A Discrepancy	Math Computation	0.2959	.05 positive
Math C/A Discrepancy	Math Total	0.4882	.01 positive
Math Computation Discrep.	English 6	-0.2928	.05 negative
Math Computation Discrep.	Language Expository	-0.2688	.05 negative
Math Computation Discrep.	Math 6	-0.2822	.05 negative
Math Computation Discrep.	Math Computation	0.5399	.01 positive
Math Computation Discrep.	Rdg. Comprehension	-0.3797	.01 negative
Math Computation Discrep.	Reading Vocabulary	-0.3359	.01 negative
Math Computation Discrep.	Reading Total	-0.3734	.01 negative
Math Total Discrepancy	Math Concept/App.	0.251	.05 positive
Math Total Discrepancy	Math Computation	0.5501	.01 positive
Math Total Discrepancy	Math Total	0.4496	.01 positive
Rdg. Comp. Discrepancy	English 7	0.3304	.05 positive
Rdg. Comp. Discrepancy	Language Expository	0.2536	.05 positive
Rdg. Comp. Discrepancy	Math Total	0.2638	.05 positive
Rdg. Comp. Discrepancy	Rdg. Comprehension	0.643	.01 positive
Rdg. Comp. Discrepancy	Reading Vocabulary	0.318	.01 positive
Rdg. Comp. Discrepancy	Reading Total	0.5139	.01 positive
Rdg. Comp. Discrepancy	Total Battery	0.3876	.01 positive
Rdg. Vocab. Discrepancy	English 6	-0.2921	.05 negative
Rdg. Vocab. Discrepancy	Math 6	-0.2725	.05 negative
Rdg. Vocab. Discrepancy	Reading Vocabulary	0.2753	.05 positive
Reading Total Discrepancy	English 7	0.2828	.05 positive
Reading Total Discrepancy	Rdg. Comprehension	0.3743	.01 positive
Reading Total Discrepancy	Reading Vocabulary	0.5128	.01 positive
Reading Total Discrepancy	Reading Total	0.4912	.01 positive
Reading Total Discrepancy	Total Battery	0.3454	.01 positive

Table 6 is, by far, the most controversial. The information here shows that the correlation between discrepancy and achievement indicators may either be positive or negative with significance at either .05 or .01 levels. Discussion of this data will be on case-by-case basis in the next section.

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

There is no relationship between number of days absent and achievement. This null hypothesis was proven to be true in all areas except reading total discrepancy, math 6 (school-based test) , reading comprehension, reading vocabulary, and reading total as is shown in Table 1. Contrary to other research studies, it was found that absence has little correlation with scores on various achievement indicators. These negative correlations do indicate, however, that as the number of days absent increases, scores went down in all areas of the reading portion of the ISTEP as well as the score on the math 6 test. Future study may be done to examine absence on a period-by-period basis as was indicated by Duckworth. Students who are frequently absent from other courses (such as math or language arts) but are not absent for the whole day, may skew results in comparing the absence and achievement relationship.

A student with high CSI score does no better on the ISTEP than a student with low CSI score. Table 2 examines the relationship between CSI and discrepancy scores and table 3 the correlation between CSI and achievement indicators. The results of table 2 indicate negative correlations which means that as the CSI goes up, the discrepancy goes down. This is of particular concern in that scores of negative 18 or lower indicate the student is not doing what he/she is capable of on these tests tests. Students with higher CSI scores are more likely to have a greater discrepancy which indicates a gap between ability and achievement. In this study, of the sixty four students participating, only 14 students had standard scores of 18 or more below their CSI. Of those fourteen, only one has a CSI score less than 90. Table 3 indicates positive relationships (usually at the .01 level) between CSI and achievement indicators which implies that as CSI scores increase, the test score increases. This disproves the null hypothesis. This is not to say, however, that a student with a lower CSI is not doing what he/she is capable of. In fact, as table 2 indicates, students with lower CSI scores more often show their ability and achievement on the test to be

equivalent. Further tests should focus on the relationship between CSI score and achievement with particular consideration on comparing students at high, middle, and low CSI scores and their discrepancies on tests. It is recommended that a large sample be gathered at random to verify results of this study.

A student who is discrepant in one sub-test of the ISTEP will not be discrepant in other sub-tests. As shown in Table 4, there are many significant relationships between two discrepancies. This proves the null hypothesis to be false except for the following relationships between discrepancies:

- Total battery & reading vocabulary
- Language expository & Math total
- Language mechanics & Math concept/applications
- Language mechanics & Reading comprehension
- Language mechanics & Reading total
- Math computation & Reading comprehension
- Math computation & Reading total.

All other relationships are significant.

Table 5 investigated the relationship between various achievement indicators. It was found that all tests (ISTEP sub-tests, total battery, and school-based) were positively correlated and generally at the .01 level. Only three were significant at the .05 level: Math computation & Reading vocabulary; Math computation & Reading comprehension, and Math 7 with Math computation. This verification is used to prove the tests are correlated and that as one score goes up, the others should also. This is due in part to maturity of the learners.

Of concern, however, is the variation between negative and positive correlation between discrepancies and achievement indicators. Examining first, the positive relationships at .05 significance:

- Language total discrepancy & Language total
- Math concepts/applications discrepancy & Math concepts/applications
- Reading vocabulary discrepancy & Reading vocabulary

These three are logical. As the discrepancy goes up, the score goes up. This indicates the student is functioning at his/her level of ability or higher.

- Total battery discrepancy & English 7
- Total battery discrepancy & Language mechanics
- Total battery discrepancy & Language total

These three are grouped together for purposes of explanation. As the discrepancy of the total battery increases (the student is more closely doing what he/she is capable of or beyond; in other words, the difference between standard score and CSI is zero or above), the English 7, language mechanics, and language totals increase.

- Language mechanics discrepancy & Language total

Again, as the discrepancy between standard score on the language mechanics test and CSI increases (i.e. is not negative), the language total increases.

- Math concepts/applications discrepancy & English 7

This puzzling phenomenon can be explained by saying that tests only measure what a particular student can do on a particular test on a particular day. What this correlation means is that as a student is achieving what he/she is capable of in math concepts & applications, their English 7 score increased. Maturity may play a role in this relationship, more than others.

- Math total discrepancy & Math concepts/applications

As a student's achievement is equivalent to ability in the math total score, it may be due primarily to an increased math concept/applications score.

- Reading comprehension discrepancy & English 7
- Reading comprehension discrepancy & Language expository

• Reading comprehension discrepancy & Math total

A student who comprehends a read passage at or above ability level has higher scores on the English 7, language expository, and math total tests. This indicates these tests depend to a good deal how well a student is able to understand what they read in that portion of the test.

• Reading total discrepancy & English 7

Again, as a student is functioning at or above their reading ability receives a higher score on the English 7 test.

Secondly, an examination of the positive correlations at the .01 level provides:

• Total battery discrepancy & Total battery
• Language expository discrepancy & Language expository
• Language mechanical discrepancy & Language mechanical
• Math concept/applications discrepancy & Math concept/applications
• Math computation discrepancy & Math computation
• Math total discrepancy & Math total
• Reading comprehension discrepancy & Reading comprehension
• Reading Total discrepancy & Reading total

As before, it is logical these are significantly correlated because as a student's discrepancy increases (they are functioning at or above ability level for that area) the score increases also.

• Total battery discrepancy & Math computation
• Total battery discrepancy & Math total

Math computation & total math scores are indicators of how well a student does on the ISTEP. As those scores increase, the discrepancy on the total battery increases as well which indicates the student is doing as well as (if not better than) expected due to ability as indicated by CSI score.

• Language total discrepancy & Language mechanical

The mechanical aspect of the language test is a strong indicator of how well a student does in language overall.

• Math concept/applications discrepancy & Math total

The closer a student functions to their ability (or above) with regards to concepts & applications in math determines their overall math total.

• Math total discrepancy & Math computation

The computation aspect of the math test is a strong estimation of how well a student does in math overall.

• Reading comprehension discrepancy & Reading vocabulary

• Reading comprehension discrepancy & Reading total

• Reading comprehension discrepancy & Total battery

A student who is able to comprehend what is read does better on all parts of the reading test as well as the total battery overall.

• Reading Total discrepancy & Reading comprehension

• Reading Total discrepancy & Reading vocabulary

• Reading Total discrepancy & Total battery

Reading at or above ability level indicates an increased score in all reading scores as well as the total battery score.

Finally, this study examined the negative correlations between discrepancies and various achievement indicators and offers possible conclusions as to why these relationships occurred. The following negative correlations are significant at the .05 level as indicated in Table 6:

• Language mechanical discrepancy & Reading vocabulary

This correlation indicates that a person who writes well may have a limited vocabulary.

• Language expository discrepancy & English 6

• Math computation discrepancy & Math 6

• Reading vocabulary discrepancy & English 6

This study indicates no logical reason for these negative correlations. They may have occurred due to the hour of the day the sixth grade students took the school-based English or math tests. The variance may also be due in part to the fact that

the school-based test was taken at the end of the year when students may not have been as focused on taking a test, particularly one that may not significantly impact their future. A further study may be needed to examine the scores of students over the course of many years who take these school-based tests.

- Reading vocabulary discrepancy & Math 6
- Math computation discrepancy & English 6
- Math computation discrepancy & Language Expository

These three scores were lumped together because each involves a math and language arts score. Psychologist Arthur Combs indicated that as we become more intelligent in one area, we become less intelligent in another. In other words, our perceptions & values change over time. Therefore, as these students mature, their preferences for subject matter may have changed. This theory may also hold for these relationships which are significant at the .01 level (negative).

- Math computation discrepancy & reading comprehension
- Math computation discrepancy & reading vocabulary
- Math computation discrepancy & reading total

In conclusion, of the three null hypotheses presented, (1) There is no relationship between number of days absent and achievement; (2) A student with high CSI score does no better on the ISTEP than a student with low CSI score; (3) A student who is discrepant in one sub-test of the ISTEP will not be discrepant in other sub-tests; all were proven false at some level. Further recommended studies include an examination of the correlation between student absence by period and achievement, a repeated measures test to study the school-based tests in English and math, and a correlational study of the relationship between CSI and achievement through a larger and more random sample.

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