A Study of Gender-Based and Ethnic-Based Differential Item Functioning (DIF) in the Spring 2003 Idaho Standards Achievement Tests Applying the Simultaneous Bias Test (SIBTEST) and the Mantel-Haenszel Chi Square Test

Idaho Standards Achievement Tests
Reading, Language Usage, and Mathematics
Grades 4, 8, and 10

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Abstract

The purpose of this study was to screen for gender-based (female-male) and ethnic-based (Hispanic-White) differential item functioning (DIF) in the 2003 *Idaho Standards Achievement Tests* of reading, language arts and mathematics at grades 4, 8 and 10. The vendor, the Northwest Evaluation Association (NWEA), assembled the computer-administered tests using items from its Rasch-calibrated item bank and items from Idaho teachers that were equated to the item bank metric. The absence of DIF statistics for any of these test items led to this study. NWEA provided random samples of data representing about half of the students completing each grade-level test that ranged from 8,659 for the tenth grade mathematics test to 9,676 for the fourth grade language usage test. This study used the Simultaneous Item Bias Test (SIBTEST), which assesses item dimensionality, and the Mantel-Haenszel Chi Square Test to detect statistically significant DIF in the individual items. A Bonferonni correction controlled for Type I error. Effect size procedures described whether the observed statistical differences were large enough to have practical meaning. This study also noted DIF findings from a concurrent NWEA analysis of item parameter invariance in the 2003 Idaho tests. The proportion of items exhibiting moderate to high gender-based DIF ranged from seven percent for the fourth grade reading test to 37 percent for the tenth grade mathematics test. The proportion of items exhibiting moderate to high ethnic-based DIF ranged from seven percent for the eighth grade mathematics test to 19 percent for the fourth grade tests of reading and language arts. The study recommended that NWEA and independent curriculum specialists review all items exhibiting moderate to high DIF before further use, that the state examine the impact of the high occurrence of DIF on the ability to accurately interpret the spring 2003 student scores, and that the state add language to the vendor contract requiring DIF analyses of all items used in future administrations of the statewide tests. (Contains 6 tables, 1 figure, 17 references, and 3 appendices.)

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Table of Contents

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Introduction

Differential Item Functioning (DIF)

Validity refers to the degree to which scientific evidence and theory support the intended interpretation of test scores for their proposed use. It is the use of a test that is validated through a process of collecting evidence, not the test itself. A sound validity argument accumulates evidence about curriculum alignment, score reliability, test administration and scoring, score scaling and equating, standard setting, and fairness for all students. The fairness issue may be characterized as a lack of technical bias. Differential item functioning (DIF) occurs when the responses of students of approximately equal ability differ systematically based on their membership in a particular subgroup. Statistical analysis of the internal structure of a test can detect whether any items function differently for identifiable subgroups of students. However, the informed judgment of curriculum specialists and psychometricians is required to determine whether the difficulties or nuisance abilities in items exhibiting DIF are unfairly related to group membership. There is general consensus that consideration of technical bias is critical to sound testing practice (*Standards*, 1999).

Test developers should strive to identify and remove language, symbols, words, phrases, and content that are generally regarded as offensive by members of racial, ethnic, gender or other groups, except when judged necessary for adequate representation of the domain (*Standards*, 1999). This task is usually performed by a joint panel of assessment experts and members of interested groups. It is important to note here that screening for DIF is not a replacement for this sort of scrutiny. Even if an item shows no differential difficulty, it should be not be included on a test if it fails the review criteria (Zieky, 1993).

Idaho Standards Achievement Tests (ISAT)

The State Board of Education contracted with the Northwest Evaluation Association (NWEA) of Portland, Oregon, to develop and score reading, language and mathematics tests that assess the extent to which students in grades 2 through 10 are meeting the Idaho achievement standards. These tests are collectively known as the Idaho Standards Achievement Tests (ISAT). The ISAT tests, which for the most part are computer presented, were constructed using multiple-choice items that were either drawn from NWEA's Rasch-calibrated item bank or written by Idaho teachers and equated to the item bank metric. This study was limited to the "fixed" portions of ISAT tests administered in the spring of 2003 to students in grades 4, 8 and 10, to meet reporting requirements mandated by the *No Child Left Behind Act*. The reading, language and mathematics tests for grades 4 and 8 each had 42 items. The reading, language and mathematics tests for grade 10 had 55, 56 and 60 items, respectively. Items on the reading, language usage, and mathematics tests were linked to a "goal area" or subject strand. The reading tests

had six strands, the language usage tests had six strands, and the mathematics tests had seven strands (*Test Design Blueprints*, 2003). Results were published by goal area for students, classrooms, schools, districts, and the state. The test developer has yet to assemble and publish a technical manual that documents specifically the qualities and characteristics of the Idaho Standards Achievement Tests. NWEA's technical manual issued for all assessments related to the item bank (i.e., the levels tests and the computer adaptive testing) has no indication that items in the bank have ever been screened for differential item functioning (*Technical Manual*, 2003).

Methodology

Focal and Reference Groups

This study screened for both gender-based DIF and ethnic-based DIF. For the gender-based analyses, female students were the focal group and male students were the reference group. For the ethnic-based analyses, Hispanic students were the focal group and White students were the reference group. The data available for the other ethnic groups were insufficient to make statistical analysis meaningful.

Data

NWEA, the test developer, provided a random sample of student records from the spring 2003 administration of the ISAT. Each record or case indicated the student's grade level, gender, and ethnic group, in addition to the student's responses to the test items (whether correct or not correct). Only cases exhibiting student responses for all test items were used for this study. The total cases and complete cases for the focal and reference groups at each of the grade level tests are displayed in Table 1.

DIF Detection

Two statistical procedures were used to detect DIF, namely the Simultaneous Item Bias Test (SIBTEST) and the Mantel-Haenszel Chi Square Test (Clauser & Mazor, 1998; Stout & Roussos, 1996; Dorans & Holland, 1993; and Roberts, 2003). DIF comes in two forms, uniform DIF and non-uniform or crossing DIF. The ISAT tests were developed using Rasch measurement theory (i.e., the one parameter logistic model) where the "a" or discrimination parameter is constant. Since item characteristic curves for the focus and reference groups cannot cross in the Rasch model, this study screened only for uniform DIF.

The Simultaneous Item Bias Test (SIBTEST). SIBTEST is a model-based method founded in multidimensional item response theory. DIF is defined as the difference in the probability of answering correctly when students in groups having the same levels of the latent attribute of interest possess different amounts of nuisance abilities that influence responding (Stark et al., 2001). SIBTEST yields two statistics of interest: the p-value that estimates the probability that an observed difference occurred by chance; and the Beta estimate that describes the size of the difference. Contamination of internal matching criteria is always a concern; SIBTEST tries to minimize this issue

Table 1. Number of student cases (and complete cases) provided by NWEA, and the number of complete cases in the gender and ethnic groups by grade level and subject.

Grade 4	Total	Complete	Female	Male	Hispanic	White†
Reading	9,544	9,541	4,635	4,906	1,152	7,822 / 6,999
Language Usage	9,676	9,662	4,668	4,994	1,168	7,294 / 6,999
Mathematics	9,624	9,621	4,645	4,976	1,163	7,890 / 6,999
Grade 8	**Total**	**Complete**	**Female**	**Male**	**Hispanic**	**White†**
Reading	9,590	9,588	4,708	4,880	891	8,151 / 6,999
Language Usage	9,672	9,659	4,740	4,919	907	8,204 / 6,999
Mathematics	9,494	9,489	4,667	4,822	885	8,061 / 6,999
Grade 10	**Total**	**Complete**	**Female**	**Male**	**Hispanic**	**White†**
Reading	8,712	8,704	4,286	4,418	769	7,539 / 6,999
Language Usage	8,940	8,920	4,405	4,515	790	7,730 / 6,999
Mathematics	8,659	8,639	4,243	4,396	771	7,474 / 6,999

† The first number in the White column indicates the total number of student cases that were available for analysis. All of the available data for White students were used for the Mantel-Haenszel analyses. The maximum sample size for SIBTEST is less than 7,000 cases, so a random sample of 6,999 cases was drawn from the total number of White students available for each grade-level test and used for the SIBTEST analyses.

through an iterative process. After an initial automatic DIF analysis was run in which each item was screened using all of the remaining items as a matching subtest, the item (or sometimes items) with the highest Beta estimate was "ignored" and the automatic analysis repeated. Successive iterations of the process eventually identified a subset of items that exhibited no statistically significant DIF. These DIF-free items constituted the matching subtest against which each of the remaining items, one at a time, was analyzed. Except for the eighth grade mathematics test, the matching subtests each were larger than the suggested minimum of 20 or more DIF-free items (Shealy & Stout, 1993).

The Mantel-Haenszel Chi Square Test. Mantel-Haenszel is a non-parametric approach based on the analyses of contingency tables. A 2x2 contingency table for each of ten (for this study) ability levels is constructed from the student responses to the item being screened. Mantel-Haenszel produces two statistics estimating the probability that members of the focal and reference groups will get an item right or wrong. The Chi Square estimated the statistical significance of the difference, and the log odds-ratio estimated the size of the difference. (Linacre & Wright, 1989). The ISAT tests were developed using Rasch technology. This assumes the test items are unidimensional and the total scores are reliable measures of the ability of interest. Internal matching criteria were used for the analysis — focal and reference groups were matched on the number-right score on the test with the ability range divided into ten intervals. A comparison study using both internal and external matching criteria for the Mantel-Haenszel procedure found that "although the two criteria were only moderately correlated, results of DIF screening were similar" (cited in Clauser & Mazor, 1998).

Type I Error and the Bonferonni Adjustment. High Type I error increases the expense of constructing and revising tests because it can result in perfectly good items being discarded at a higher than necessary rate. Perhaps an even bigger problem is that it can get in the way of the test developer's attempts to understand the root causes of statistical DIF. The Bonferonni adjustment can be used with SIBTEST to maintain the nominal "family" alpha level, i.e., choosing a critical value where the nominal value is divided by the number of items on the test (Stark et al., 2001). In the case of the ISAT fourth grade reading test with 42 items with a nominal alpha level of .05, for example, the critical value with the Bonferonni adjustment would be .05 divided by 42. Using a Bonferonni adjusted alpha level also solves the problem of highType I error rates for the Mantel-Haenszel procedure (Penfield, 2001).

DIF Description

Statistical procedures such as SIBTEST and Mantel-Haenszel determine whether observed differences are larger than might be expected by chance. However, they do not indicate whether the statistically significant differences enjoy practical significance. Effect size procedures have been developed to determine when statistical differences are large enough to have practical meaning.

The SIBTEST software generates a Beta statistic, which is an indicator of effect size. Roussos (2004), co-author of the *SIBTEST Manual*, recommended using "standardized p-values" (first suggested by Neil Dorans of the ETS in 1989) to help understand and interpret the Beta values. Absolute values of the Beta statistic between .000 and .050 indicate negligible DIF, between .050 and .100 indicate moderate DIF, and .100 and above indicate large DIF. Items exhibiting moderate DIF should be inspected to ensure that no possible effect is overlooked. Items with large DIF are unusual and should be examined very carefully. (Dorans & Holland, 1993). Based on the SIBTEST analyses for this study, items from each of the ISAT grade-level tests were classified as "1" (negligible DIF), "2" (moderate DIF) or "3" (large DIF).

The Mantel-Haenszel statistic is in the form of an odds-ratio, i.e., the odds that members of one group will answer an item correctly exceed the corresponding odds for comparable members of another group. Since the odds-ratio lacks intuitive meaning for most people, ETS constructed a "delta scale" (by multiplying the natural log of the odds-ratio by -2.57) to describe effect size. ETS then classified item DIF into three categories based on a combination of the absolute value of the item's delta scale and the item's statistical significance. ETS's Category A items had an absolute delta scale value less than 1.0, Category B items between 1.0 and 1.5, and Category C items 1.5 or higher. Category A items had negligible or non-significant DIF, while category B and C items exhibited statistically significant DIF. (Zieky, 1993). Based on the Mantel-Haenszel analyses for this study, items from each of the ISAT grade-level tests were classified as "A" (negligible DIF), "B" (slight to moderate DIF) or "C" (moderate to large DIF).

Cross Validation Mini-Study

The main thrust of this project was to screen items from the 2003 Spring ISAT for DIF using two different statistical procedures, specifically SIBTEST and Mantel-Haenszel. There are other ways to screen for DIF, however, such as using a cross validation method with one statistical test. This "mini-study" within a study, using SIBTEST, was limited to a search for uniform gender-based DIF in the tenth grade reading and mathematics tests. The main or "original" SIBTEST analyses were conducted using all of the available student data. The cross validation analysis consisted of two SIBTEST runs, each using half of the available student data. Male students were randomly divided into two groups of equal size (X_m/Y_m), and female students were randomly divided into two groups (X_f/Y_f). SIBTEST was run for both of the tenth grade tests first using the X_m and X_f data, then repeated using the Y_m and Y_f data. In the original analyses, all of the items classified with moderate or large gender-based DIF were reported. In this cross validation mini-study, only items that were classified with moderate or large DIF in both runs were reported.

Results

The item-level results from the SIBTEST procedure are listed in the 18 tables found in Appendix A (see page 17). There are two tables in the appendix for each ISAT grade-level subject test (e.g., Grade 4 Reading, Grade 8 Language Usage, Grade 10 Mathematics, etc.). The first lists item results from the screening for gender-based DIF, and the second lists item results from the screening for ethnic-based DIF. Items are grouped by the test developer's "goal area" (word analysis, vocabulary, etc.) and sorted on the estimated Beta statistic.

The item-level results from the Mantel-Haenszel procedure are listed in the 18 tables found in Appendix B (see page 42). Once again, there are two tables in the appendix for each ISAT grade-level subject test (e.g., Grade 4 Reading, Grade 8 Language Usage, Grade 10 Mathematics, etc.). The first lists item results from the screening for gender-based DIF, and the second lists item results from the screening for ethnic-based DIF. Items are grouped by the test developer's "goal area" and sorted on the log odds-ratio.

Statistical Significance

Table 2 lists the number and percentage of items on each ISAT test where statistically significant gender-based DIF or ethnic-based DIF was detected (1) by the SIBTEST procedure, (2) by the Mantel-Haenszel procedure, or (3) by both procedures.

Table 2 indicates that the SIBTEST procedure detected statistically significant gender-based DIF ranging from a low of 26.8 percent of the items for Grade 10 Language Usage to a high of 57.1 percent for Grade 8 Mathematics. The Mantel-Haenszel procedure detected statistically significant gender-based DIF ranging from a low of 20.4 percent of the items for Grade 10 Language Usage to a high of 60.0 percent for Grade 10 Mathematics. Both procedures detected statistically significant gender-based DIF ranging from a low of 25.0 percent of the items for Grade 10 Language Usage to a high of 50.0 percent for Grade 8 Mathematics.

Table 2. The number and percentage of reading, language usage and mathematics items for grades 4, 8 and 10, from the Spring 2003 ISAT that exhibited statistically significant gender- or ethnic-based DIF at the .05 level of confidence following a Bonferonni adjustment, as detected by the SIBTEST procedure, by the Mantel-Haenszel procedure, or by both procedures.

Items with Statistically Significant Gender-Based DIF

Reading	Number			Percentage		
	Grade 4	Grade 8	Grade 10	Grade 4	Grade 8	Grade 10
SIBTEST	15	18	23	35.7%	42.9%	41.8%
MH Chi Square	13	21	24	31.0%	50.0%	43.6%
Both Procedures	12	18	20	28.6%	42.9%	36.4%

Language Usage	Number			Percentage		
	Grade 4	Grade 8	Grade 10	Grade 4	Grade 8	Grade 10
SIBTEST	18	14	15	42.9%	33.3%	26.8%
MH Chi Square	17	16	17	40.5%	38.1%	30.4%
Both Procedures	17	12	14	40.5%	28.6%	25.0%

Mathematics	Number			Percentage		
	Grade 4	Grade 8	Grade 10	Grade 4	Grade 8	Grade 10
SIBTEST	14	24	29	33.3%	57.1%	48.3%
MH Chi Square	16	25	36	38.1%	59.5%	60.0%
Both Procedures	11	21	19	26.2%	50.0%	31.7%

Items with Statistically Significant Ethnic-Based DIF

Reading	Number			Percentage		
	Grade 4	Grade 8	Grade 10	Grade 4	Grade 8	Grade 10
SIBTEST	5	5	8	11.9%	11.9%	14.5%
MH Chi Square	9	5	9	21.4%	11.9%	16.4%
Both Procedures	5	4	8	11.9%	9.5%	14.5%

Language Usage	Number			Percentage		
	Grade 4	Grade 8	Grade 10	Grade 4	Grade 8	Grade 10
SIBTEST	8	5	6	19.0%	11.9%	10.7%
MH Chi Square	10	9	14	23.8%	21.4%	25.0%
Both Procedures	7	5	5	16.7%	11.9%	8.9%

Mathematics	Number			Percentage		
	Grade 4	Grade 8	Grade 10	Grade 4	Grade 8	Grade 10
SIBTEST	7	4	4	16.7%	9.5%	6.7%
MH Chi Square	8	4	4	19.0%	9.5%	6.7%
Both Procedures	5	3	1	11.9%	7.1%	1.7%

Table 2 also indicates that the SIBTEST procedure detected statistically significant ethnic-based DIF ranging from a low of 6.7 percent of the items for Grade 10 Mathematics to a high of 19.0 percent for Grade 4 Language Usage. The Mantel-Haenszel procedure detected statistically significant ethnic-based DIF ranging from a low of 6.7 percent of the items for Grade 10 Mathematics to a high of 25.0 percent for Grade 10 Language Usage. Both procedures detected statistically significant ethnic-based DIF ranging from a low of 1.7 percent of the items for Grade 10 Mathematics to a high of 16.7 percent for Grade 4 Language Usage.

SIBTEST and Mantel-Haenszel both detected fewer items with statistical ethnic-based DIF than with statistical gender-based DIF. Two factors may have contributed to this result: the size of the samples and the inequality of the ability distributions (Penfield, 2001). First, smaller sample sizes tend to reduce the power of the statistical procedure to detect DIF. Sample sizes for the gender-based analyses ranged from 4,286 to 4,994, and differences between the focal and reference groups were fewer than 200 students. In contrast, the sample sizes for the ethnic-based analyses ranged from 769 to 1,168 for the focal groups and from 6,999 to 8,204 for the reference groups, with large differences between focus and reference groups that ranged from 6,126 to 7,292 students. Second, when the ability of the focal group is a standard deviation below the reference group, the majority of the focal group members are in the lower portion of the continuum for which there is little difference in the expected performance of the focal and reference groups. Standard score differences between the focal and reference groups for the gender-based analyses ranged from .08 to .41, with an average standardized difference of .17 for the nine tests. Standard score differences between focal and reference groups for the ethnic-based analyses ranged from .69 to .98, with an average standardized difference of .74.

Practical Significance

Table 3 lists the items on each ISAT grade-level subject test that were classified as having moderate or large DIF, gender-based or ethnic-based, based on a combination of the statistical significance from the SIBTEST and Mantel-Haenszel procedures and related effect size. The table also lists items with "noteworthy" gender-based and ethnic-based DIF identified in a study conducted by the test developer on the same administration of the ISAT (Hauser & Gage, 2004).

Each item listed in Table 3 exhibited moderate or large DIF, and each is a candidate for review by curriculum and psychometric specialists. It should be noted that weighing practical significance has reduced the burden on the test developer because only items classified as having moderate or large DIF based on a combination of statistical significance and effect size are presented for further review. In this study, 54.7 percent of the items that SIBTEST detected with statistically significant gender-based DIF were removed from further consideration, as were 13.5 percent of the items with statistically significant ethnic-based DIF. Also, 83.8 percent of the items that Mantel-Haenszel detected with statistically significant gender-based DIF were removed from further consideration, as were 65.3 percent of the items with statistically significant ethnic-based DIF.

Table 3. Items from the Spring 2003 ISAT with moderate or large DIF from the SIBTEST and Mantel-Haenszel procedures (based on statistical significance and effect size), and items with noteworthy DIF from NWEA study.

Reading 4th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	10,25,39	4,7,17,36
Mantel-Haenszel	25	17
NWEA Study	None	8,12,16,17,23
Language 4th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	15,19,22,32	5,12,15,16,20,25,28
Mantel-Haenszel	None	5,9
NWEA Study	None	5,9
Mathematics 4th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	32,34,39	6,13,17,29,31,34
Mantel-Haenszel	5,34	6
NWEA Study	None	6,34,35
Reading 8th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	1,7,8,16,19,20,32,33,37,42	10,21,28,29,36
Mantel-Haenszel	20,42	29,36
NWEA Study	None	28,36
Language 8th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	12,14,21,29,36,38	8,12,14,23,26
Mantel-Haenszel	2,3,14	8,12
NWEA Study	2,3	8,12
Mathematics 8th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	4,8,11,12,14,19,22,23,25,28,32,35,36,40	4,9,19
Mantel-Haenszel	4,19	4,19
NWEA Study	4,12	4,9,19
Reading 10th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	1,5,12,16,21,24,26,32,40,44,45,55	2,8,10,12,24,40,44,54
Mantel-Haenszel	1,8,12,26,44,45,49	2,8,12,24,44,54
NWEA Study	12,26	2,8,19,24,44
Language 10th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	14,18,21,23,25,35,56	12,22,25,50,51,53
Mantel-Haenszel	14,18	1,17,20,22,25,32,50,53
NWEA Study	3,18	17,20,22,25
Mathematics 10th	Gender-Based DIF	Ethnic-Based DIF
SIBTEST	1,6,10,11,13,16,20,21,27,29,30,39,50,51,53,54,55,59	16,20,52
Mantel-Haenszel	6,13,29,30,39,50,51,54,55	8
NWEA Study	6,9,12,20,21,27,29,30,35,39,44,51,54,55	12,16,27,33,42,55

An unduplicated count of items exhibiting moderate or large DIF whether by SIBTEST, by Mantel-Haenszel, or by the NWEA study (i.e., items listed in Table 3) was made, and the percentages of items for the grade-level subject tests were computed and plotted in Figure 1. Since the state requires students, beginning with the Class of 2004, to demonstrate proficiency on the ISAT to receive a high school diploma, the high percentages of items on the tenth grade reading test (25 percent) and mathematics test (37 percent) showing evidence of moderate or large gender-based DIF are especially problematic.

The distribution of items classified as having moderate or large DIF across the 57 grade-level goal-areas (i.e., cells) was tallied by screening procedure and examined for patterns. The gender-based DIF results are listed in Table 4, and the ethnic-based DIF results in Table 5. The SIBTEST procedure classified two or more items with moderate and large gender-based DIF in 19 of the 57 cells, while Mantel-Haenszel classified two or more in only six cells. There were five cells in which the same two or more items were classified with moderate to large gender-based DIF by both SIBTEST and Mantel-Haenszel:

Grade	ISAT Test	Goal Area or Strand	DIF Items
8	Language Usage	Conventions - Spelling	2
10	Reading	Vocabulary	2
10	Mathematics	Measurement	3
10	Mathematics	Data Analysis, Probability & Stats	2
10	Mathematics	Algebra	2

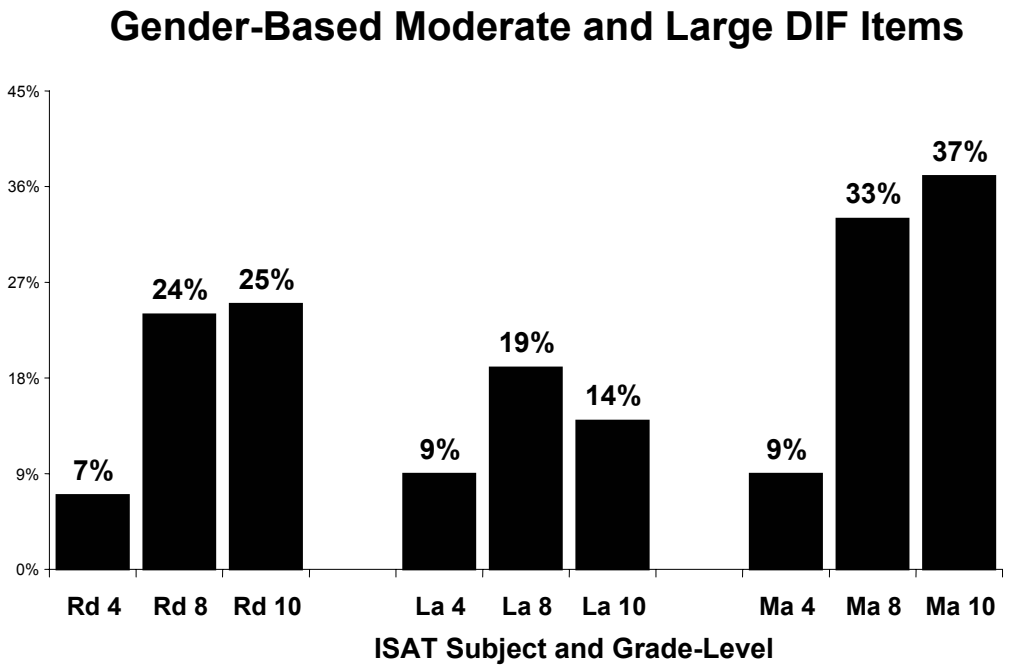
The SIBTEST procedure identified two or more items with moderate or large ethnic based DIF in eight of the 57 cells, while Mantel-Haenszel classified two or more in only five cells. There were two cells where the same two items were classified with moderate to large ethnic-based DIF by both SIBTEST and Mantel-Haenszel:

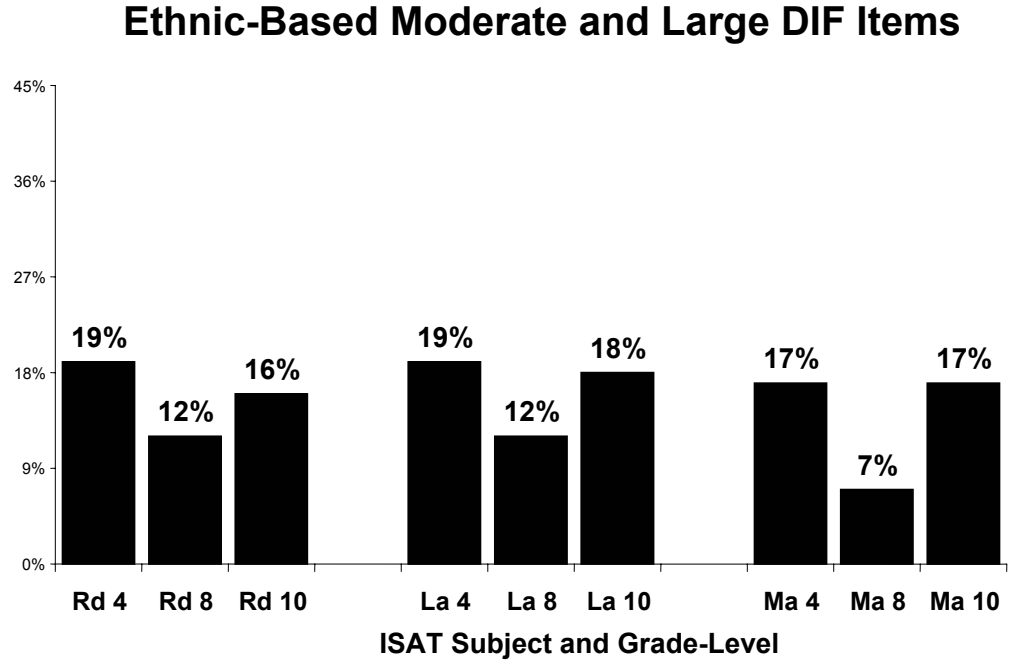
Grade	ISAT Test	Goal Area or Strand	DIF Items
10	Reading	Vocabulary	2
10	Language Usage	Conventions - Capitalization	2

Cross Validation Mini-Study

The item-level results from the SIBTEST cross validation mini-study are listed in two tables in Appendix C (see page 67). Table 6 displays items by goal area from the tenth grade reading and mathematics tests that were classified as having moderate or large gender-based DIF by the original SIBTEST analysis and the SIBTEST cross validation analysis. On the Grade 10 Reading test, the original SIBTEST analysis classified 12 items (i.e., 22 percent of the 55-item test) as having moderate or large gender-based DIF, while the cross validation analysis classified 10 items (18 percent). Seven items on the reading test were classified with gender-based DIF by both methods including items 1, 12, 16, 26, 40, 44, and 45. The original analysis classified five reading items with DIF that were not detected by the cross validation method including items 5, 21, 24, 32, and 55. Cross validation discovered moderate or large gender-based DIF in three reading items that went unnoticed in the original analysis including items 18, 41, and 49. (page 11)

Figure 1. Percentage of items on the Spring 2003 Idaho Standards Achievement Tests with moderate to large gender-based DIF (upper chart) and moderate to large ethnic-based DIF (lower chart).





On the Grade 10 Mathematics test, the original SIBTEST analysis classified 18 items (i.e., 30 percent of the 60-item test) as having moderate or large gender-based DIF, while the cross validation analysis classified 15 items (25 percent). Fifteen items on the math test were classified with gender-based DIF by both methods including items 6, 10, 11, 13, 16, 20, 27, 29, 30, 50, 51, 53, 54, 55, and 59. The original analysis classified three mathematics items with DIF that were not detected through cross validation including items1, 21, and 39.

Table 4. Frequency of items classified as having moderate or large gender-based DIF for each strand of the ISAT reading, language usage and mathematics tests at grades 4, 8 and 10, as indicated by the SIBTEST (SIB) procedure, by the Mantel-Haenszel (MH) procedure, or by both procedures (Both).

	Grade 4			Grade 8			Grade 10		
Reading	SIB	MH	Both	SIB	MH	Both	SIB	MH	Both
Word Analysis	0	0	0	4	1	1	1	1	1
Vocabulary	0	0	0	1	1	1	5	2	2
Literal Comprehension	1	0	0	1	0	0	1	1	1
Interpretive Comprehension	1	1	1	1	0	0	5	1	1
Evaluative Comprehension	0	0	0	0	0	0	1	2	1
Literacy Analysis	1	0	0	3	0	0	2	0	0

	Grade 4			Grade 8			Grade 10		
Language Usage	SIB	MH	Both	SIB	MH	Both	SIB	MH	Both
Composition & Writing Process	0	0	0	1	0	0	1	0	0
Composition & Structure	2	0	0	1	0	0	2	1	1
Grammar & Usage	1	0	0	2	0	0	1	0	0
Conventions - Punctuation	0	0	0	0	0	0	0	0	0
Conventions - Capitalization	1	0	0	0	1	0	1	0	0
Conventions - Spelling	0	0	0	2	2	2	2	1	1

	Grade 4			Grade 8			Grade 10		
Mathematics	SIB	MH	Both	SIB	MH	Both	SIB	MH	Both
Number Sense	0	0	0	2	0	0	—	—	—
Estimation & Computation	0	0	0	4	0	0	2	1	1
Reasoning & Problem Solving	2	0	0	1	1	1	1	1	1
Measurement	1	1	1	1	0	0	6	3	3
Algebra, Functions & Models	0	1	0	4	0	0	—	—	—
Geometry	0	0	0	1	1	1	2	0	0
Data Analysis, Probability & Stats	0	0	0	1	0	0	4	2	2
Algebra	—	—	—	—	—	—	2	2	2
Functions & Models	—	—	—	—	—	—	1	1	1

Table 5. Frequency of items classified as having moderate or large ethnic-based DIF for each strand of the ISAT reading, language usage and mathematics tests at grades 4, 8 and 10, as indicated by the SIBTEST (SIB) procedure, by the Mantel-Haenszel (MH) procedure, or by both procedures (Both).

	Grade 4			Grade 8			Grade 10		
Reading	SIB	MH	Both	SIB	MH	Both	SIB	MH	Both
Word Analysis	1	0	0	0	0	0	1	1	1
Vocabulary	1	0	0	1	1	1	4	3	2
Literal Comprehension	1	0	0	1	0	0	0	0	0
Interpretive Comprehension	0	0	0	1	1	1	0	0	0
Evaluative Comprehension	1	1	1	1	0	0	1	1	1
Literacy Analysis	0	0	0	0	0	0	2	1	1

	Grade 4			Grade 8			Grade 10		
Language Usage	SIB	MH	Both	SIB	MH	Both	SIB	MH	Both
Composition & Writing Process	4	0	0	1	1	1	0	2	0
Composition & Structure	1	0	0	0	0	0	0	0	0
Grammar & Usage	1	2	1	1	1	1	2	1	1
Conventions - Punctuation	0	0	0	1	0	0	0	2	0
Conventions - Capitalization	0	0	0	0	0	0	2	2	2
Conventions - Spelling	1	0	0	2	0	0	2	1	1

	Grade 4			Grade 8			Grade 10		
Mathematics	SIB	MH	Both	SIB	MH	Both	SIB	MH	Both
Number Sense	0	0	0	0	0	0	—	—	—
Estimation & Computation	0	0	0	0	0	0	1	0	0
Reasoning & Problem Solving	1	0	0	1	1	1	0	0	0
Measurement	3	1	1	0	0	0	1	0	0
Algebra, Functions & Models	0	0	0	0	0	0	—	—	—
Geometry	1	0	0	1	1	1	0	0	0
Data Analysis, Probability & Stats	1	0	0	1	0	0	1	1	0
Algebra	—	—	—	—	—	—	0	0	0
Functions & Models	—	—	—	—	—	—	0	0	0

Table 6. Items grouped by goal area on the tenth grade reading and mathematics tests that were classified as having moderate or large gender-based DIF by the SIBTEST original and cross validation analyses.

Grade 10 Reading

Item	Original Analysis	Cross Validation	Reading Goal Area
45	X	X	Word Analysis
12	X	X	Vocabulary
24	X	—	Vocabulary
40	X	X	Vocabulary
44	X	X	Vocabulary
55	X	—	Vocabulary
26	X	X	Literal Comprehension
41	—	X	Literal Comprehension
1	X	X	Interpretive Comprehension
5	X	—	Interpretive Comprehension
16	X	X	Interpretive Comprehension
21	X	—	Interpretive Comprehension
32	X	—	Interpretive Comprehension
49	—	X	Evaluative Comprehension
18	—	X	Literacy Analysis

Grade 10 Mathematics

Item	Original Analysis	Cross Validation	Mathematics Goal Area
51	X	X	Estimation & Computation
53	X	X	Estimation & Computation
54	X	X	Math Reasoning & Problem Solving
1	X	—	Measurement
10	X	X	Measurement
13	X	X	Measurement
20	X	X	Measurement
50	X	X	Measurement
55	X	X	Measurement
30	X	X	Algebra
39	X	—	Algebra
11	X	X	Geometry
27	X	X	Geometry
6	X	X	Data Analysis, Probability & Stats
16	X	X	Data Analysis, Probability & Stats
29	X	X	Data Analysis, Probability & Stats
59	X	X	Data Analysis, Probability & Stats
21	X	—	Functions & Mathematical Models

Recommendations

The state should:

- Conduct a review of the Spring 2003 ISAT items that exhibited moderate or large DIF to determine whether to continue using an item "as is" or to revise an item or to discard an item. It is further recommended that the reviewers include the test developer and independent curriculum specialists who share the gender and ethnicity of the study's focus and reference groups. Documentation of the review should list panel members and their qualifications as well as the panel's findings and recommendations regarding each item.

- Consider whether there were enough items exhibiting DIF in the Spring 2003 ISAT to warrant removing student responses for offending items and re-calculating results. Results from the Spring 2003 ISAT form the baseline for AYP reporting over the next decade. It is important that they be as accurate as possible and amenable to correct interpretation.

- Determine the impact that the especially high occurrence of DIF in the tenth grade reading and mathematics tests might have on the interpretation of student scores, particularly with respect to the accurate and correct interpretation of scores for students in the NCLB reporting subgroups whose actual skill levels hover at or near the proficiency cut scores.

- Include language in the contract with the test developer that calls for DIF analyses on all items used in future ISAT administrations. These studies, if possible, should be conducted on pilot or field test data rather than operational test data.

- Replicate this DIF study using student responses from the IASA assessments for the springs of 2004 and 2005, at a minimum the SIBTEST portion of the study.

The test developer should:

- Seek to detect and eliminate aspects of the ISAT test design, content, and format that might bias test scores for particular groups (*Standards*, 1999). The nature, extent, and findings of these studies should be documented along with other ISAT validation studies in a technical manual prepared specifically for ISAT.

- Implement a systematic procedure to screen for item bias or DIF in all items used for future ISAT assessments, and determine whether the screening might be conducted on pilot and field test data rather than operational test data.

# # #

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Appendix A

Item Results from Simutaneous Item Bias Test (SIBTEST)

Item:	The number of the item or question.
Beta:	SIBTEST statistic estimating magnitude of DIF (effect size). Positive value indicates DIF favoring the reference group. Negative value indicates DIF favoring the focal group.
P-Value:	The probability that the Beta estimate could have occurred by chance.
Class:	Item classification based on combination of statistical significance and effect size. "1" items have negligible DIF, "2" items exhibit moderate DIF, and "3" items have large DIF.
Favored:	Name of the group that DIF favors in item classsified as "2" or "3".
Goal Area:	Subject area "strand" to which item has been assigned for reporting results.
p	Proportion correct response on the item (Classical Test Theory p-value).
r	Point biserial (i.e., item score / test score correlation).

Subject, Grade Level, and Group Membership Tables

ISAT Reading, Grade 4, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,635) **Reference Group: Male Students (4,906)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
34	-0.033	0.000	✳	1		Word Analysis	0.718	0.325
20	-0.016	0.114		1		Word Analysis	0.543	0.236
13	-0.011	0.133		1		Word Analysis	0.841	0.364
18	-0.006	0.432		1		Word Analysis	0.818	0.380
26	0.003	0.732		1		Word Analysis	0.558	0.447
35	0.014	0.149		1		Word Analysis	0.452	0.378
36	0.014	0.133		1		Word Analysis	0.456	0.414
28	-0.013	0.161		1		Vocabulary	0.559	0.512
3	-0.009	0.338		1		Vocabulary	0.607	0.424
9	0.002	0.718		1		Vocabulary	0.941	0.313
37	0.021	0.030		1		Vocabulary	0.384	0.340
7	0.030	0.003		1		Vocabulary	0.516	0.385
19	0.045	0.000	✳	1		Vocabulary	0.701	0.492
42	0.048	0.000	✳	1		Vocabulary	0.282	0.365
39	-0.061	0.000	✳	2	Female	Literal Comprehension	0.435	0.304
22	-0.045	0.000	✳	1		Literal Comprehension	0.725	0.528
8	-0.016	0.108		1		Literal Comprehension	0.398	0.244
4	0.002	0.806		1		Literal Comprehension	0.695	0.450
15	0.012	0.189		1		Literal Comprehension	0.711	0.265
2	0.017	0.105		1		Literal Comprehension	0.525	0.223
6	0.031	0.001	✳	1		Literal Comprehension	0.445	0.474
5	-0.022	0.020		1		Interpretive Comprehension	0.537	0.447
14	-0.016	0.001	✳	1		Interpretive Comprehension	0.921	0.403
1	-0.016	0.020		1		Interpretive Comprehension	0.851	0.419
21	-0.014	0.032		1		Interpretive Comprehension	0.868	0.302
40	-0.004	0.691		1		Interpretive Comprehension	0.380	0.298
32	-0.001	0.865		1		Interpretive Comprehension	0.718	0.511
25	0.067	0.000	✳	2	Male	Interpretive Comprehension	0.726	0.478
17	-0.049	0.000	✳	1		Evaluative Comprehension	0.802	0.485
11	-0.043	0.000	✳	1		Evaluative Comprehension	0.762	0.391
31	-0.039	0.000	✳	1		Evaluative Comprehension	0.705	0.524
30	-0.033	0.001	✳	1		Evaluative Comprehension	0.577	0.409
29	-0.012	0.163		1		Evaluative Comprehension	0.726	0.420
12	0.002	0.808		1		Evaluative Comprehension	0.342	0.217
27	0.010	0.228		1		Evaluative Comprehension	0.736	0.372
10	-0.052	0.000	✳	2	Female	Literacy Analysis	0.428	0.337
24	-0.038	0.000	✳	1		Literacy Analysis	0.669	0.418
38	-0.034	0.000	✳	1		Literacy Analysis	0.389	0.343
16	0.004	0.617		1		Literacy Analysis	0.827	0.453
23	0.009	0.260		1		Literacy Analysis	0.755	0.528
33	0.012	0.236		1		Literacy Analysis	0.562	0.333
41	0.014	0.159		1		Literacy Analysis	0.416	0.317

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Reading, Grade 4, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (1,152) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
36	-0.074	0.000	✳	2	Hispanic	Word Analysis	0.456	0.409
26	-0.050	0.002		1		Word Analysis	0.554	0.448
13	-0.028	0.011		1		Word Analysis	0.839	0.363
34	-0.002	0.920		1		Word Analysis	0.721	0.323
20	0.007	0.716		1		Word Analysis	0.541	0.226
18	0.013	0.335		1		Word Analysis	0.816	0.376
35	0.024	0.263		1		Word Analysis	0.453	0.380
28	-0.048	0.004		1		Vocabulary	0.560	0.506
3	-0.021	0.017		1		Vocabulary	0.607	0.425
9	-0.007	0.325		1		Vocabulary	0.941	0.313
19	0.002	0.871		1		Vocabulary	0.698	0.494
37	0.004	0.819		1		Vocabulary	0.381	0.333
42	0.038	0.040		1		Vocabulary	0.278	0.364
7	0.076	0.000	✳	2	White	Vocabulary	0.514	0.381
4	-0.068	0.000	✳	2	Hispanic	Literal Comprehension	0.695	0.450
15	-0.039	0.013		1		Literal Comprehension	0.719	0.266
22	-0.018	0.165		1		Literal Comprehension	0.728	0.526
2	-0.016	0.021		1		Literal Comprehension	0.525	0.218
8	-0.013	0.531		1		Literal Comprehension	0.399	0.244
39	0.001	0.951		1		Literal Comprehension	0.432	0.304
6	0.005	0.797		1		Literal Comprehension	0.443	0.472
40	-0.038	0.051		1		Interpretive Comprehension	0.381	0.302
1	-0.017	0.100		1		Interpretive Comprehension	0.852	0.417
5	0.014	0.466		1		Interpretive Comprehension	0.535	0.445
14	0.017	0.033		1		Interpretive Comprehension	0.921	0.406
21	0.028	0.027		1		Interpretive Comprehension	0.866	0.302
32	0.035	0.018		1		Interpretive Comprehension	0.717	0.515
25	0.038	0.014		1		Interpretive Comprehension	0.726	0.481
30	-0.025	0.192		1		Evaluative Comprehension	0.576	0.407
29	-0.014	0.374		1		Evaluative Comprehension	0.722	0.419
11	0.000	0.986		1		Evaluative Comprehension	0.764	0.387
12	0.010	0.601		1		Evaluative Comprehension	0.344	0.210
27	0.023	0.138		1		Evaluative Comprehension	0.734	0.376
31	0.036	0.013		1		Evaluative Comprehension	0.706	0.528
17	0.074	0.000	✳	2	White	Evaluative Comprehension	0.800	0.489
41	-0.056	0.005		1		Literacy Analysis	0.416	0.322
24	-0.021	0.229		1		Literacy Analysis	0.672	0.425
33	0.000	0.999		1		Literacy Analysis	0.556	0.337
38	0.005	0.784		1		Literacy Analysis	0.386	0.349
10	0.016	0.427		1		Literacy Analysis	0.429	0.340
23	0.036	0.013		1		Literacy Analysis	0.754	0.523
16	0.042	0.001	✳	1		Literacy Analysis	0.825	0.453

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Language Usage, Grade 4, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,668) **Reference Group: Male Students (4,994)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
36	-0.040	0.000	✳	1		Composition and the Writing Process	0.399	0.307
13	-0.028	0.000	✳	1		Composition and the Writing Process	0.859	0.373
10	-0.020	0.018		1		Composition and the Writing Process	0.772	0.320
12	-0.010	0.208		1		Composition and the Writing Process	0.817	0.338
25	0.011	0.258		1		Composition and the Writing Process	0.559	0.433
20	0.012	0.214		1		Composition and the Writing Process	0.665	0.283
28	0.044	0.000	✳	1		Composition and the Writing Process	0.531	0.460
22	-0.065	0.000	✳	2	Female	Composition and Structure	0.559	0.322
39	0.005	0.618		1		Composition and Structure	0.522	0.417
27	0.007	0.464		1		Composition and Structure	0.443	0.236
30	0.039	0.000	✳	1		Composition and Structure	0.734	0.396
29	0.046	0.000	✳	1		Composition and Structure	0.448	0.330
1	0.047	0.000	✳	1		Composition and Structure	0.662	0.407
15	0.062	0.000	✳	2	Male	Composition and Structure	0.705	0.423
26	-0.051	0.000	✳	1		Grammar and Usage	0.644	0.415
41	0.002	0.808		1		Grammar and Usage	0.538	0.426
6	0.011	0.090		1		Grammar and Usage	0.860	0.422
38	0.014	0.162		1		Grammar and Usage	0.556	0.224
9	0.018	0.003		1		Grammar and Usage	0.896	0.368
5	0.030	0.000	✳	1		Grammar and Usage	0.841	0.424
19	0.052	0.000	✳	2	Male	Grammar and Usage	0.702	0.426
21	-0.049	0.000	✳	1		Conventions - Punctuation	0.669	0.531
18	-0.034	0.000	✳	1		Conventions - Punctuation	0.729	0.450
8	-0.029	0.000	✳	1		Conventions - Punctuation	0.842	0.373
34	-0.018	0.063		1		Conventions - Punctuation	0.434	0.365
40	-0.003	0.790		1		Conventions - Punctuation	0.379	0.359
23	0.000	0.987		1		Conventions - Punctuation	0.629	0.144
4	0.003	0.616		1		Conventions - Punctuation	0.884	0.316
32	-0.085	0.000	✳	2	Female	Conventions - Capitalization	0.547	0.465
24	-0.046	0.000	✳	1		Conventions - Capitalization	0.664	0.403
31	-0.043	0.000	✳	1		Conventions - Capitalization	0.527	0.343
37	-0.024	0.013		1		Conventions - Capitalization	0.487	0.398
17	-0.009	0.360		1		Conventions - Capitalization	0.626	0.224
11	-0.007	0.308		1		Conventions - Capitalization	0.858	0.396
3	-0.002	0.866		1		Conventions - Capitalization	0.690	0.233
2	-0.034	0.001	✳	1		Conventions - Spelling	0.523	0.288
16	-0.018	0.058		1		Conventions - Spelling	0.678	0.311
7	-0.015	0.068		1		Conventions - Spelling	0.753	0.379
14	-0.001	0.915		1		Conventions - Spelling	0.794	0.399
35	0.005	0.643		1		Conventions - Spelling	0.426	0.237
33	0.010	0.241		1		Conventions - Spelling	0.268	0.314
42	0.024	0.014		1		Conventions - Spelling	0.406	0.218

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Languge Usage, Grade 4, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (1,168) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
36	-0.014	0.480		1		Composition and the Writing Process	0.397	0.307
13	-0.011	0.305		1		Composition and the Writing Process	0.857	0.375
10	-0.007	0.649		1		Composition and the Writing Process	0.770	0.315
28	0.058	0.001	✳	2	White	Composition and the Writing Process	0.528	0.455
12	0.061	0.000	✳	2	White	Composition and the Writing Process	0.820	0.335
25	0.063	0.001	✳	2	White	Composition and the Writing Process	0.557	0.430
20	0.064	0.000	✳	2	White	Composition and the Writing Process	0.664	0.284
22	-0.012	0.526		1		Composition and Structure	0.556	0.327
30	-0.004	0.792		1		Composition and Structure	0.734	0.397
39	0.025	0.166		1		Composition and Structure	0.521	0.416
1	0.027	0.102		1		Composition and Structure	0.663	0.407
29	0.043	0.031		1		Composition and Structure	0.452	0.326
27	0.051	0.008		1		Composition and Structure	0.443	0.231
15	0.063	0.000	✳	2	White	Composition and Structure	0.706	0.416
26	0.021	0.207		1		Grammar and Usage	0.645	0.412
38	-0.058	0.004		1		Grammar and Usage	0.557	0.219
6	-0.025	0.010		1		Grammar and Usage	0.860	0.421
9	0.028	0.004		1		Grammar and Usage	0.896	0.373
19	0.032	0.038		1		Grammar and Usage	0.703	0.431
41	0.046	0.012		1		Grammar and Usage	0.538	0.419
5	0.063	0.000	✳	2	White	Grammar and Usage	0.843	0.423
8	-0.009	0.011		1		Conventions - Punctuation	0.841	0.372
34	0.004	0.816		1		Conventions - Punctuation	0.435	0.364
21	0.014	0.335		1		Conventions - Punctuation	0.668	0.532
40	0.016	0.403		1		Conventions - Punctuation	0.377	0.360
4	0.021	0.048		1		Conventions - Punctuation	0.883	0.321
23	0.021	0.275		1		Conventions - Punctuation	0.629	0.152
18	0.030	0.072		1		Conventions - Punctuation	0.727	0.446
24	-0.026	0.119		1		Conventions - Capitalization	0.662	0.402
32	-0.021	0.218		1		Conventions - Capitalization	0.549	0.461
11	-0.016	0.156		1		Conventions - Capitalization	0.858	0.400
3	-0.014	0.385		1		Conventions - Capitalization	0.688	0.229
37	-0.011	0.567		1		Conventions - Capitalization	0.487	0.391
17	0.017	0.349		1		Conventions - Capitalization	0.621	0.226
31	0.027	0.118		1		Conventions - Capitalization	0.528	0.339
16	-0.075	0.000	✳	2	Hispanic	Conventions - Spelling	0.677	0.308
35	-0.054	0.004		1		Conventions - Spelling	0.424	0.241
14	-0.044	0.000	✳	1		Conventions - Spelling	0.792	0.402
7	-0.041	0.002		1		Conventions - Spelling	0.751	0.375
33	-0.032	0.056		1		Conventions - Spelling	0.268	0.310
42	-0.008	0.684		1		Conventions - Spelling	0.405	0.221
2	0.044	0.022		1		Conventions - Spelling	0.522	0.291

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Mathematics, Grade 4, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,645) **Reference Group: Male Students (4,976)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
14	-0.030	0.000	✳	1		Number Sense	0.760	0.434
2	-0.005	0.241		1		Number Sense	0.940	0.303
38	0.019	0.015		1		Number Sense	0.212	0.338
19	0.028	0.001	✳	1		Number Sense	0.714	0.524
27	0.045	0.000	✳	1		Number Sense	0.515	0.454
10	0.046	0.000	✳	1		Number Sense	0.656	0.141
9	-0.041	0.000	✳	1		Estimation and Computation	0.860	0.395
33	-0.028	0.002		1		Estimation and Computation	0.701	0.379
40	-0.026	0.004		1		Estimation and Computation	0.297	0.366
28	-0.018	0.028		1		Estimation and Computation	0.751	0.472
24	-0.013	0.132		1		Estimation and Computation	0.351	0.479
3	0.004	0.456		1		Estimation and Computation	0.888	0.368
18	-0.023	0.002		1		Math Reasoning and Problem Solving	0.748	0.566
12	-0.013	0.169		1		Math Reasoning and Problem Solving	0.619	0.365
29	0.001	0.925		1		Math Reasoning and Problem Solving	0.526	0.461
15	0.006	0.273		1		Math Reasoning and Problem Solving	0.894	0.377
39	0.055	0.000	✳	2	Male	Math Reasoning and Problem Solving	0.249	0.378
32	0.069	0.000	✳	2	Male	Math Reasoning and Problem Solving	0.524	0.450
7	-0.030	0.000	✳	1		Measurement	0.846	0.399
17	-0.023	0.021		1		Measurement	0.498	0.382
22	0.014	0.145		1		Measurement	0.535	0.416
6	0.017	0.014		1		Measurement	0.822	0.494
42	0.034	0.000	✳	1		Measurement	0.290	0.265
34	0.090	0.000	✳	2	Male	Measurement	0.525	0.555
37	-0.029	0.004		1		Algebra, Functions and Math Models	0.472	0.331
5	-0.023	0.000	✳	1		Algebra, Functions and Math Models	0.940	0.211
16	-0.004	0.629		1		Algebra, Functions and Math Models	0.801	0.416
26	0.014	0.141		1		Algebra, Functions and Math Models	0.515	0.509
11	0.025	0.001	✳	1		Algebra, Functions and Math Models	0.806	0.369
41	0.028	0.002		1		Algebra, Functions and Math Models	0.632	0.481
1	-0.024	0.000	✳	1		Geometry	0.901	0.313
30	-0.020	0.012		1		Geometry	0.800	0.355
13	0.001	0.916		1		Geometry	0.349	0.381
20	0.004	0.626		1		Geometry	0.770	0.253
25	0.008	0.411		1		Geometry	0.404	0.408
36	0.010	0.344		1		Geometry	0.485	0.245
35	-0.004	0.689		1		Data Analysis, Probability and Stats	0.340	0.289
4	0.002	0.777		1		Data Analysis, Probability and Stats	0.835	0.306
21	0.010	0.029		1		Data Analysis, Probability and Stats	0.936	0.357
31	0.012	0.188		1		Data Analysis, Probability and Stats	0.706	0.333
23	0.027	0.002		1		Data Analysis, Probability and Stats	0.701	0.465
8	0.034	0.000	✳	1		Data Analysis, Probability and Stats	0.840	0.339

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Mathematics, Grade 4, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (1,163) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
38	-0.015	0.364		1		Number Sense	0.212	0.331
2	-0.006	0.390		1		Number Sense	0.941	0.300
14	-0.004	0.776		1		Number Sense	0.760	0.430
27	-0.001	0.995		1		Number Sense	0.512	0.452
19	0.027	0.054		1		Number Sense	0.713	0.526
10	0.035	0.051		1		Number Sense	0.658	0.147
9	-0.043	0.000	✳	1		Estimation and Computation	0.857	0.403
28	-0.024	0.068		1		Estimation and Computation	0.752	0.470
40	-0.014	0.423		1		Estimation and Computation	0.293	0.364
33	-0.012	0.465		1		Estimation and Computation	0.701	0.377
3	0.005	0.642		1		Estimation and Computation	0.886	0.370
24	0.009	0.553		1		Estimation and Computation	0.353	0.480
39	-0.027	0.077		1		Math Reasoning and Problem Solving	0.250	0.378
18	-0.011	0.353		1		Math Reasoning and Problem Solving	0.747	0.571
15	0.001	0.950		1		Math Reasoning and Problem Solving	0.893	0.390
12	0.005	0.747		1		Math Reasoning and Problem Solving	0.617	0.359
32	0.040	0.023		1		Math Reasoning and Problem Solving	0.521	0.451
29	0.063	0.000	✳	2	White	Math Reasoning and Problem Solving	0.561	0.458
42	0.014	0.398		1		Measurement	0.289	0.263
7	0.030	0.011		1		Measurement	0.841	0.406
22	0.036	0.039		1		Measurement	0.535	0.415
6	0.058	0.000	✳	2	White	Measurement	0.818	0.498
34	0.068	0.000	✳	2	White	Measurement	0.522	0.550
17	0.078	0.000	✳	2	White	Measurement	0.498	0.382
11	-0.032	0.006		1		Algebra, Functions and Math Models	0.807	0.367
26	-0.018	0.275		1		Algebra, Functions and Math Models	0.513	0.501
16	-0.014	0.267		1		Algebra, Functions and Math Models	0.802	0.419
41	-0.005	0.751		1		Algebra, Functions and Math Models	0.635	0.478
5	0.005	0.579		1		Algebra, Functions and Math Models	0.938	0.208
37	0.044	0.015		1		Algebra, Functions and Math Models	0.471	0.331
13	-0.059	0.000	✳	2	Hispanic	Geometry	0.349	0.375
25	-0.022	0.199		1		Geometry	0.403	0.403
20	-0.012	0.432		1		Geometry	0.768	0.248
1	-0.001	0.952		1		Geometry	0.902	0.315
30	0.007	0.592		1		Geometry	0.802	0.358
36	0.038	0.041		1		Geometry	0.468	0.240
35	-0.045	0.012		1		Data Analysis, Probability and Stats	0.343	0.287
4	-0.007	0.564		1		Data Analysis, Probability and Stats	0.835	0.311
8	0.003	0.770		1		Data Analysis, Probability and Stats	0.838	0.345
21	0.013	0.112		1		Data Analysis, Probability and Stats	0.934	0.363
23	0.042	0.006		1		Data Analysis, Probability and Stats	0.700	0.471
31	0.057	0.000	✳	2	White	Data Analysis, Probability and Stats	0.707	0.332

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Reading, Grade 8, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,708) **Reference Group: Male Students (4,880)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
2	0.007	0.497		1		Word Analysis	0.568	0.322
35	0.007	0.288		1		Word Analysis	0.863	0.323
40	0.018	0.064		1		Word Analysis	0.613	0.412
1	0.058	0.000	✳	2	Male	Word Analysis	0.690	0.442
19	0.060	0.000	✳	2	Male	Word Analysis	0.508	0.575
32	0.077	0.000	✳	2	Male	Word Analysis	0.383	0.325
20	0.102	0.000	✳	3	Male	Word Analysis	0.659	0.476
39	-0.034	0.000	✳	1		Vocabulary	0.750	0.497
17	-0.016	0.122		1		Vocabulary	0.552	0.311
36	-0.005	0.353		1		Vocabulary	0.896	0.410
14	0.003	0.777		1		Vocabulary	0.352	0.377
12	0.029	0.000	✳	1		Vocabulary	0.222	0.333
31	0.040	0.000	✳	1		Vocabulary	0.717	0.348
42	0.104	0.000	✳	3	Male	Vocabulary	0.636	0.498
8	-0.066	0.000	✳	2	Female	Literal Comprehension	0.581	0.369
27	-0.035	0.000	✳	1		Literal Comprehension	0.422	0.433
18	-0.024	0.013		1		Literal Comprehension	0.371	0.335
3	0.002	0.799		1		Literal Comprehension	0.832	0.344
28	0.032	0.002		1		Literal Comprehension	0.593	0.287
13	0.041	0.000	✳	1		Literal Comprehension	0.583	0.504
30	0.044	0.000	✳	1		Literal Comprehension	0.625	0.340
6	-0.011	0.255		1		Interpretive Comprehension	0.554	0.483
29	-0.007	0.333		1		Interpretive Comprehension	0.857	0.362
25	-0.002	0.809		1		Interpretive Comprehension	0.770	0.448
11	0.008	0.340		1		Interpretive Comprehension	0.691	0.523
10	0.014	0.163		1		Interpretive Comprehension	0.516	0.340
26	0.016	0.045		1		Interpretive Comprehension	0.800	0.362
16	0.090	0.000	✳	2	Male	Interpretive Comprehension	0.566	0.407
23	-0.033	0.001	✳	1		Evaluative Comprehension	0.428	0.306
9	-0.026	0.005		1		Evaluative Comprehension	0.652	0.441
4	-0.015	0.005		1		Evaluative Comprehension	0.911	0.404
15	-0.010	0.308		1		Evaluative Comprehension	0.572	0.489
5	0.003	0.768		1		Evaluative Comprehension	0.741	0.327
21	0.017	0.063		1		Evaluative Comprehension	0.650	0.427
22	0.033	0.001	✳	1		Evaluative Comprehension	0.452	0.396
7	-0.091	0.000	✳	2	Female	Literacy Analysis	0.588	0.298
33	-0.072	0.000	✳	2	Female	Literacy Analysis	0.519	0.236
37	-0.058	0.000	✳	2	Female	Literacy Analysis	0.447	0.201
41	-0.030	0.002		1		Literacy Analysis	0.418	0.331
24	-0.026	0.004		1		Literacy Analysis	0.721	0.362
34	-0.001	0.901		1		Literacy Analysis	0.869	0.434
38	0.008	0.368		1		Literacy Analysis	0.745	0.370

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Reading, Grade 8, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (891) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
32	-0.054	0.021		1		Word Analysis	0.384	0.321
1	-0.004	0.842		1		Word Analysis	0.696	0.440
35	0.000	0.978		1		Word Analysis	0.864	0.324
19	0.013	0.547		1		Word Analysis	0.507	0.572
40	0.021	0.348		1		Word Analysis	0.612	0.419
20	0.037	0.092		1		Word Analysis	0.655	0.478
2	0.058	0.016		1		Word Analysis	0.570	0.326
31	-0.033	0.071		1		Vocabulary	0.714	0.353
12	-0.029	0.162		1		Vocabulary	0.221	0.341
14	-0.026	0.254		1		Vocabulary	0.356	0.375
39	-0.020	0.177		1		Vocabulary	0.748	0.501
17	-0.014	0.527		1		Vocabulary	0.551	0.312
42	-0.011	0.598		1		Vocabulary	0.634	0.498
36	0.053	0.000	✳	2	White	Vocabulary	0.859	0.417
28	-0.096	0.000	✳	2	Hispanic	Literal Comprehension	0.587	0.282
27	-0.051	0.019		1		Literal Comprehension	0.421	0.433
3	-0.004	0.834		1		Literal Comprehension	0.832	0.345
13	-0.002	0.932		1		Literal Comprehension	0.581	0.507
30	0.004	0.862		1		Literal Comprehension	0.632	0.348
8	0.007	0.755		1		Literal Comprehension	0.579	0.394
18	0.018	0.461		1		Literal Comprehension	0.371	0.339
10	-0.080	0.000	✳	2	Hispanic	Interpretive Comprehension	0.513	0.344
6	-0.062	0.003		1		Interpretive Comprehension	0.555	0.480
16	-0.004	0.842		1		Interpretive Comprehension	0.563	0.400
11	-0.003	0.848		1		Interpretive Comprehension	0.691	0.526
25	0.030	0.137		1		Interpretive Comprehension	0.766	0.455
26	0.038	0.049		1		Interpretive Comprehension	0.801	0.361
29	0.068	0.000	✳	2	White	Interpretive Comprehension	0.860	0.365
15	0.010	0.634		1		Evaluative Comprehension	0.573	0.487
5	0.012	0.604		1		Evaluative Comprehension	0.738	0.328
4	0.020	0.072		1		Evaluative Comprehension	0.910	0.405
22	0.026	0.276		1		Evaluative Comprehension	0.451	0.393
9	0.036	0.009		1		Evaluative Comprehension	0.651	0.440
23	0.073	0.002		1		Evaluative Comprehension	0.430	0.308
21	0.093	0.000	✳	2	White	Evaluative Comprehension	0.649	0.431
38	-0.026	0.221		1		Literacy Analysis	0.745	0.370
24	-0.008	0.660		1		Literacy Analysis	0.724	0.363
34	0.006	0.610		1		Literacy Analysis	0.867	0.439
7	0.024	0.317		1		Literacy Analysis	0.590	0.303
33	0.030	0.218		1		Literacy Analysis	0.519	0.234
37	0.033	0.178		1		Literacy Analysis	0.446	0.202
41	0.058	0.015		1		Literacy Analysis	0.412	0.333

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Language Usage, Grade 8, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,740) **Reference Group: Male Students (4,919)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
19	-0.024	0.011		1		Composition and the Writing Process	0.611	0.424
8	-0.012	0.081		1		Composition and the Writing Process	0.852	0.360
35	0.007	0.502		1		Composition and the Writing Process	0.526	0.411
17	0.010	0.176		1		Composition and the Writing Process	0.836	0.409
5	0.015	0.022		1		Composition and the Writing Process	0.876	0.263
41	0.024	0.010		1		Composition and the Writing Process	0.277	0.177
21	0.058	0.000	✳	2	Male	Composition and the Writing Process	0.681	0.266
16	-0.027	0.001	✳	1		Composition and Structure	0.765	0.324
11	-0.021	0.016		1		Composition and Structure	0.759	0.357
4	-0.020	0.003		1		Composition and Structure	0.863	0.354
15	-0.004	0.697		1		Composition and Structure	0.337	0.314
10	0.016	0.035		1		Composition and Structure	0.819	0.301
33	0.021	0.033		1		Composition and Structure	0.365	0.294
38	0.075	0.000	✳	2	Male	Composition and Structure	0.401	0.377
30	-0.003	0.764		1		Grammar and Usage	0.516	0.296
40	-0.003	0.752		1		Grammar and Usage	0.483	0.328
9	0.014	0.036		1		Grammar and Usage	0.856	0.441
42	0.022	0.004		1		Grammar and Usage	0.166	0.201
27	0.034	0.001	✳	1		Grammar and Usage	0.430	0.314
12	0.062	0.000	✳	2	Male	Grammar and Usage	0.794	0.413
36	0.070	0.000	✳	2	Male	Grammar and Usage	0.484	0.379
18	-0.017	0.024		1		Conventions - Punctuation	0.813	0.500
26	-0.014	0.017		1		Conventions - Punctuation	0.602	0.358
22	-0.009	0.351		1		Conventions - Punctuation	0.523	0.499
34	0.002	0.810		1		Conventions - Punctuation	0.442	0.280
7	0.009	0.243		1		Conventions - Punctuation	0.791	0.325
28	0.017	0.098		1		Conventions - Punctuation	0.478	0.313
39	0.037	0.000	✳	1		Conventions - Punctuation	0.382	0.312
2	-0.031	0.000	✳	1		Conventions - Capitalization	0.899	0.358
37	-0.009	0.364		1		Conventions - Capitalization	0.456	0.338
13	-0.008	0.362		1		Conventions - Capitalization	0.731	0.336
1	-0.005	0.485		1		Conventions - Capitalization	0.864	0.391
24	-0.002	0.826		1		Conventions - Capitalization	0.525	0.228
32	0.008	0.376		1		Conventions - Capitalization	0.618	0.414
25	0.035	0.000	✳	1		Conventions - Capitalization	0.729	0.508
14	-0.087	0.000	✳	2	Female	Conventions - Spelling	0.697	0.334
29	-0.055	0.000	✳	2	Female	Conventions - Spelling	0.520	0.441
3	-0.035	0.000	✳	1		Conventions - Spelling	0.873	0.428
6	-0.029	0.000	✳	1		Conventions - Spelling	0.828	0.328
23	-0.017	0.091		1		Conventions - Spelling	0.608	0.376
20	0.023	0.016		1		Conventions - Spelling	0.635	0.351
31	0.039	0.000	✳	1		Conventions - Spelling	0.533	0.357

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Language Usage, Grade 8, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (907) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
41	0.004	0.817		1		Composition and the Writing Process	0.272	0.178
35	0.005	0.795		1		Composition and the Writing Process	0.523	0.410
19	0.008	0.681		1		Composition and the Writing Process	0.610	0.424
5	0.026	0.045		1		Composition and the Writing Process	0.876	0.271
17	0.038	0.006		1		Composition and the Writing Process	0.835	0.404
21	0.064	0.002		1		Composition and the Writing Process	0.680	0.258
8	0.095	0.000	✳	2	White	Composition and the Writing Process	0.848	0.373
15	-0.012	0.552		1		Composition and Structure	0.337	0.311
4	0.009	0.485		1		Composition and Structure	0.862	0.361
33	0.012	0.528		1		Composition and Structure	0.367	0.289
10	0.019	0.245		1		Composition and Structure	0.817	0.302
16	0.048	0.014		1		Composition and Structure	0.766	0.325
11	0.051	0.004		1		Composition and Structure	0.759	0.355
38	0.057	0.005		1		Composition and Structure	0.403	0.372
36	-0.056	0.006		1		Grammar and Usage	0.488	0.374
27	-0.015	0.465		1		Grammar and Usage	0.426	0.315
40	0.000	0.998		1		Grammar and Usage	0.485	0.329
9	0.012	0.325		1		Grammar and Usage	0.856	0.445
42	0.027	0.056		1		Grammar and Usage	0.164	0.195
30	0.046	0.031		1		Grammar and Usage	0.513	0.301
12	0.110	0.000	✳	3	White	Grammar and Usage	0.793	0.419
34	-0.023	0.271		1		Conventions - Punctuation	0.440	0.273
39	-0.013	0.522		1		Conventions - Punctuation	0.378	0.298
28	0.020	0.344		1		Conventions - Punctuation	0.478	0.315
18	0.024	0.061		1		Conventions - Punctuation	0.807	0.504
22	0.024	0.230		1		Conventions - Punctuation	0.521	0.497
7	0.033	0.063		1		Conventions - Punctuation	0.790	0.328
26	0.104	0.000	✳	3	White	Conventions - Punctuation	0.599	0.359
37	-0.034	0.117		1		Conventions - Capitalization	0.449	0.334
24	-0.030	0.021		1		Conventions - Capitalization	0.525	0.223
32	-0.022	0.246		1		Conventions - Capitalization	0.616	0.415
2	-0.019	0.041		1		Conventions - Capitalization	0.898	0.368
1	-0.003	0.832		1		Conventions - Capitalization	0.863	0.400
25	0.004	0.775		1		Conventions - Capitalization	0.728	0.509
13	0.008	0.660		1		Conventions - Capitalization	0.729	0.342
23	-0.060	0.001	✳	2	Hispanic	Conventions - Spelling	0.605	0.366
14	-0.059	0.001	✳	2	Hispanic	Conventions - Spelling	0.694	0.332
20	-0.053	0.004		1		Conventions - Spelling	0.637	0.350
31	-0.030	0.148		1		Conventions - Spelling	0.532	0.356
3	-0.017	0.101		1		Conventions - Spelling	0.874	0.428
6	-0.004	0.809		1		Conventions - Spelling	0.829	0.331
29	0.007	0.739		1		Conventions - Spelling	0.521	0.435

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Mathematics, Grade 8, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,667) **Reference Group: Male Students (4,822)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
3	-0.045	0.000	✳	1		Number Sense	0.826	0.390
17	-0.044	0.000	✳	1		Number Sense	0.622	0.491
41	-0.022	0.017		1		Number Sense	0.351	0.512
30	-0.012	0.238		1		Number Sense	0.346	0.286
24	0.010	0.246		1		Number Sense	0.723	0.463
36	0.053	0.000	✳	2	Male	Number Sense	0.371	0.385
35	0.070	0.000	✳	2	Male	Number Sense	0.492	0.499
32	-0.068	0.000	✳	2	Female	Estimation and Computation	0.651	0.453
28	-0.060	0.000	✳	2	Female	Estimation and Computation	0.617	0.532
40	-0.059	0.000	✳	2	Female	Estimation and Computation	0.569	0.546
25	-0.052	0.000	✳	2	Female	Estimation and Computation	0.803	0.337
31	-0.038	0.000	✳	1		Estimation and Computation	0.396	0.523
39	0.019	0.055		1		Estimation and Computation	0.483	0.440
26	-0.038	0.000	✳	1		Math Reasoning and Problem Solving	0.660	0.394
10	-0.026	0.004		1		Math Reasoning and Problem Solving	0.725	0.375
42	-0.023	0.013		1		Math Reasoning and Problem Solving	0.277	0.365
34	0.015	0.127		1		Math Reasoning and Problem Solving	0.515	0.432
33	0.019	0.055		1		Math Reasoning and Problem Solving	0.751	0.485
38	0.029	0.002		1		Math Reasoning and Problem Solving	0.395	0.507
19	0.057	0.000	✳	2	Male	Math Reasoning and Problem Solving	0.612	0.572
27	0.001	0.933		1		Measurement	0.647	0.453
16	0.003	0.737		1		Measurement	0.430	0.477
21	0.033	0.000	✳	1		Measurement	0.249	0.330
18	0.034	0.001	✳	1		Measurement	0.468	0.471
11	0.072	0.000	✳	2	Male	Measurement	0.520	0.500
12	-0.090	0.000	✳	2	Female	Algebra, Functions and Math Models	0.614	0.444
14	-0.073	0.000	✳	2	Female	Algebra, Functions and Math Models	0.498	0.376
22	-0.056	0.000	✳	2	Female	Algebra, Functions and Math Models	0.378	0.413
8	-0.050	0.000	✳	2	Female	Algebra, Functions and Math Models	0.747	0.561
6	-0.021	0.001	✳	1		Algebra, Functions and Math Models	0.863	0.448
5	-0.010	0.253		1		Algebra, Functions and Math Models	0.733	0.407
13	-0.026	0.009		1		Geometry	0.573	0.456
15	-0.019	0.039		1		Geometry	0.308	0.407
37	0.009	0.358		1		Geometry	0.407	0.409
1	0.010	0.178		1		Geometry	0.839	0.330
29	0.039	0.000	✳	1		Geometry	0.746	0.468
4	0.104	0.000	✳	3	Male	Geometry	0.838	0.386
23	-0.070	0.000	✳	2	Female	Data Analysis, Probability and Stats	0.449	0.407
20	-0.044	0.000	✳	1		Data Analysis, Probability and Stats	0.609	0.527
2	-0.039	0.000	✳	1		Data Analysis, Probability and Stats	0.878	0.381
9	-0.002	0.814		1		Data Analysis, Probability and Stats	0.634	0.524
7	0.018	0.023		1		Data Analysis, Probability and Stats	0.824	0.310

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Mathematics, Grade 8, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (885) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
30	-0.011	0.636		1		Number Sense	0.343	0.288
17	-0.005	0.769		1		Number Sense	0.617	0.490
41	0.006	0.757		1		Number Sense	0.348	0.512
35	0.013	0.531		1		Number Sense	0.491	0.503
3	0.015	0.259		1		Number Sense	0.822	0.390
24	0.027	0.102		1		Number Sense	0.718	0.468
36	0.039	0.065		1		Number Sense	0.369	0.390
25	-0.038	0.003		1		Estimation and Computation	0.802	0.336
31	-0.034	0.101		1		Estimation and Computation	0.396	0.524
39	-0.033	0.123		1		Estimation and Computation	0.481	0.436
32	-0.025	0.152		1		Estimation and Computation	0.645	0.452
40	0.000	0.979		1		Estimation and Computation	0.564	0.551
28	0.012	0.548		1		Estimation and Computation	0.615	0.531
26	-0.044	0.012		1		Math Reasoning and Problem Solving	0.660	0.391
33	-0.002	0.910		1		Math Reasoning and Problem Solving	0.568	0.489
10	0.007	0.719		1		Math Reasoning and Problem Solving	0.724	0.370
38	0.009	0.663		1		Math Reasoning and Problem Solving	0.395	0.507
42	0.012	0.546		1		Math Reasoning and Problem Solving	0.272	0.363
34	0.050	0.012		1		Math Reasoning and Problem Solving	0.511	0.437
19	0.062	0.001	✳	2	White	Math Reasoning and Problem Solving	0.609	0.575
18	-0.015	0.527		1		Measurement	0.468	0.470
11	-0.011	0.582		1		Measurement	0.519	0.500
16	-0.011	0.575		1		Measurement	0.426	0.485
21	0.000	0.993		1		Measurement	0.251	0.333
27	0.037	0.051		1		Measurement	0.645	0.454
22	-0.039	0.046		1		Algebra, Functions and Math Models	0.369	0.420
5	-0.019	0.257		1		Algebra, Functions and Math Models	0.733	0.410
8	0.018	0.256		1		Algebra, Functions and Math Models	0.743	0.562
12	0.018	0.393		1		Algebra, Functions and Math Models	0.608	0.442
6	0.020	0.077		1		Algebra, Functions and Math Models	0.861	0.450
14	0.047	0.031		1		Algebra, Functions and Math Models	0.496	0.377
37	-0.013	0.567		1		Geometry	0.406	0.409
15	-0.010	0.671		1		Geometry	0.306	0.410
1	0.020	0.192		1		Geometry	0.833	0.332
29	0.040	0.013		1		Geometry	0.744	0.473
4	0.054	0.000	✳	2	White	Geometry	0.836	0.389
13	0.056	0.011		1		Geometry	0.568	0.461
2	-0.034	0.000	✳	1		Data Analysis, Probability and Stats	0.878	0.384
23	-0.029	0.204		1		Data Analysis, Probability and Stats	0.447	0.399
20	0.003	0.882		1		Data Analysis, Probability and Stats	0.608	0.529
7	0.024	0.108		1		Data Analysis, Probability and Stats	0.823	0.311
9	0.082	0.000	✳	2	White	Data Analysis, Probability and Stats	0.629	0.530

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Reading, Grade 10, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,286) **Reference Group: Male Students (4,418)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
37	-0.021	0.026		1		Word Analysis	0.655	0.466
2	-0.017	0.122		1		Word Analysis	0.533	0.111
36	-0.015	0.053		1		Word Analysis	0.154	-0.079
4	-0.014	0.113		1		Word Analysis	0.781	0.316
19	-0.012	0.231		1		Word Analysis	0.695	0.200
35	-0.003	0.727		1		Word Analysis	0.702	0.359
42	0.033	0.002		1		Word Analysis	0.479	0.288
25	0.034	0.001		1		Word Analysis	0.551	0.275
45	0.106	0.000	✳	3	Male	Word Analysis	0.499	0.402
28	-0.044	0.000	✳	1		Vocabulary	0.509	0.294
29	0.017	0.095		1		Vocabulary	0.483	0.452
52	0.021	0.031		1		Vocabulary	0.318	0.349
9	0.039	0.000	✳	1		Vocabulary	0.762	0.409
24	0.056	0.000	✳	2	Male	Vocabulary	0.667	0.517
44	0.061	0.000	✳	2	Male	Vocabulary	0.807	0.465
55	0.066	0.000	✳	2	Male	Vocabulary	0.409	0.252
40	0.081	0.000	✳	2	Male	Vocabulary	0.630	0.441
12	0.124	0.000	✳	3	Male	Vocabulary	0.588	0.326
26	-0.108	0.000	✳	3	Female	Literal Comprehension	0.590	0.392
41	-0.047	0.000	✳	1		Literal Comprehension	0.734	0.447
39	-0.040	0.000	✳	1		Literal Comprehension	0.539	0.430
7	-0.025	0.006		1		Literal Comprehension	0.734	0.363
14	-0.015	0.081		1		Literal Comprehension	0.776	0.423
6	-0.008	0.334		1		Literal Comprehension	0.797	0.440
3	-0.001	0.888		1		Literal Comprehension	0.866	0.387
38	0.011	0.281		1		Literal Comprehension	0.545	0.441
27	0.016	0.130		1		Literal Comprehension	0.407	0.208
16	-0.076	0.000	✳	2	Female	Interpretive Comprehension	0.623	0.341
5	-0.051	0.000	✳	2	Female	Interpretive Comprehension	0.605	0.431
32	-0.050	0.000	✳	2	Female	Interpretive Comprehension	0.367	0.415
15	-0.037	0.000	✳	1		Interpretive Comprehension	0.834	0.420
20	-0.037	0.000	✳	1		Interpretive Comprehension	0.678	0.462
33	-0.034	0.001		1		Interpretive Comprehension	0.382	0.172
43	-0.024	0.010		1		Interpretive Comprehension	0.693	0.466
11	0.012	0.224		1		Interpretive Comprehension	0.646	0.388
21	0.064	0.000	✳	2	Male	Interpretive Comprehension	0.595	0.337
1	0.068	0.000	✳	2	Male	Interpretive Comprehension	0.779	0.454

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

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ISAT Reading, Grade 10, Spring 2003

Gender DIF — SIBTEST

Focal Group: Female Students (4,286) **Reference Group: Male Students (4,418)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
23	-0.037	0.001		1		Evaluative Comprehension	0.437	0.167
8	-0.019	0.011		1		Evaluative Comprehension	0.787	0.542
47	-0.012	0.214		1		Evaluative Comprehension	0.648	0.379
17	-0.008	0.451		1		Evaluative Comprehension	0.695	0.436
22	0.002	0.836		1		Evaluative Comprehension	0.808	0.376
30	0.010	0.255		1		Evaluative Comprehension	0.646	0.537
50	0.024	0.015		1		Evaluative Comprehension	0.346	0.334
51	0.029	0.004		1		Evaluative Comprehension	0.393	0.351
49	0.084	0.000	✳	2	Male	Evaluative Comprehension	0.212	0.330
18	-0.064	0.000	✳	2	Female	Literacy Analysis	0.597	0.291
48	-0.024	0.022		1		Literacy Analysis	0.506	0.360
13	-0.011	0.243		1		Literacy Analysis	0.743	0.292
53	0.019	0.056		1		Literacy Analysis	0.425	0.368
31	0.027	0.008		1		Literacy Analysis	0.482	0.373
10	0.028	0.003		1		Literacy Analysis	0.668	0.425
46	0.038	0.000	✳	1		Literacy Analysis	0.315	0.260
54	0.039	0.000	✳	1		Literacy Analysis	0.542	0.409
34	0.058	0.000	✳	2	Male	Literacy Analysis	0.384	0.395

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

ISAT Reading, Grade 10, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (769) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
2	-0.094	0.000	✳	2	Hispanic	Word Analysis	0.531	0.109
36	-0.040	0.046		1		Word Analysis	0.154	-0.080
45	-0.034	0.177		1		Word Analysis	0.500	0.403
19	-0.017	0.500		1		Word Analysis	0.698	0.197
4	-0.004	0.849		1		Word Analysis	0.779	0.316
42	0.007	0.826		1		Word Analysis	0.480	0.289
35	0.011	0.619		1		Word Analysis	0.699	0.360
25	0.024	0.342		1		Word Analysis	0.547	0.274
37	0.035	0.110		1		Word Analysis	0.656	0.468
52	-0.025	0.330		1		Vocabulary	0.317	0.350
28	0.010	0.686		1		Vocabulary	0.513	0.294
9	0.022	0.282		1		Vocabulary	0.761	0.409
29	0.031	0.021		1		Vocabulary	0.483	0.452
44	0.061	0.000	✳	2	White	Vocabulary	0.804	0.467
55	0.063	0.012		1		Vocabulary	0.409	0.255
40	0.074	0.000	✳	2	White	Vocabulary	0.629	0.443
24	0.112	0.000	✳	3	White	Vocabulary	0.667	0.519
12	0.144	0.000	✳	3	White	Vocabulary	0.588	0.329
39	-0.049	0.022		1		Literal Comprehension	0.539	0.432
26	-0.036	0.106		1		Literal Comprehension	0.589	0.386
41	-0.009	0.656		1		Literal Comprehension	0.732	0.447
38	-0.006	0.803		1		Literal Comprehension	0.545	0.444
14	-0.002	0.903		1		Literal Comprehension	0.775	0.424
3	0.003	0.825		1		Literal Comprehension	0.864	0.391
27	0.005	0.851		1		Literal Comprehension	0.408	0.211
6	0.029	0.123		1		Literal Comprehension	0.799	0.438
7	0.042	0.060		1		Literal Comprehension	0.735	0.362
16	-0.067	0.001		1		Interpretive Comprehension	0.622	0.345
5	-0.052	0.031		1		Interpretive Comprehension	0.605	0.429
33	-0.021	0.444		1		Interpretive Comprehension	0.385	0.174
32	-0.002	0.926		1		Interpretive Comprehension	0.371	0.422
43	0.001	0.955		1		Interpretive Comprehension	0.692	0.465
15	0.002	0.898		1		Interpretive Comprehension	0.832	0.420
11	0.010	0.634		1		Interpretive Comprehension	0.644	0.391
20	0.011	0.561		1		Interpretive Comprehension	0.679	0.468
21	0.036	0.133		1		Interpretive Comprehension	0.597	0.338
1	0.042	0.033		1		Interpretive Comprehension	0.778	0.458

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

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ISAT Reading, Grade 10, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (769) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
49	0.003	0.891		1		Evaluative Comprehension	0.212	0.330
50	0.003	0.927		1		Evaluative Comprehension	0.364	0.332
17	0.005	0.817		1		Evaluative Comprehension	0.696	0.437
47	0.014	0.544		1		Evaluative Comprehension	0.646	0.383
22	0.019	0.298		1		Evaluative Comprehension	0.809	0.375
51	0.041	0.095		1		Evaluative Comprehension	0.369	0.354
30	0.042	0.041		1		Evaluative Comprehension	0.648	0.541
23	0.055	0.021		1		Evaluative Comprehension	0.435	0.161
8	0.068	0.000	✳	2	White	Evaluative Comprehension	0.788	0.544
34	-0.040	0.106		1		Literacy Analysis	0.384	0.392
18	-0.032	0.162		1		Literacy Analysis	0.601	0.291
46	-0.008	0.760		1		Literacy Analysis	0.314	0.256
31	0.014	0.589		1		Literacy Analysis	0.481	0.372
13	0.027	0.195		1		Literacy Analysis	0.742	0.289
48	0.032	0.182		1		Literacy Analysis	0.504	0.360
53	0.048	0.057		1		Literacy Analysis	0.425	0.367
54	0.108	0.000	✳	3	White	Literacy Analysis	0.543	0.410
10	0.114	0.000	✳	3	White	Literacy Analysis	0.666	0.427

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

ISAT Language Usage, Grade 10, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,405) **Reference Group: Male Students (4,515)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
54	-0.047	0.000	✳	1		Composition and the Writing Process	0.471	0.336
38	-0.027	0.010		1		Composition and the Writing Process	0.427	0.350
1	-0.005	0.346		1		Composition and the Writing Process	0.908	0.323
26	-0.005	0.625		1		Composition and the Writing Process	0.689	0.403
40	-0.004	0.722		1		Composition and the Writing Process	0.565	0.353
9	0.006	0.576		1		Composition and the Writing Process	0.507	0.341
17	0.010	0.113		1		Composition and the Writing Process	0.875	0.407
10	0.012	0.089		1		Composition and the Writing Process	0.855	0.443
7	0.030	0.003		1		Composition and the Writing Process	0.553	0.400
21	0.050	0.000	✳	2	Male	Composition and the Writing Process	0.591	0.272
14	-0.091	0.000	✳	2	Female	Composition and Structure	0.712	0.295
56	-0.057	0.000	✳	2	Female	Composition and Structure	0.480	0.207
15	-0.022	0.014		1		Composition and Structure	0.758	0.301
41	-0.003	0.732		1		Composition and Structure	0.643	0.339
55	-0.002	0.853		1		Composition and Structure	0.193	0.105
30	0.001	0.949		1		Composition and Structure	0.770	0.429
24	0.003	0.734		1		Composition and Structure	0.730	0.407
43	0.011	0.180		1		Composition and Structure	0.792	0.410
29	0.028	0.006		1		Composition and Structure	0.577	0.375
46	-0.031	0.002		1		Grammar and Usage	0.396	0.309
3	-0.019	0.001		1		Grammar and Usage	0.886	0.428
51	-0.019	0.009		1		Grammar and Usage	0.279	0.379
47	-0.005	0.721		1		Grammar and Usage	0.527	0.441
37	0.016	0.135		1		Grammar and Usage	0.500	0.168
6	0.032	0.001		1		Grammar and Usage	0.703	0.260
33	0.033	0.032		1		Grammar and Usage	0.580	0.310
22	0.038	0.000	✳	1		Grammar and Usage	0.703	0.488
49	0.039	0.000	✳	1		Grammar and Usage	0.246	0.343
35	0.080	0.000	✳	2	Male	Grammar and Usage	0.362	0.303
16	-0.040	0.000	✳	1		Conventions - Punctuation	0.696	0.332
48	-0.039	0.000	✳	1		Conventions - Punctuation	0.547	0.372
27	-0.022	0.028		1		Conventions - Punctuation	0.561	0.432
45	-0.008	0.400		1		Conventions - Punctuation	0.457	0.512
20	0.011	0.194		1		Conventions - Punctuation	0.700	0.509
44	0.015	0.142		1		Conventions - Punctuation	0.457	0.365
32	0.022	0.011		1		Conventions - Punctuation	0.710	0.494
13	0.028	0.003		1		Conventions - Punctuation	0.736	0.315
34	0.039	0.000	✳	1		Conventions - Punctuation	0.495	0.232

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/56)

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ISAT Language Usage, Grade 10, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,405) **Reference Group: Male Students (4,515)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
2	-0.029	0.000	✳	1		Conventions - Capitalization	0.794	0.352
42	-0.025	0.014		1		Conventions - Capitalization	0.484	0.416
28	-0.018	0.090		1		Conventions - Capitalization	0.489	0.210
11	0.003	0.646		1		Conventions - Capitalization	0.842	0.349
5	0.011	0.094		1		Conventions - Capitalization	0.899	0.244
19	0.016	0.123		1		Conventions - Capitalization	0.462	0.319
50	0.016	0.105		1		Conventions - Capitalization	0.357	0.384
53	0.046	0.000	✳	1		Conventions - Capitalization	0.325	0.433
23	0.051	0.000	✳	2	Male	Conventions - Capitalization	0.693	0.372
25	-0.059	0.000	✳	2	Female	Conventions - Spelling	0.387	0.234
18	-0.054	0.000	✳	2	Female	Conventions - Spelling	0.881	0.417
31	-0.035	0.001		1		Conventions - Spelling	0.559	0.411
39	-0.029	0.005		1		Conventions - Spelling	0.538	0.372
12	-0.026	0.007		1		Conventions - Spelling	0.666	0.335
36	-0.026	0.012		1		Conventions - Spelling	0.536	0.360
4	0.004	0.610		1		Conventions - Spelling	0.831	0.309
8	0.013	0.084		1		Conventions - Spelling	0.825	0.344
52	0.021	0.034		1		Conventions - Spelling	0.321	0.297

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/56)

ISAT Language Usage, Grade 10, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (790) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
38	-0.044	0.042		1		Composition and the Writing Process	0.428	0.351
54	-0.011	0.626		1		Composition and the Writing Process	0.474	0.339
40	0.002	0.937		1		Composition and the Writing Process	0.565	0.353
7	0.005	0.803		1		Composition and the Writing Process	0.552	0.402
1	0.020	0.056		1		Composition and the Writing Process	0.906	0.337
10	0.020	0.139		1		Composition and the Writing Process	0.857	0.448
21	0.020	0.364		1		Composition and the Writing Process	0.590	0.272
26	0.021	0.270		1		Composition and the Writing Process	0.690	0.407
17	0.029	0.026		1		Composition and the Writing Process	0.877	0.411
9	0.064	0.003		1		Composition and the Writing Process	0.509	0.346
14	-0.061	0.001		1		Composition and Structure	0.713	0.299
41	-0.045	0.028		1		Composition and Structure	0.643	0.342
55	0.006	0.759		1		Composition and Structure	0.193	0.107
43	0.015	0.389		1		Composition and Structure	0.791	0.414
15	0.016	0.378		1		Composition and Structure	0.757	0.305
56	0.022	0.325		1		Composition and Structure	0.478	0.209
24	0.024	0.203		1		Composition and Structure	0.730	0.409
30	0.034	0.050		1		Composition and Structure	0.770	0.430
29	0.056	0.022		1		Composition and Structure	0.574	0.375
3	-0.019	0.056		1		Grammar and Usage	0.887	0.428
47	-0.014	0.513		1		Grammar and Usage	0.528	0.445
49	-0.010	0.616		1		Grammar and Usage	0.247	0.345
46	-0.008	0.709		1		Grammar and Usage	0.397	0.307
37	0.003	0.873		1		Grammar and Usage	0.496	0.166
6	0.015	0.442		1		Grammar and Usage	0.703	0.266
33	0.030	0.155		1		Grammar and Usage	0.580	0.308
35	0.037	0.065		1		Grammar and Usage	0.363	0.299
51	0.071	0.000	✳	2	White	Grammar and Usage	0.280	0.375
22	0.082	0.000	✳	2	White	Grammar and Usage	0.704	0.491
27	-0.027	0.020		1		Conventions - Punctuation	0.561	0.427
16	0.009	0.620		1		Conventions - Punctuation	0.698	0.336
44	0.010	0.632		1		Conventions - Punctuation	0.453	0.361
48	0.030	0.174		1		Conventions - Punctuation	0.544	0.374
45	0.038	0.065		1		Conventions - Punctuation	0.457	0.509
13	0.050	0.008		1		Conventions - Punctuation	0.735	0.318
20	0.062	0.001		1		Conventions - Punctuation	0.700	0.507
32	0.066	0.001		1		Conventions - Punctuation	0.709	0.500
34	0.071	0.002		1		Conventions - Punctuation	0.496	0.234

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/56)

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ISAT Language Usage, Grade 10, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (790) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
50	-0.103	0.000	✳	3	Hispanic	Conventions - Capitalization	0.359	0.386
23	-0.048	0.010		1		Conventions - Capitalization	0.690	0.372
28	-0.032	0.126		1		Conventions - Capitalization	0.485	0.214
19	-0.020	0.307		1		Conventions - Capitalization	0.458	0.322
2	0.002	0.896		1		Conventions - Capitalization	0.795	0.351
5	0.010	0.428		1		Conventions - Capitalization	0.899	0.240
11	0.018	0.217		1		Conventions - Capitalization	0.840	0.353
42	0.023	0.249		1		Conventions - Capitalization	0.482	0.413
53	0.081	0.000	✳	2	White	Conventions - Capitalization	0.325	0.433
25	-0.144	0.000	✳	3	Hispanic	Conventions - Spelling	0.386	0.236
12	-0.077	0.000	✳	2	Hispanic	Conventions - Spelling	0.667	0.334
39	-0.041	0.053		1		Conventions - Spelling	0.539	0.370
36	-0.036	0.087		1		Conventions - Spelling	0.534	0.358
31	-0.033	0.119		1		Conventions - Spelling	0.560	0.409
4	-0.030	0.033		1		Conventions - Spelling	0.828	0.311
18	-0.026	0.014		1		Conventions - Spelling	0.882	0.417
52	0.011	0.606		1		Conventions - Spelling	0.322	0.297
8	0.012	0.454		1		Conventions - Spelling	0.825	0.350

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/56)

ISAT Mathematics, Grade 10, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,243) **Reference Group: Male Students (4,396)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
56	-0.020	0.041		1		Estimation and Computation	0.620	0.507
58	-0.019	0.071		1		Estimation and Computation	0.536	0.440
60	-0.002	0.803		1		Estimation and Computation	0.280	0.474
57	-0.001	0.956		1		Estimation and Computation	0.272	0.421
48	0.002	0.860		1		Estimation and Computation	0.226	0.282
33	0.010	0.344		1		Estimation and Computation	0.465	0.456
52	0.028	0.001		1		Estimation and Computation	0.756	0.446
5	0.036	0.000	✳	1		Estimation and Computation	0.582	0.524
32	0.048	0.000	✳	1		Estimation and Computation	0.482	0.488
53	0.096	0.000	✳	2	Male	Estimation and Computation	0.576	0.547
51	0.106	0.000	✳	3	Male	Estimation and Computation	0.695	0.481
37	-0.035	0.000	✳	1		Math Reasoning and Problem Solving	0.406	0.536
47	0.012	0.023		1		Math Reasoning and Problem Solving	0.066	0.050
23	0.016	0.127		1		Math Reasoning and Problem Solving	0.433	0.378
15	0.032	0.001		1		Math Reasoning and Problem Solving	0.680	0.462
42	0.037	0.000	✳	1		Math Reasoning and Problem Solving	0.301	0.234
43	0.041	0.000	✳	1		Math Reasoning and Problem Solving	0.324	0.398
54	0.128	0.000	✳	3	Male	Math Reasoning and Problem Solving	0.251	0.351
7	0.042	0.000	✳	1		Measurement	0.472	0.454
1	0.052	0.000	✳	2	Male	Measurement	0.755	0.471
50	0.059	0.000	✳	2	Male	Measurement	0.129	0.245
20	0.097	0.000	✳	2	Male	Measurement	0.306	0.420
10	0.101	0.000	✳	3	Male	Measurement	0.477	0.504
55	0.143	0.000	✳	3	Male	Measurement	0.563	0.591
13	0.173	0.000	✳	3	Male	Measurement	0.479	0.626
30	-0.058	0.000	✳	2	Female	Algebra	0.613	0.565
39	-0.051	0.000	✳	2	Female	Algebra	0.343	0.472
44	-0.039	0.000	✳	1		Algebra	0.237	0.362
26	-0.028	0.002		1		Algebra	0.623	0.582
19	-0.024	0.008		1		Algebra	0.671	0.525
46	-0.019	0.049		1		Algebra	0.344	0.473
18	-0.015	0.105		1		Algebra	0.657	0.517
49	-0.014	0.121		1		Algebra	0.205	0.123
31	0.018	0.079		1		Algebra	0.464	0.392
2	0.028	0.001		1		Algebra	0.813	0.260
25	-0.020	0.025		1		Geometry	0.711	0.508
35	-0.019	0.007		1		Geometry	0.832	0.409
36	-0.011	0.286		1		Geometry	0.640	0.444
45	-0.011	0.277		1		Geometry	0.323	0.276
41	0.014	0.149		1		Geometry	0.270	0.301
4	0.033	0.000	✳	1		Geometry	0.794	0.511
22	0.042	0.000	✳	1		Geometry	0.433	0.342
11	0.058	0.000	✳	2	Male	Geometry	0.698	0.439
27	0.088	0.000	✳	2	Male	Geometry	0.685	0.304

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/60)

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ISAT Mathematics, Grade 10, Spring 2003
Gender DIF — SIBTEST

Focal Group: Female Students (4,243) **Reference Group: Male Students (4,396)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
8	0.007	0.267		1		Data Analyis, Probability and Stats	0.871	0.385
24	0.017	0.086		1		Data Analyis, Probability and Stats	0.658	0.474
3	0.033	0.000	✳	1		Data Analyis, Probability and Stats	0.803	0.487
16	0.057	0.000	✳	2	Male	Data Analyis, Probability and Stats	0.569	0.556
59	0.066	0.000	✳	2	Male	Data Analyis, Probability and Stats	0.323	0.427
6	0.126	0.000	✳	3	Male	Data Analyis, Probability and Stats	0.593	0.459
29	0.155	0.000	✳	3	Male	Data Analyis, Probability and Stats	0.381	0.491
21	-0.068	0.000	✳	2	Female	Functions and Mathematical Models	0.624	0.555
9	-0.039	0.000	✳	1		Functions and Mathematical Models	0.668	0.488
38	-0.025	0.011		1		Functions and Mathematical Models	0.636	0.451
14	-0.023	0.022		1		Functions and Mathematical Models	0.626	0.397
17	-0.017	0.076		1		Functions and Mathematical Models	0.620	0.485
40	-0.016	0.090		1		Functions and Mathematical Models	0.391	0.452
28	-0.015	0.118		1		Functions and Mathematical Models	0.370	0.497
34	-0.004	0.703		1		Functions and Mathematical Models	0.435	0.510
12	0.012	0.144		1		Functions and Mathematical Models	0.766	0.532

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/60)

ISAT Mathematics, Grade 10, Spring 2003
Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (771) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
58	-0.055	0.015		1		Estimation and Computation	0.538	0.444
33	-0.051	0.028		1		Estimation and Computation	0.468	0.452
52	-0.050	0.000	✳	2	Hispanic	Estimation and Computation	0.756	0.450
57	-0.049	0.064		1		Estimation and Computation	0.272	0.421
60	-0.018	0.424		1		Estimation and Computation	0.284	0.469
5	-0.016	0.365		1		Estimation and Computation	0.586	0.522
51	-0.006	0.698		1		Estimation and Computation	0.694	0.485
56	0.005	0.813		1		Estimation and Computation	0.621	0.504
48	0.012	0.563		1		Estimation and Computation	0.224	0.280
32	0.043	0.066		1		Estimation and Computation	0.483	0.489
53	0.056	0.017		1		Estimation and Computation	0.758	0.545
47	-0.027	0.064		1		Math Reasoning and Problem Solving	0.066	0.051
42	-0.023	0.361		1		Math Reasoning and Problem Solving	0.305	0.228
43	-0.001	0.969		1		Math Reasoning and Problem Solving	0.327	0.401
15	0.004	0.841		1		Math Reasoning and Problem Solving	0.684	0.462
23	0.035	0.133		1		Math Reasoning and Problem Solving	0.436	0.375
54	0.037	0.082		1		Math Reasoning and Problem Solving	0.253	0.385
37	0.061	0.019		1		Math Reasoning and Problem Solving	0.410	0.537
1	-0.016	0.289		1		Measurement	0.757	0.475
50	-0.016	0.380		1		Measurement	0.128	0.241
7	-0.008	0.748		1		Measurement	0.472	0.456
10	0.005	0.817		1		Measurement	0.484	0.503
13	0.019	0.351		1		Measurement	0.481	0.628
55	0.059	0.007		1		Measurement	0.567	0.593
20	0.100	0.000	✳	3	White	Measurement	0.306	0.423
19	-0.039	0.014		1		Algebra	0.675	0.522
18	-0.038	0.035		1		Algebra	0.659	0.521
39	-0.024	0.311		1		Algebra	0.341	0.470
44	-0.022	0.303		1		Algebra	0.238	0.359
31	-0.017	0.476		1		Algebra	0.466	0.392
30	-0.005	0.784		1		Algebra	0.618	0.567
46	-0.001	0.980		1		Algebra	0.347	0.470
26	0.002	0.922		1		Algebra	0.627	0.584
49	0.002	0.921		1		Algebra	0.203	0.119
2	0.041	0.024		1		Algebra	0.815	0.261
22	-0.033	0.160		1		Geometry	0.433	0.340
27	-0.020	0.355		1		Geometry	0.685	0.300
25	-0.013	0.409		1		Geometry	0.714	0.507
45	0.013	0.641		1		Geometry	0.323	0.278
41	0.019	0.430		1		Geometry	0.269	0.301
4	0.020	0.161		1		Geometry	0.796	0.512
35	0.034	0.029		1		Geometry	0.833	0.408
11	0.037	0.085		1		Geometry	0.699	0.438
36	0.077	0.001		1		Geometry	0.644	0.443

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/60)

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ISAT Mathematics, Grade 10, Spring 2003

Ethnic DIF — SIBTEST

Focal Group: Hispanic Students (771) **Reference Group: White Students (6,999)**

Item	Beta	P-Value		Class	Favored	Goal Area	*p*	*r*
3	0.001	0.910		1		Data Analyis, Probability and Stats	0.804	0.488
6	0.014	0.485		1		Data Analyis, Probability and Stats	0.596	0.461
59	0.018	0.421		1		Data Analyis, Probability and Stats	0.324	0.431
8	0.030	0.014		1		Data Analyis, Probability and Stats	0.873	0.387
29	0.038	0.117		1		Data Analyis, Probability and Stats	0.383	0.491
24	0.069	0.004		1		Data Analyis, Probability and Stats	0.663	0.477
16	0.126	0.000	✳	3	White	Data Analyis, Probability and Stats	0.572	0.555
21	-0.034	0.051		1		Functions and Mathematical Models	0.627	0.551
38	-0.023	0.234		1		Functions and Mathematical Models	0.638	0.458
17	-0.014	0.463		1		Functions and Mathematical Models	0.622	0.486
28	-0.011	0.639		1		Functions and Mathematical Models	0.371	0.498
9	-0.006	0.734		1		Functions and Mathematical Models	0.670	0.487
34	-0.004	0.870		1		Functions and Mathematical Models	0.435	0.509
40	0.007	0.779		1		Functions and Mathematical Models	0.393	0.449
14	0.023	0.315		1		Functions and Mathematical Models	0.631	0.395
12	0.031	0.026		1		Functions and Mathematical Models	0.770	0.531

Items are sorted within goal areas on the Beta estimate.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/60)

Appendix B

Item Results from Mantel-Haenszel Chi Square Test with Bonferonni Adjustment

Item:	The number of the item or question.
Chi Square:	The statistical value derived from the Mantel-Haenszel procedure.
P-Value:	The probability that the Chi Square statistic could have occurred by chance.
Log Odds Ratio:	The natural log of the ratio of the odds that reference group members will answer the question correctly to the odds for focal group members. A positive value indicates better odds for reference group members to answer correctly; a negative value indicates better odds for focal group members to answer correctly. An effect size.
Class:	Item classification based on combination of statistical significance and effect size. "A" items have nigligible DIF, "B" items exhibit slight to moderate DIF, and "C" items have moderate to large DIF.
Favored:	Name of the group that DIF favors in item classsified as "B" or "C".
Goal Area:	Subject area "strand" to which item has been assigned for reporting results.

Subject, Grade Level, and Group Membership Tables

ISAT Reading, Grade 4, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,635) **Reference Group: Male Students (4,906)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
34	11.359	0.001	✳	-0.164	A		Word Analysis
13	1.037	0.309		-0.064	A		Word Analysis
20	1.341	0.247		-0.050	A		Word Analysis
18	0.039	0.843		-0.013	A		Word Analysis
26	1.091	0.296		0.049	A		Word Analysis
35	4.346	0.037		0.094	A		Word Analysis
36	4.352	0.037		0.096	A		Word Analysis
28	0.310	0.578		-0.028	A		Vocabulary
3	0.041	0.840		-0.010	A		Vocabulary
9	0.055	0.815		0.026	A		Vocabulary
37	7.583	0.005		0.127	A		Vocabulary
7	14.126	0.000	✳	0.168	A		Vocabulary
19	36.967	0.000	✳	0.316	A		Vocabulary
42	38.851	0.000	✳	0.316	A		Vocabulary
22	27.850	0.000	✳	-0.291	A		Literal Comprehension
39	33.567	0.000	✳	-0.253	A		Literal Comprehension
8	1.188	0.276		-0.048	A		Literal Comprehension
4	0.922	0.337		0.049	A		Literal Comprehension
15	2.854	0.091		0.081	A		Literal Comprehension
2	3.909	0.048		0.085	A		Literal Comprehension
6	17.708	0.000	✳	0.201	A		Literal Comprehension
14	7.882	0.005		-0.250	A		Interpretive Comprehension
1	3.088	0.079		-0.116	A		Interpretive Comprehension
21	2.392	0.122		-0.102	A		Interpretive Comprehension
5	2.759	0.097		-0.077	A		Interpretive Comprehension
40	0.011	0.916		0.006	A		Interpretive Comprehension
32	0.270	0.603		0.029	A		Interpretive Comprehension
25	78.547	0.000	✳	0.472	B	Male	Interpretive Comprehension
17	38.571	0.000	✳	-0.375	A		Evaluative Comprehension
11	21.774	0.000	✳	-0.248	A		Evaluative Comprehension
31	17.843	0.000	✳	-0.226	A		Evaluative Comprehension
30	8.671	0.003		-0.135	A		Evaluative Comprehension
29	0.299	0.584		-0.029	A		Evaluative Comprehension
12	0.437	0.509		0.031	A		Evaluative Comprehension
27	3.069	0.080		0.089	A		Evaluative Comprehension
10	22.738	0.000	✳	-0.211	A		Literacy Analysis
24	12.289	0.000	✳	-0.170	A		Literacy Analysis
38	8.570	0.003		-0.133	A		Literacy Analysis
16	1.218	0.270		0.070	A		Literacy Analysis
33	3.500	0.061		0.083	A		Literacy Analysis
41	4.574	0.032		0.096	A		Literacy Analysis
23	4.783	0.029		0.127	A		Literacy Analysis

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Reading, Grade 4, Spring 2003
Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (1,152) **Reference Group: White Students (7,822)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
36	28.177	0.000	✳	-0.385	A		Word Analysis
34	4.764	0.029		-0.161	A		Word Analysis
20	3.502	0.061		-0.127	A		Word Analysis
13	1.913	0.167		-0.123	A		Word Analysis
35	0.444	0.505		-0.050	A		Word Analysis
26	0.032	0.858		-0.016	A		Word Analysis
18	5.134	0.023		0.184	A		Word Analysis
28	5.464	0.019		-0.175	A		Vocabulary
3	0.310	0.578		-0.042	A		Vocabulary
9	0.008	0.930		-0.017	A		Vocabulary
37	0.011	0.915		-0.011	A		Vocabulary
19	3.453	0.063		0.142	A		Vocabulary
7	14.130	0.000	✳	0.268	A		Vocabulary
42	8.139	0.004		0.269	A		Vocabulary
4	19.540	0.000	✳	-0.334	A		Literal Comprehension
15	5.294	0.021		-0.171	A		Literal Comprehension
8	5.384	0.020		-0.164	A		Literal Comprehension
2	2.762	0.097		-0.113	A		Literal Comprehension
22	0.232	0.630		0.041	A		Literal Comprehension
39	0.328	0.567		0.044	A		Literal Comprehension
6	0.571	0.450		0.062	A		Literal Comprehension
32	5.333	0.021		-0.171	A		Interpretive Comprehension
40	2.923	0.087		-0.128	A		Interpretive Comprehension
1	0.913	0.339		-0.087	A		Interpretive Comprehension
5	0.062	0.803		0.021	A		Interpretive Comprehension
25	9.374	0.002		0.225	A		Interpretive Comprehension
21	8.605	0.003		0.255	A		Interpretive Comprehension
14	11.495	0.001	✳	0.348	A		Interpretive Comprehension
30	5.119	0.024		-0.162	A		Evaluative Comprehension
12	0.665	0.451		-0.061	A		Evaluative Comprehension
29	0.001	0.972		0.005	A		Evaluative Comprehension
11	0.019	0.891		0.013	A		Evaluative Comprehension
27	10.364	0.001	✳	0.235	A		Evaluative Comprehension
31	13.859	0.000	✳	0.280	A		Evaluative Comprehension
17	45.476	0.000	✳	0.513	B	White	Evaluative Comprehension
41	7.919	0.005		-0.202	A		Literacy Analysis
24	4.872	0.027		-0.161	A		Literacy Analysis
33	0.768	0.381		-0.062	A		Literacy Analysis
10	0.093	0.760		0.025	A		Literacy Analysis
38	0.313	0.576		0.045	A		Literacy Analysis
23	21.942	0.000	✳	0.369	A		Literacy Analysis
16	22.397	0.000	✳	0.375	A		Literacy Analysis

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Language Usage, Grade 4, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,668) **Reference Group: Male Students (4,994)**

Item	Chi Square	P-Value	Log Odds Ratio	Class	Favored	Goal Area
13	17.364	0.000 ✳	-0.271	A		Composition and the Writing Process
36	9.616	0.002	-0.138	A		Composition and the Writing Process
10	6.196	0.013	-0.130	A		Composition and the Writing Process
12	0.644	0.422	-0.047	A		Composition and the Writing Process
25	2.786	0.095	0.077	A		Composition and the Writing Process
20	4.055	0.044	0.092	A		Composition and the Writing Process
28	32.532	0.000 ✳	0.268	A		Composition and the Writing Process
22	35.280	0.000 ✳	-0.260	A		Composition and Structure
39	1.124	0.289	0.049	A		Composition and Structure
27	1.668	0.197	0.056	A		Composition and Structure
30	21.604	0.000 ✳	0.238	A		Composition and Structure
29	31.213	0.000 ✳	0.246	A		Composition and Structure
1	27.789	0.000 ✳	0.252	A		Composition and Structure
15	53.421	0.000 ✳	0.365	A		Composition and Structure
26	25.829	0.000 ✳	-0.240	A		Grammar and Usage
41	1.051	0.305	0.048	A		Grammar and Usage
38	3.964	0.045	0.085	A		Grammar and Usage
6	2.164	0.141	0.099	A		Grammar and Usage
9	4.697	0.030	0.160	A		Grammar and Usage
5	17.646	0.000 ✳	0.264	A		Grammar and Usage
19	36.735	0.000 ✳	0.303	A		Grammar and Usage
21	26.978	0.000 ✳	-0.271	A		Conventions - Punctuation
8	18.972	0.000 ✳	-0.269	A		Conventions - Punctuation
18	13.217	0.000 ✳	-0.190	A		Conventions - Punctuation
34	0.578	0.447	-0.035	A		Conventions - Punctuation
4	0.000	0.998	0.002	A		Conventions - Punctuation
23	0.864	0.353	0.041	A		Conventions - Punctuation
40	0.807	0.369	0.042	A		Conventions - Punctuation
32	74.635	0.000 ✳	-0.403	A		Conventions - Capitalization
24	21.121	0.000 ✳	-0.219	A		Conventions - Capitalization
31	14.262	0.000 ✳	-0.166	A		Conventions - Capitalization
37	2.555	0.110	-0.073	A		Conventions - Capitalization
11	0.714	0.398	-0.057	A		Conventions - Capitalization
17	0.320	0.572	-0.025	A		Conventions - Capitalization
3	0.031	0.861	0.009	A		Conventions - Capitalization
2	10.499	0.001 ✳	-0.139	A		Conventions - Spelling
7	2.135	0.144	-0.077	A		Conventions - Spelling
16	1.251	0.263	-0.053	A		Conventions - Spelling
14	0.055	0.815	-0.014	A		Conventions - Spelling
35	1.214	0.271	0.048	A		Conventions - Spelling
33	3.719	0.054	0.097	A		Conventions - Spelling
42	8.530	0.003	0.126	A		Conventions - Spelling

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Languge Usage, Grade 4, Spring 2003
Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (1.168) **Reference Group: White Students (7,924)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
10	1.203	0.273		-0.085	A		Composition and the Writing Process
36	0.498	0.480		-0.054	A		Composition and the Writing Process
13	0.019	0.891		-0.015	A		Composition and the Writing Process
28	8.911	0.003		0.217	A		Composition and the Writing Process
25	10.658	0.001	✳	0.232	A		Composition and the Writing Process
20	15.002	0.000	✳	0.262	A		Composition and the Writing Process
12	22.991	0.000	✳	0.366	A		Composition and the Writing Process
22	1.795	0.180		-0.093	A		Composition and Structure
39	0.004	0.947		-0.007	A		Composition and Structure
30	0.277	0.599		0.042	A		Composition and Structure
29	0.708	0.400		0.062	A		Composition and Structure
1	3.559	0.059		0.135	A		Composition and Structure
27	7.590	0.006		0.193	A		Composition and Structure
15	26.664	0.000	✳	0.369	A		Composition and Structure
38	20.289	0.000	✳	-0.302	A		Grammar and Usage
6	0.835	0.361		-0.087	A		Grammar and Usage
41	1.005	0.316		0.072	A		Grammar and Usage
26	1.141	0.285		0.077	A		Grammar and Usage
19	7.926	0.005		0.204	A		Grammar and Usage
9	22.188	0.000	✳	0.427	B	White	Grammar and Usage
5	49.976	0.000	✳	0.562	B	White	Grammar and Usage
34	0.094	0.759		-0.025	A		Conventions - Punctuation
8	0.001	0.969		0.007	A		Conventions - Punctuation
23	0.021	0.885		0.012	A		Conventions - Punctuation
18	0.533	0.465		0.056	A		Conventions - Punctuation
21	2.358	0.125		0.116	A		Conventions - Punctuation
40	3.818	0.051		0.153	A		Conventions - Punctuation
4	4.008	0.045		0.181	A		Conventions - Punctuation
37	5.880	0.015		-0.173	A		Conventions - Capitalization
24	3.331	0.068		-0.132	A		Conventions - Capitalization
3	1.854	0.173		-0.098	A		Conventions - Capitalization
32	1.658	0.198		-0.095	A		Conventions - Capitalization
17	1.052	0.305		-0.071	A		Conventions - Capitalization
11	0.369	0.543		-0.057	A		Conventions - Capitalization
31	3.996	0.046		0.139	A		Conventions - Capitalization
16	29.503	0.000	✳	-0.390	A		Conventions - Spelling
14	10.915	0.001	✳	-0.268	A		Conventions - Spelling
7	11.540	0.001	✳	-0.258	A		Conventions - Spelling
35	9.302	0.002		-0.210	A		Conventions - Spelling
2	9.249	0.002		-0.209	A		Conventions - Spelling
42	5.872	0.015		-0.167	A		Conventions - Spelling
33	1.838	0.175		-0.116	A		Conventions - Spelling

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Mathematics, Grade 4, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,645) **Reference Group: Male Students (4,976)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
14	16.666	0.000	✳	-0.218	A		Number Sense
2	1.142	0.285		-0.102	A		Number Sense
38	1.207	0.272		0.062	A		Number Sense
19	9.045	0.003		0.162	A		Number Sense
27	13.578	0.000	✳	0.171	A		Number Sense
10	19.250	0.000	✳	0.192	A		Number Sense
9	41.545	0.000	✳	-0.423	A		Estimation and Computation
40	16.682	0.000	✳	-0.201	A		Estimation and Computation
33	11.258	0.001	✳	-0.163	A		Estimation and Computation
24	8.307	0.004		-0.145	A		Estimation and Computation
28	5.904	0.015		-0.133	A		Estimation and Computation
3	1.222	0.269		0.081	A		Estimation and Computation
18	10.972	0.001	✳	-0.195	A		Math Reasoning and Problem Solving
12	4.856	0.028		-0.101	A		Math Reasoning and Problem Solving
29	0.600	0.439		-0.037	A		Math Reasoning and Problem Solving
15	1.470	0.225		0.090	A		Math Reasoning and Problem Solving
32	38.988	0.000	✳	0.289	A		Math Reasoning and Problem Solving
39	30.553	0.000	✳	0.291	A		Math Reasoning and Problem Solving
7	21.313	0.000	✳	-0.290	A		Measurement
17	10.369	0.001	✳	-0.144	A		Measurement
22	0.358	0.549		0.028	A		Measurement
42	7.150	0.007		0.128	A		Measurement
6	4.492	0.034		0.134	A		Measurement
34	87.523	0.000	✳	0.467	B	Male	Measurement
5	26.186	0.000	✳	-0.460	B	Female	Algebra, Functions and Math Models
37	14.753	0.000	✳	-0.169	A		Algebra, Functions and Math Models
16	0.404	0.525		-0.038	A		Algebra, Functions and Math Models
26	0.105	0.746		0.017	A		Algebra, Functions and Math Models
41	4.059	0.044		0.099	A		Algebra, Functions and Math Models
11	9.737	0.002		0.175	A		Algebra, Functions and Math Models
1	16.053	0.000	✳	-0.293	A		Geometry
30	8.848	0.003		-0.164	A		Geometry
13	0.952	0.329		-0.047	A		Geometry
25	0.013	0.908		-0.006	A		Geometry
20	0.045	0.832		0.012	A		Geometry
36	0.200	0.655		0.020	A		Geometry
35	1.907	0.167		-0.064	A		Data Analysis, Probability and Stats
4	0.012	0.914		0.008	A		Data Analysis, Probability and Stats
31	0.378	0.539		0.030	A		Data Analysis, Probability and Stats
23	6.561	0.010		0.130	A		Data Analysis, Probability and Stats
21	6.324	0.012		0.237	A		Data Analysis, Probability and Stats
8	20.146	0.000	✳	0.269	A		Data Analysis, Probability and Stats

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Mathematics, Grade 4, Spring 2003
Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (1,163) **Reference Group: White Students (7,890)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
38	2.625	0.105		-0.152	A		Number Sense
2	0.323	0.570		-0.075	A		Number Sense
14	0.016	0.900		-0.013	A		Number Sense
27	0.006	0.940		0.008	A		Number Sense
10	2.735	0.098		0.114	A		Number Sense
19	3.161	0.075		0.137	A		Number Sense
9	13.361	0.000	✳	-0.349	A		Estimation and Computation
28	7.659	0.006		-0.218	A		Estimation and Computation
33	6.255	0.012		-0.184	A		Estimation and Computation
40	1.689	0.194		-0.108	A		Estimation and Computation
3	0.231	0.631		0.049	A		Estimation and Computation
24	0.360	0.548		0.054	A		Estimation and Computation
39	1.967	0.161		-0.128	A		Math Reasoning and Problem Solving
18	1.204	0.273		-0.094	A		Math Reasoning and Problem Solving
32	0.019	0.890		-0.012	A		Math Reasoning and Problem Solving
12	0.001	0.976		-0.004	A		Math Reasoning and Problem Solving
15	0.509	0.476		0.074	A		Math Reasoning and Problem Solving
29	9.965	0.002		0.227	A		Math Reasoning and Problem Solving
42	0.039	0.843		0.019	A		Measurement
22	3.010	0.083		0.126	A		Measurement
7	11.061	0.001	✳	0.277	A		Measurement
17	17.263	0.000	✳	0.298	A		Measurement
34	26.744	0.000	✳	0.413	A		Measurement
6	32.910	0.000	✳	0.464	B	White	Measurement
11	11.893	0.001	✳	-0.281	A		Algebra, Functions and Math Models
16	6.075	0.014		-0.201	A		Algebra, Functions and Math Models
41	0.925	0.336		-0.073	A		Algebra, Functions and Math Models
26	0.572	0.449		-0.061	A		Algebra, Functions and Math Models
5	0.003	0.955		0.000	A		Algebra, Functions and Math Models
37	2.635	0.105		0.114	A		Algebra, Functions and Math Models
13	11.740	0.001	✳	-0.269	A		Geometry
25	2.266	0.132		-0.115	A		Geometry
20	9.690	0.325		-0.078	A		Geometry
30	0.009	0.927		0.010	A		Geometry
1	0.316	0.574		0.060	A		Geometry
36	0.928	0.336		0.067	A		Geometry
35	29.594	0.000	✳	-0.387	A		Data Analysis, Probability and Stats
4	0.202	0.653		-0.042	A		Data Analysis, Probability and Stats
8	1.071	0.301		0.090	A		Data Analysis, Probability and Stats
31	8.441	0.004		0.202	A		Data Analysis, Probability and Stats
23	7.598	0.006		0.203	A		Data Analysis, Probability and Stats
21	3.624	0.057		0.217	A		Data Analysis, Probability and Stats

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Reading, Grade 8, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,708) **Reference Group: Male Students (4,880)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
35	0.063	0.802		-0.018	A		Word Analysis
2	0.157	0.692		0.018	A		Word Analysis
40	1.194	0.275		0.051	A		Word Analysis
1	28.762	0.000	✳	0.266	A		Word Analysis
19	35.336	0.000	✳	0.307	A		Word Analysis
32	67.971	0.000	✳	0.375	A		Word Analysis
20	114.971	0.000	✳	0.535	B	Male	Word Analysis
39	37.072	0.000	✳	-0.338	A		Vocabulary
36	7.109	0.008		-0.205	A		Vocabulary
17	4.578	0.032		-0.093	A		Vocabulary
14	0.022	0.882		-0.008	A		Vocabulary
31	11.870	0.001	✳	0.169	A		Vocabulary
12	12.824	0.000	✳	0.194	A		Vocabulary
42	107.303	0.000	✳	0.516	B	Male	Vocabulary
8	58.472	0.000	✳	-0.347	A		Literal Comprehension
27	18.603	0.000	✳	-0.201	A		Literal Comprehension
18	9.495	0.002		-0.140	A		Literal Comprehension
3	0.736	0.391		-0.052	A		Literal Comprehension
28	6.954	0.008		0.116	A		Literal Comprehension
30	14.648	0.000	✳	0.174	A		Literal Comprehension
13	12.817	0.000	✳	0.175	A		Literal Comprehension
29	6.027	0.014		-0.159	A		Interpretive Comprehension
6	4.879	0.027		-0.105	A		Interpretive Comprehension
25	2.792	0.095		-0.093	A		Interpretive Comprehension
11	0.756	0.385		-0.047	A		Interpretive Comprehension
10	0.483	0.487		0.031	A		Interpretive Comprehension
26	0.349	0.555		0.034	A		Interpretive Comprehension
16	76.602	0.000	✳	0.400	A		Interpretive Comprehension
4	17.653	0.000	✳	-0.351	A		Evaluative Comprehension
9	14.970	0.000	✳	-0.187	A		Evaluative Comprehension
23	15.505	0.000	✳	-0.172	A		Evaluative Comprehension
15	3.530	0.060		-0.091	A		Evaluative Comprehension
5	0.927	0.336		-0.049	A		Evaluative Comprehension
21	1.163	0.281		0.052	A		Evaluative Comprehension
22	11.488	0.001	✳	0.157	A		Evaluative Comprehension
7	88.085	0.000	✳	-0.410	A		Literacy Analysis
33	55.505	0.000	✳	-0.315	A		Literacy Analysis
37	33.364	0.000	✳	-0.244	A		Literacy Analysis
24	17.369	0.000	✳	-0.206	A		Literacy Analysis
41	11.555	0.001	✳	-0.151	A		Literacy Analysis
34	2.909	0.088		-0.121	A		Literacy Analysis
38	0.009	0.923		0.006	A		Literacy Analysis

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Reading, Grade 8, Spring 2003
Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (891) **Reference Group: White Students (8,151)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
32	5.541	0.019		-0.198	A		Word Analysis
1	0.196	0.658		-0.039	A		Word Analysis
40	0.050	0.822		0.021	A		Word Analysis
2	1.029	0.310		0.080	A		Word Analysis
35	0.729	0.393		0.086	A		Word Analysis
19	2.047	0.153		0.136	A		Word Analysis
20	5.641	0.018		0.194	A		Word Analysis
14	2.920	0.087		-0.158	A		Vocabulary
12	0.488	0.485		-0.082	A		Vocabulary
31	0.488	0.485		-0.060	A		Vocabulary
17	0.462	0.497		-0.056	A		Vocabulary
42	0.388	0.533		-0.055	A		Vocabulary
39	0.000	0.995		0.003	A		Vocabulary
36	90.201	0.000	✳	0.903	C	White	Vocabulary
28	25.956	0.000	✳	-0.399	A		Literal Comprehension
3	5.799	0.016		-0.222	A		Literal Comprehension
27	3.331	0.068		-0.163	A		Literal Comprehension
8	0.714	0.398		-0.068	A		Literal Comprehension
18	0.439	0.508		-0.059	A		Literal Comprehension
13	0.000	0.999		0.004	A		Literal Comprehension
30	0.040	0.841		0.019	A		Literal Comprehension
6	20.288	0.000	✳	-0.369	A		Interpretive Comprehension
10	9.268	0.002		-0.245	A		Interpretive Comprehension
25	0.033	0.855		0.019	A		Interpretive Comprehension
11	0.732	0.392		0.075	A		Interpretive Comprehension
16	1.095	0.295		0.089	A		Interpretive Comprehension
26	3.825	0.050		0.171	A		Interpretive Comprehension
29	25.636	0.000	✳	0.446	B	White	Interpretive Comprehension
5	0.331	0.565		0.051	A		Evaluative Comprehension
15	0.896	0.344		0.081	A		Evaluative Comprehension
9	1.508	0.219		0.101	A		Evaluative Comprehension
22	3.201	0.074		0.154	A		Evaluative Comprehension
23	7.753	0.005		0.235	A		Evaluative Comprehension
4	7.112	0.008		0.279	A		Evaluative Comprehension
21	20.746	0.000	✳	0.352	A		Evaluative Comprehension
38	3.944	0.047		-0.172	A		Literacy Analysis
24	1.738	0.187		-0.111	A		Literacy Analysis
7	0.510	0.475		-0.057	A		Literacy Analysis
37	0.410	0.522		0.052	A		Literacy Analysis
33	1.885	0.170		0.107	A		Literacy Analysis
41	2.122	0.145		0.124	A		Literacy Analysis
34	8.593	0.003		0.290	A		Literacy Analysis

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Language Usage, Grade 8, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,740) **Reference Group: Male Students (4,919)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
8	8.770	0.003		-0.189	A		Composition and the Writing Process
19	12.164	0.000	✳	-0.164	A		Composition and the Writing Process
17	0.163	0.686		-0.027	A		Composition and the Writing Process
35	0.249	0.618		-0.024	A		Composition and the Writing Process
5	1.870	0.172		0.093	A		Composition and the Writing Process
41	9.069	0.003		0.144	A		Composition and the Writing Process
21	36.421	0.000	✳	0.282	A		Composition and the Writing Process
4	19.255	0.000	✳	-0.293	A		Composition and Structure
16	14.202	0.000	✳	-0.198	A		Composition and Structure
11	10.421	0.001	✳	-0.169	A		Composition and Structure
15	0.515	0.473		-0.035	A		Composition and Structure
33	3.348	0.067		0.084	A		Composition and Structure
10	2.282	0.131		0.088	A		Composition and Structure
38	52.836	0.000	✳	0.337	A		Composition and Structure
40	0.141	0.707		-0.018	A		Grammar and Usage
30	0.069	0.793		-0.012	A		Grammar and Usage
9	0.006	0.938		0.008	A		Grammar and Usage
27	9.485	0.002		0.138	A		Grammar and Usage
42	8.115	0.004		0.168	A		Grammar and Usage
36	44.848	0.000	✳	0.303	A		Grammar and Usage
12	42.800	0.000	✳	0.375	A		Grammar and Usage
18	18.559	0.000	✳	-0.273	A		Conventions - Punctuation
26	8.066	0.005		-0.129	A		Conventions - Punctuation
22	6.495	0.011		-0.124	A		Conventions - Punctuation
34	0.083	0.774		0.014	A		Conventions - Punctuation
7	0.221	0.638		0.027	A		Conventions - Punctuation
28	2.442	0.118		0.070	A		Conventions - Punctuation
39	12.193	0.000	✳	0.161	A		Conventions - Punctuation
2	36.038	0.000	✳	-0.468	B	Female	Conventions - Capitalization
1	4.254	0.039		-0.141	A		Conventions - Capitalization
13	2.495	0.114		-0.080	A		Conventions - Capitalization
37	1.507	0.220		-0.056	A		Conventions - Capitalization
32	0.006	0.940		-0.005	A		Conventions - Capitalization
24	0.054	0.817		0.011	A		Conventions - Capitalization
25	7.373	0.007		0.150	A		Conventions - Capitalization
3	47.465	0.000	✳	-0.506	B	Female	Conventions - Spelling
14	89.946	0.000	✳	-0.456	B	Female	Conventions - Spelling
29	43.519	0.000	✳	-0.306	A		Conventions - Spelling
6	19.869	0.000	✳	-0.264	A		Conventions - Spelling
23	3.587	0.058		-0.088	A		Conventions - Spelling
20	3.250	0.071		0.084	A		Conventions - Spelling
31	14.644	0.000	✳	0.173	A		Conventions - Spelling

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Language Usage, Grade 8, Spring 2003
Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (907) **Reference Group: White Students (8,204)**

Item	Chi Square	P-Value	Log Odds Ratio	Class	Favored	Goal Area
41	0.250	0.617	-0.046	A		Composition and the Writing Process
19	0.091	0.763	0.027	A		Composition and the Writing Process
35	0.181	0.670	0.037	A		Composition and the Writing Process
21	7.366	0.007	0.204	A		Composition and the Writing Process
5	11.085	0.001 ✳	0.322	A		Composition and the Writing Process
17	14.796	0.000 ✳	0.346	A		Composition and the Writing Process
8	102.345	0.000 ✳	0.861	C	White	Composition and the Writing Process
15	3.697	0.055	-0.163	A		Composition and Structure
33	0.199	0.656	-0.040	A		Composition and Structure
16	2.221	0.136	0.123	A		Composition and Structure
4	1.747	0.186	0.127	A		Composition and Structure
10	4.108	0.043	0.183	A		Composition and Structure
11	9.132	0.003	0.241	A		Composition and Structure
38	9.413	0.002	0.270	A		Composition and Structure
36	14.294	0.000 ✳	-0.296	A		Grammar and Usage
27	3.453	0.063	-0.147	A		Grammar and Usage
40	2.766	0.096	-0.130	A		Grammar and Usage
42	0.004	0.947	-0.013	A		Grammar and Usage
30	2.853	0.091	0.133	A		Grammar and Usage
9	4.278	0.039	0.198	A		Grammar and Usage
12	67.981	0.000 ✳	0.663	C	White	Grammar and Usage
34	8.882	0.003	-0.226	A		Conventions - Punctuation
39	1.877	0.171	-0.112	A		Conventions - Punctuation
28	0.249	0.618	-0.041	A		Conventions - Punctuation
22	0.721	0.396	0.075	A		Conventions - Punctuation
7	1.086	0.297	0.089	A		Conventions - Punctuation
18	9.684	0.002	0.281	A		Conventions - Punctuation
26	16.219	0.000 ✳	0.308	A		Conventions - Punctuation
24	4.890	0.027	-0.166	A		Conventions - Capitalization
37	3.680	0.055	-0.152	A		Conventions - Capitalization
2	1.668	0.196	-0.144	A		Conventions - Capitalization
32	0.041	0.840	-0.019	A		Conventions - Capitalization
13	0.034	0.854	-0.018	A		Conventions - Capitalization
1	0.000	0.984	0.007	A		Conventions - Capitalization
25	1.174	0.279	0.095	A		Conventions - Capitalization
14	25.414	0.000 ✳	-0.411	A		Conventions - Spelling
23	12.919	0.000 ✳	-0.281	A		Conventions - Spelling
20	10.335	0.001 ✳	-0.252	A		Conventions - Spelling
31	5.163	0.023	-0.176	A		Conventions - Spelling
3	0.475	0.491	-0.075	A		Conventions - Spelling
6	0.143	0.705	-0.038	A		Conventions - Spelling
29	0.127	0.722	-0.032	A		Conventions - Spelling

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Mathematics, Grade 8, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,667) **Reference Group: Male Students (4,822)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
3	31.526	0.000	✳	-0.340	A		Number Sense
17	13.406	0.000	✳	-0.180	A		Number Sense
41	0.818	0.366		-0.048	A		Number Sense
30	0.039	0.843		-0.010	A		Number Sense
24	7.792	0.005		0.147	A		Number Sense
36	40.778	0.000	✳	0.298	A		Number Sense
35	76.674	0.000	✳	0.418	A		Number Sense
25	35.405	0.000	✳	-0.330	A		Estimation and Computation
32	41.410	0.000	✳	-0.313	A		Estimation and Computation
28	33.361	0.000	✳	-0.291	A		Estimation and Computation
40	25.910	0.000	✳	-0.254	A		Estimation and Computation
31	7.366	0.007		-0.136	A		Estimation and Computation
39	10.755	0.001	✳	0.152	A		Estimation and Computation
26	13.020	0.000	✳	-0.172	A		Math Reasoning and Problem Solving
10	3.850	0.050		-0.099	A		Math Reasoning and Problem Solving
42	1.498	0.221		-0.063	A		Math Reasoning and Problem Solving
34	5.275	0.022		0.106	A		Math Reasoning and Problem Solving
33	11.233	0.001	✳	0.160	A		Math Reasoning and Problem Solving
38	22.641	0.000	✳	0.236	A		Math Reasoning and Problem Solving
19	71.185	0.000	✳	0.441	B	Male	Math Reasoning and Problem Solving
27	1.691	0.194		0.064	A		Measurement
16	3.057	0.080		0.084	A		Measurement
21	15.648	0.000	✳	0.206	A		Measurement
18	23.790	0.000	✳	0.228	A		Measurement
11	73.288	0.000	✳	0.411	A		Measurement
12	76.458	0.000	✳	-0.415	A		Algebra, Functions and Math Models
14	43.682	0.000	✳	-0.296	A		Algebra, Functions and Math Models
8	22.605	0.000	✳	-0.281	A		Algebra, Functions and Math Models
22	27.580	0.000	✳	-0.247	A		Algebra, Functions and Math Models
6	6.473	0.011		-0.179	A		Algebra, Functions and Math Models
5	0.301	0.583		0.029	A		Algebra, Functions and Math Models
13	1.855	0.173		-0.065	A		Geometry
15	0.736	0.391		-0.043	A		Geometry
37	2.588	0.108		0.075	A		Geometry
1	5.100	0.024		0.136	A		Geometry
29	37.926	0.000	✳	0.334	A		Geometry
4	268.527	0.000	✳	1.055	C	Male	Geometry
2	31.929	0.000	✳	-0.395	A		Data Analysis, Probability and Stats
23	40.972	0.000	✳	-0.291	A		Data Analysis, Probability and Stats
20	9.762	0.002		-0.156	A		Data Analysis, Probability and Stats
9	1.484	0.223		0.062	A		Data Analysis, Probability and Stats
7	14.821	0.000	✳	0.221	A		Data Analysis, Probability and Stats

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Mathematics, Grade 8, Spring 2003
Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (885) **Reference Group: White Students (8,061)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
30	1.956	0.162		-0.120	A		Number Sense
17	0.047	0.829		-0.021	A		Number Sense
41	0.000	0.987		-0.006	A		Number Sense
35	0.593	0.441		0.072	A		Number Sense
36	1.414	0.234		0.110	A		Number Sense
3	3.935	0.047		0.182	A		Number Sense
24	4.892	0.027		0.188	A		Number Sense
39	6.792	0.009		-0.215	A		Estimation and Computation
25	5.169	0.023		-0.208	A		Estimation and Computation
31	2.197	0.138		-0.147	A		Estimation and Computation
32	2.149	0.143		-0.122	A		Estimation and Computation
28	0.002	0.966		0.000	A		Estimation and Computation
40	0.371	0.542		0.057	A		Estimation and Computation
26	8.351	0.004		-0.234	A		Math Reasoning and Problem Solving
10	0.636	0.425		-0.068	A		Math Reasoning and Problem Solving
33	0.341	0.559		-0.051	A		Math Reasoning and Problem Solving
42	0.068	0.795		-0.030	A		Math Reasoning and Problem Solving
38	0.970	0.325		0.099	A		Math Reasoning and Problem Solving
34	9.227	0.002		0.256	A		Math Reasoning and Problem Solving
19	23.442	0.000	✳	0.444	B	White	Math Reasoning and Problem Solving
11	4.707	0.030		-0.183	A		Measurement
21	2.093	0.148		-0.142	A		Measurement
18	1.548	0.213		-0.111	A		Measurement
16	0.598	0.439		-0.071	A		Measurement
27	3.356	0.067		0.148	A		Measurement
5	1.916	0.166		-0.119	A		Algebra, Functions and Math Models
22	0.860	0.354		-0.088	A		Algebra, Functions and Math Models
12	0.006	0.936		0.010	A		Algebra, Functions and Math Models
8	0.892	0.345		0.087	A		Algebra, Functions and Math Models
6	1.254	0.263		0.110	A		Algebra, Functions and Math Models
14	2.086	0.149		0.116	A		Algebra, Functions and Math Models
37	1.563	0.211		-0.108	A		Geometry
15	0.157	0.592		-0.043	A		Geometry
13	1.722	0.189		0.108	A		Geometry
1	3.132	0.077		0.160	A		Geometry
29	10.485	0.001	✳	0.274	A		Geometry
4	37.549	0.000	✳	0.542	B	White	Geometry
2	8.999	0.003		-0.322	A		Data Analysis, Probability and Stats
23	2.924	0.087		-0.145	A		Data Analysis, Probability and Stats
20	0.438	0.508		0.060	A		Data Analysis, Probability and Stats
7	0.662	0.416		0.074	A		Data Analysis, Probability and Stats
9	24.498	0.000	✳	0.425	A		Data Analysis, Probability and Stats

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/42)

ISAT Reading, Grade 10, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,286) **Reference Group: Male Students (4.418)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
37	9.489	0.002		-0.159	A		Word Analysis
4	4.444	0.035		-0.117	A		Word Analysis
19	1.870	0.172		-0.066	A		Word Analysis
2	1.869	0.172		-0.060	A		Word Analysis
36	0.949	0.330		-0.060	A		Word Analysis
35	0.978	0.323		-0.051	A		Word Analysis
42	7.234	0.007		0.122	A		Word Analysis
25	7.926	0.005		0.128	A		Word Analysis
45	94.088	0.000	✳	0.462	B	Male	Word Analysis
28	19.740	0.000	✳	-0.201	A		Vocabulary
29	1.128	0.288		0.053	A		Vocabulary
52	3.462	0.063		0.094	A		Vocabulary
9	13.541	0.000	✳	0.207	A		Vocabulary
24	24.635	0.000	✳	0.268	A		Vocabulary
55	36.029	0.000	✳	0.275	A		Vocabulary
40	58.517	0.000	✳	0.383	A		Vocabulary
44	50.623	0.000	✳	0.488	B	Male	Vocabulary
12	141.888	0.000	✳	0.557	B	Male	Vocabulary
26	135.016	0.000	✳	-0.554	B	Female	Literal Comprehension
41	44.867	0.000	✳	-0.369	A		Literal Comprehension
39	23.976	0.000	✳	-0.235	A		Literal Comprehension
7	11.210	0.001		-0.177	A		Literal Comprehension
14	7.461	0.006		-0.158	A		Literal Comprehension
6	2.560	0.110		-0.098	A		Literal Comprehension
3	1.016	0.314		-0.072	A		Literal Comprehension
38	0.232	0.630		0.024	A		Literal Comprehension
27	2.126	0.145		0.066	A		Literal Comprehension
15	42.303	0.000	✳	-0.423	A		Interpretive Comprehension
16	71.237	0.000	✳	-0.400	A		Interpretive Comprehension
32	34.183	0.000	✳	-0.292	A		Interpretive Comprehension
5	34.960	0.000	✳	-0.290	A		Interpretive Comprehension
20	26.016	0.000	✳	-0.268	A		Interpretive Comprehension
43	13.046	0.000	✳	-0.192	A		Interpretive Comprehension
33	8.766	0.003		-0.135	A		Interpretive Comprehension
11	0.432	0.511		0.033	A		Interpretive Comprehension
21	34.502	0.000	✳	0.275	A		Interpretive Comprehension
1	53.089	0.000	✳	0.433	B	Male	Interpretive Comprehension

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

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ISAT Reading, Grade 10, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,286) **Reference Group: Male Students (4.418)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
8	14.936	0.000	✳	-0.252	A		Evaluative Comprehension
23	9.007	0.003		-0.133	A		Evaluative Comprehension
47	3.192	0.074		-0.089	A		Evaluative Comprehension
17	2.690	0.101		-0.087	A		Evaluative Comprehension
22	0.395	0.530		-0.039	A		Evaluative Comprehension
30	0.106	0.745		-0.019	A		Evaluative Comprehension
50	3.514	0.061		0.091	A		Evaluative Comprehension
51	5.251	0.022		0.109	A		Evaluative Comprehension
49	91.751	0.000	✳	0.550	B	Male	Evaluative Comprehension
10	47.389	0.000	✳	-0.316	A		Literacy Analysis
13	7.494	0.006		-0.127	A		Literacy Analysis
18	3.447	0.063		-0.097	A		Literacy Analysis
31	2.478	0.115		0.075	A		Literacy Analysis
34	5.045	0.025		0.105	A		Literacy Analysis
46	4.323	0.038		0.106	A		Literacy Analysis
48	11.762	0.001		0.167	A		Literacy Analysis
53	12.416	0.000	✳	0.169	A		Literacy Analysis
54	25.426	0.000	✳	0.245	A		Literacy Analysis

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

ISAT Reading, Grade 10, Spring 2003
Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (769) **Reference Group: White Students (7,539)**

Item	Chi Square	P-Value	Log Odds Ratio	Class	Favored	Goal Area
2	36.890	0.000 ✳	-0.492	B	Hispanic	Word Analysis
36	7.587	0.006	-0.272	A		Word Analysis
45	6.170	0.013	-0.217	A		Word Analysis
19	5.651	0.017	-0.206	A		Word Analysis
35	1.189	0.276	-0.097	A		Word Analysis
4	0.992	0.319	-0.096	A		Word Analysis
42	0.409	0.522	-0.057	A		Word Analysis
37	1.299	0.254	0.103	A		Word Analysis
25	1.720	0.190	0.112	A		Word Analysis
52	2.034	0.154	-0.145	A		Vocabulary
9	0.096	0.756	0.032	A		Vocabulary
55	0.816	0.366	0.081	A		Vocabulary
28	1.672	0.196	0.112	A		Vocabulary
29	1.534	0.215	0.117	A		Vocabulary
40	20.249	0.000 ✳	0.392	A		Vocabulary
44	31.451	0.000 ✳	0.525	B	White	Vocabulary
12	40.878	0.000 ✳	0.537	B	White	Vocabulary
24	51.097	0.000 ✳	0.673	C	White	Vocabulary
39	4.237	0.040	-0.183	A		Literal Comprehension
26	3.628	0.057	-0.168	A		Literal Comprehension
38	0.817	0.366	-0.082	A		Literal Comprehension
41	0.417	0.519	-0.063	A		Literal Comprehension
14	0.046	0.829	-0.024	A		Literal Comprehension
3	0.149	0.699	0.044	A		Literal Comprehension
6	0.603	0.437	0.075	A		Literal Comprehension
27	0.851	0.356	0.083	A		Literal Comprehension
7	4.923	0.026	0.195	A		Literal Comprehension
5	19.001	0.000 ✳	-0.377	A		Interpretive Comprehension
16	7.003	0.008	-0.229	A		Interpretive Comprehension
33	3.543	0.060	-0.161	A		Interpretive Comprehension
43	2.427	0.119	-0.141	A		Interpretive Comprehension
32	1.570	0.210	-0.126	A		Interpretive Comprehension
21	0.153	0.696	-0.035	A		Interpretive Comprehension
20	0.001	0.973	-0.007	A		Interpretive Comprehension
11	0.203	0.652	0.042	A		Interpretive Comprehension
15	0.391	0.532	0.065	A		Interpretive Comprehension
1	4.055	0.044	0.186	A		Interpretive Comprehension

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

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ISAT Reading, Grade 10, Spring 2003

Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (769) **Reference Group: White Students (7,539)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
50	3.157	0.076		-0.165	A		Evaluative Comprehension
51	0.062	0.803		-0.027	A		Evaluative Comprehension
30	0.014	0.905		-0.014	A		Evaluative Comprehension
17	0.000	0.987		0.005	A		Evaluative Comprehension
47	0.095	0.758		0.031	A		Evaluative Comprehension
23	0.004	0.267		0.096	A		Evaluative Comprehension
49	0.532	0.466		0.099	A		Evaluative Comprehension
22	1.118	0.290		0.102	A		Evaluative Comprehension
8	26.431	0.000	✳	0.494	B	White	Evaluative Comprehension
34	4.579	0.032		-0.207	A		Literacy Analysis
31	4.403	0.036		-0.183	A		Literacy Analysis
46	3.319	0.068		-0.170	A		Literacy Analysis
18	2.256	0.133		-0.129	A		Literacy Analysis
53	2.332	0.127		0.144	A		Literacy Analysis
13	4.435	0.035		0.187	A		Literacy Analysis
48	4.414	0.036		0.188	A		Literacy Analysis
10	23.548	0.000	✳	0.412	A		Literacy Analysis
54	25.452	0.000	✳	0.451	B	White	Literacy Analysis

Items are sorted within goal areas on the log odds ratio.

✳ = significant following a Bonferonni correction (i.e., critical value is .05/55)

ISAT Language Usage, Grade 10, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,405) **Reference Group: Male Students (4,515)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
54	22.029	0.000	✳	-0.215	A		Composition and the Writing Process
38	6.666	0.010		-0.121	A		Composition and the Writing Process
1	0.806	0.369		-0.076	A		Composition and the Writing Process
26	0.298	0.585		-0.029	A		Composition and the Writing Process
40	0.040	0.842		-0.010	A		Composition and the Writing Process
9	0.631	0.427		0.037	A		Composition and the Writing Process
10	1.707	0.191		0.095	A		Composition and the Writing Process
17	1.618	0.203		0.097	A		Composition and the Writing Process
7	8.864	0.003		0.142	A		Composition and the Writing Process
21	26.813	0.000	✳	0.238	A		Composition and the Writing Process
14	83.088	0.000	✳	-0.456	B	Female	Composition and Structure
56	21.341	0.000	✳	-0.204	A		Composition and Structure
15	5.791	0.016		-0.128	A		Composition and Structure
41	0.061	0.804		-0.013	A		Composition and Structure
24	0.008	0.930		0.006	A		Composition and Structure
30	0.012	0.911		0.008	A		Composition and Structure
55	0.182	0.670		0.025	A		Composition and Structure
43	1.948	0.163		0.084	A		Composition and Structure
29	8.539	0.003		0.139	A		Composition and Structure
3	13.308	0.000	✳	-0.291	A		Grammar and Usage
46	8.540	0.003		-0.137	A		Grammar and Usage
51	5.515	0.019		-0.125	A		Grammar and Usage
47	0.452	0.501		-0.033	A		Grammar and Usage
37	5.774	0.016		0.106	A		Grammar and Usage
33	6.400	0.011		0.117	A		Grammar and Usage
6	13.926	0.000	✳	0.184	A		Grammar and Usage
49	16.574	0.000	✳	0.225	A		Grammar and Usage
22	19.293	0.000	✳	0.241	A		Grammar and Usage
35	64.004	0.000	✳	0.385	A		Grammar and Usage
16	16.339	0.000	✳	-0.202	A		Conventions - Punctuation
48	15.573	0.000	✳	-0.184	A		Conventions - Punctuation
27	4.404	0.036		-0.103	A		Conventions - Punctuation
45	1.435	0.231		-0.062	A		Conventions - Punctuation
20	0.774	0.379		0.050	A		Conventions - Punctuation
44	1.788	0.181		0.063	A		Conventions - Punctuation
32	4.920	0.027		0.123	A		Conventions - Punctuation
13	19.605	0.001		0.170	A		Conventions - Punctuation
34	16.073	0.000	✳	0.179	A		Conventions - Punctuation

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/56)

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ISAT Language Usage, Grade 10, Spring 2003
Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,405) **Reference Group: Male Students (4,515)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
2	10.717	0.001		-0.189	A		Conventions - Capitalization
42	7.497	0.006		-0.130	A		Conventions - Capitalization
28	1.863	0.172		-0.061	A		Conventions - Capitalization
11	0.474	0.491		0.046	A		Conventions - Capitalization
50	1.997	0.158		0.070	A		Conventions - Capitalization
19	2.468	0.116		0.073	A		Conventions - Capitalization
5	3.571	0.059		0.142	A		Conventions - Capitalization
53	22.149	0.000	✳	0.249	A		Conventions - Capitalization
23	28.606	0.000	✳	0.272	A		Conventions - Capitalization
18	80.334	0.000	✳	-0.705	C	Female	Conventions - Spelling
25	29.741	0.000	✳	-0.250	A		Conventions - Spelling
31	13.463	0.000	✳	-0.175	A		Conventions - Spelling
39	6.255	0.012		-0.117	A		Conventions - Spelling
12	5.369	0.021		-0.113	A		Conventions - Spelling
36	5.470	0.019		-0.109	A		Conventions - Spelling
4	0.575	0.448		0.048	A		Conventions - Spelling
52	3.729	0.053		0.095	A		Conventions - Spelling
8	3.634	0.057		0.118	A		Conventions - Spelling

Items are sorted within goal areas on the log odds ratio.

✳ = significant following a Bonferonni correction (i.e., critical value is .05/56)

ISAT Language Usage, Grade 10, Spring 2003

Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (790) **Reference Group: White Students (7,730)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
38	13.427	0.000	✳	-0.302	A		Composition and the Writing Process
54	1.603	0.205		-0.108	A		Composition and the Writing Process
40	0.062	0.803		0.024	A		Composition and the Writing Process
21	0.479	0.489		0.059	A		Composition and the Writing Process
7	0.596	0.440		0.068	A		Composition and the Writing Process
26	2.532	0.112		0.140	A		Composition and the Writing Process
9	4.726	0.030		0.183	A		Composition and the Writing Process
10	12.720	0.000	✳	0.363	A		Composition and the Writing Process
17	21.239	0.000	✳	0.464	B	White	Composition and the Writing Process
1	42.786	0.000	✳	0.719	C	White	Composition and the Writing Process
14	17.191	0.000	✳	-0.367	A		Composition and Structure
41	4.095	0.043		-0.173	A		Composition and Structure
15	0.002	0.955		-0.007	A		Composition and Structure
55	0.005	0.945		0.012	A		Composition and Structure
56	2.452	0.117		0.131	A		Composition and Structure
29	3.516	0.061		0.158	A		Composition and Structure
43	6.263	0.012		0.231	A		Composition and Structure
24	8.772	0.003		0.262	A		Composition and Structure
30	8.989	0.003		0.271	A		Composition and Structure
46	10.064	0.002		-0.263	A		Grammar and Usage
49	2.195	0.138		-0.156	A		Grammar and Usage
47	0.699	0.403		-0.076	A		Grammar and Usage
3	0.074	0.789		-0.035	A		Grammar and Usage
37	0.058	0.809		-0.022	A		Grammar and Usage
33	0.243	0.622		0.042	A		Grammar and Usage
35	2.750	0.097		0.153	A		Grammar and Usage
6	8.712	0.003		0.246	A		Grammar and Usage
51	5.755	0.016		0.265	A		Grammar and Usage
22	32.509	0.000	✳	0.495	B	White	Grammar and Usage
48	5.435	0.020		-0.194	A		Conventions - Punctuation
27	1.804	0.179		-0.115	A		Conventions - Punctuation
16	0.011	0.918		-0.012	A		Conventions - Punctuation
44	0.008	0.930		0.011	A		Conventions - Punctuation
34	9.215	0.002		0.254	A		Conventions - Punctuation
45	8.588	0.003		0.285	A		Conventions - Punctuation
13	13.206	0.000	✳	0.305	A		Conventions - Punctuation
20	23.125	0.000	✳	0.427	B	White	Conventions - Punctuation
32	21.610	0.000	✳	0.497	B	White	Conventions - Punctuation

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/56)

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ISAT Language Usage, Grade 10, Spring 2003

Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (790) **Reference Group: White Students (7,730)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
50	40.396	0.000	✳	-0.571	B	Hispanic	Conventions - Capitalization
28	1.786	0.181		-0.110	A		Conventions - Capitalization
23	0.561	0.454		-0.068	A		Conventions - Capitalization
19	0.150	0.698		0.037	A		Conventions - Capitalization
2	1.121	0.290		0.100	A		Conventions - Capitalization
42	6.152	0.013		0.224	A		Conventions - Capitalization
11	9.313	0.002		0.290	A		Conventions - Capitalization
5	9.151	0.002		0.331	A		Conventions - Capitalization
53	19.610	0.000	✳	0.496	B	White	Conventions - Capitalization
25	91.886	0.000	✳	-0.757	C	Hispanic	Conventions - Spelling
12	15.246	0.000	✳	-0.333	A		Conventions - Spelling
36	14.627	0.000	✳	-0.314	A		Conventions - Spelling
31	10.141	0.001		-0.263	A		Conventions - Spelling
39	2.476	0.116		-0.135	A		Conventions - Spelling
4	0.323	0.570		-0.060	A		Conventions - Spelling
18	0.006	0.939		-0.014	A		Conventions - Spelling
52	0.000	0.988		0.006	A		Conventions - Spelling
8	0.005	0.946		0.011	A		Conventions - Spelling

Items are sorted within goal areas on the log odds ratio.

✳ = significant following a Bonferonni correction (i.e., critical value is .05/56)

ISAT Mathematics, Grade 10, Spring 2003

Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,243) **Reference Group: Male Students (4,396)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
56	22.597	0.000	✳	-0.247	A		Estimation and Computation
58	17.390	0.000	✳	-0.202	A		Estimation and Computation
60	7.824	0.005		-0.156	A		Estimation and Computation
57	4.632	0.031		-0.117	A		Estimation and Computation
33	2.180	0.140		-0.073	A		Estimation and Computation
48	0.998	0.318		-0.056	A		Estimation and Computation
5	0.220	0.639		0.026	A		Estimation and Computation
52	0.419	0.518		0.039	A		Estimation and Computation
32	3.966	0.046		0.100	A		Estimation and Computation
53	52.328	0.000	✳	0.380	A		Estimation and Computation
51	83.375	0.000	✳	0.496	B	Male	Estimation and Computation
37	42.407	0.000	✳	-0.345	A		Math Reasoning and Problem Solving
23	0.194	0.659		-0.022	A		Math Reasoning and Problem Solving
15	0.041	0.839		0.012	A		Math Reasoning and Problem Solving
43	4.364	0.037		0.107	A		Math Reasoning and Problem Solving
42	6.866	0.009		0.128	A		Math Reasoning and Problem Solving
47	6.083	0.014		0.224	A		Math Reasoning and Problem Solving
54	160.485	0.000	✳	0.689	C	Male	Math Reasoning and Problem Solving
7	2.627	0.105		0.079	A		Measurement
1	8.751	0.003		0.171	A		Measurement
10	58.576	0.000	✳	0.384	A		Measurement
20	54.533	0.000	✳	0.384	A		Measurement
50	57.517	0.000	✳	0.520	B	Male	Measurement
55	141.844	0.000	✳	0.656	C	Male	Measurement
13	234.992	0.000	✳	0.876	C	Male	Measurement
30	104.457	0.000	✳	-0.559	B	Female	Algebra
39	65.842	0.000	✳	-0.431	B	Female	Algebra
26	56.731	0.000	✳	-0.419	A		Algebra
44	42.416	0.000	✳	-0.363	A		Algebra
19	43.109	0.000	✳	-0.358	A		Algebra
18	31.518	0.000	✳	-0.302	A		Algebra
46	19.609	0.000	✳	-0.232	A		Algebra
49	3.781	0.052		-0.107	A		Algebra
31	0.087	0.768		-0.015	A		Algebra
2	2.651	0.104		0.095	A		Algebra
35	32.238	0.000	✳	-0.373	A		Geometry
25	32.965	0.000	✳	-0.327	A		Geometry
36	14.992	0.000	✳	-0.196	A		Geometry
45	6.752	0.009		-0.127	A		Geometry
41	0.114	0.736		0.019	A		Geometry
22	5.329	0.021		0.108	A		Geometry
4	3.398	0.065		0.121	A		Geometry
11	17.137	0.000	✳	0.219	A		Geometry
27	59.807	0.000	✳	0.379	A		Geometry

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/60)

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ISAT Mathematics, Grade 10, Spring 2003

Gender DIF — Mantel-Haenszel Chi Square

Focal Group: Female Students (4,243) **Reference Group: Male Students (4,396)**

Item	Chi Square	P-Value	Log Odds Ratio	Class	Favored	Goal Area
8	0.620	0.431	-0.060	A		Data Analyis, Probability and Stats
24	1.144	0.285	-0.057	A		Data Analyis, Probability and Stats
3	1.980	0.159	0.093	A		Data Analyis, Probability and Stats
16	6.455	0.011	0.135	A		Data Analyis, Probability and Stats
59	22.182	0.000 ✳	0.244	A		Data Analyis, Probability and Stats
6	112.203	0.000 ✳	0.528	B	Male	Data Analyis, Probability and Stats
29	171.449	0.000 ✳	0.676	C	Male	Data Analyis, Probability and Stats
21	128.351	0.000 ✳	-0.616	B	Female	Functions and Mathematical Models
9	55.984	0.000 ✳	-0.395	A		Functions and Mathematical Models
38	25.706	0.000 ✳	-0.256	A		Functions and Mathematical Models
17	20.992	0.000 ✳	-0.234	A		Functions and Mathematical Models
28	16.869	0.000 ✳	-0.215	A		Functions and Mathematical Models
14	15.557	0.000 ✳	-0.192	A		Functions and Mathematical Models
40	12.809	0.000 ✳	-0.182	A		Functions and Mathematical Models
34	11.456	0.001	-0.174	A		Functions and Mathematical Models
12	3.585	0.058	-0.120	A		Functions and Mathematical Models

Items are sorted within goal areas on the log odds ratio.

✳ = significant following a Bonferonni correction (i.e., critical value is .05/60)

ISAT Mathematics, Grade 10, Spring 2003

Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (771) **Reference Group: White Students (7,474)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
33	14.546	0.000	✳	-0.330	A		Estimation and Computation
52	6.155	0.013		-0.244	A		Estimation and Computation
57	4.388	0.036		-0.231	A		Estimation and Computation
60	3.431	0.064		-0.208	A		Estimation and Computation
58	5.382	0.020		-0.205	A		Estimation and Computation
5	2.138	0.144		-0.132	A		Estimation and Computation
56	0.002	0.968		0.000	A		Estimation and Computation
51	0.340	0.560		0.056	A		Estimation and Computation
48	0.665	0.415		0.095	A		Estimation and Computation
32	3.202	0.074		0.167	A		Estimation and Computation
53	11.126	0.001		0.319	A		Estimation and Computation
47	6.508	0.011		-0.370	A		Math Reasoning and Problem Solving
42	1.858	0.173		-0.126	A		Math Reasoning and Problem Solving
15	0.119	0.731		0.034	A		Math Reasoning and Problem Solving
43	0.106	0.744		0.037	A		Math Reasoning and Problem Solving
54	0.379	0.538		0.072	A		Math Reasoning and Problem Solving
37	0.744	0.389		0.088	A		Math Reasoning and Problem Solving
23	7.076	0.008		0.248	A		Math Reasoning and Problem Solving
50	3.149	0.076		-0.237	A		Measurement
7	0.001	0.970		-0.001	A		Measurement
1	0.000	0.986		0.006	A		Measurement
13	0.364	0.546		0.066	A		Measurement
10	0.575	0.448		0.077	A		Measurement
55	11.407	0.001		0.338	A		Measurement
20	8.921	0.003		0.340	A		Measurement
49	6.405	0.011		-0.246	A		Algebra
18	4.288	0.038		-0.191	A		Algebra
39	2.586	0.108		-0.159	A		Algebra
44	0.866	0.352		-0.110	A		Algebra
26	0.300	0.584		-0.054	A		Algebra
30	0.051	0.821		-0.025	A		Algebra
19	0.050	0.823		-0.024	A		Algebra
31	0.000	0.990		0.003	A		Algebra
46	0.021	0.884		0.020	A		Algebra
2	13.845	0.000	✳	0.337	A		Algebra
27	3.977	0.046		-0.170	A		Geometry
22	1.921	0.166		-0.120	A		Geometry
25	0.002	0.969		-0.008	A		Geometry
11	0.151	0.698		0.036	A		Geometry
45	0.480	0.488		0.068	A		Geometry
4	1.016	0.313		0.099	A		Geometry
41	1.217	0.270		0.117	A		Geometry
35	5.304	0.021		0.225	A		Geometry
36	8.863	0.003		0.249	A		Geometry

Items are sorted within goal areas on the log odds ratio.

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/60)

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ISAT Mathematics, Grade 10, Spring 2003

Ethnic DIF — Mantel-Haenszel Chi Square

Focal Group: Hispanic Students (771) **Reference Group: White Students (7,474)**

Item	Chi Square	P-Value		Log Odds Ratio	Class	Favored	Goal Area
3	0.243	0.622		0.052	A		Data Analyis, Probability and Stats
59	0.349	0.554		0.065	A		Data Analyis, Probability and Stats
6	0.756	0.385		0.079	A		Data Analyis, Probability and Stats
29	3.870	0.490		0.207	A		Data Analyis, Probability and Stats
24	11.889	0.001		0.304	A		Data Analyis, Probability and Stats
16	21.562	0.000	✳	0.425	A		Data Analyis, Probability and Stats
8	17.935	0.000	✳	0.443	B	White	Data Analyis, Probability and Stats
21	2.293	0.130		-0.143	A		Functions and Mathematical Models
34	1.225	0.268		-0.107	A		Functions and Mathematical Models
17	1.243	0.265		-0.098	A		Functions and Mathematical Models
38	0.938	0.333		-0.087	A		Functions and Mathematical Models
40	0.682	0.409		-0.079	A		Functions and Mathematical Models
9	0.001	0.979		-0.006	A		Functions and Mathematical Models
14	0.014	0.905		0.013	A		Functions and Mathematical Models
28	0.283	0.595		0.060	A		Functions and Mathematical Models
12	11.170	0.001		0.323	A		Functions and Mathematical Models

Items are sorted within goal areas on the log odds ratio.

✳ = significant following a Bonferonni correction (i.e., critical value is .05/60)

Appendix C

Item Results from SIBTEST Cross Validation Mini-Study

Item:	The number of the item or question
Beta:	SIBTEST estimate of magnitude of DIF (effect size). Positive value indicates DIF favoring the reference group (males). Negative value indicates DIF favoring the focal group (females).
P-Value:	The probability that the Beta estimate occurred by chance.
Class:	Item classification based on combination of statistical signifance and effect size. "1" items have negligible DIF, "2" items exhibit moderate DIF, and "3" items have large DIF.
DIF:	(1) Check mark means item was classified with moderate or large DIF on both runs. (2) Number is lower of the classifications from the two runs. (3) The group the observed DIF favors; M for male, and F for female.
Goal Area:	Subject area "strand" to which item has been assigned for reporting results.

Grade 10 Subject Tables

ISAT Reading, Grade 10, Spring 2003
SIBTEST Cross Validation — Gender DIF

Focal Group: Female Students **Reference Group: Male Students**

	Group X			Group Y				
Item	Beta	P-Value	Class	Beta	P-Value	Class	DIF	Goal Area
2	0.002	0.908	1	-0.033	0.032	1		Word Analysis
4	-0.009	0.486	1	-0.021	0.091	1		Word Analysis
19	0.001	0.929	1	-0.024	0.089	1		Word Analysis
25	0.042	0.005	1	0.021	0.166	1		Word Analysis
35	0.005	0.688	1	-0.019	0.142	1		Word Analysis
36	-0.007	0.499	1	-0.014	0.186	1		Word Analysis
37	-0.012	0.348	1	-0.034	0.011	1		Word Analysis
42	0.021	0.163	1	0.042	0.005	1		Word Analysis
45	0.124	0.000 ✳	3	0.078	0.000 ✳	2	✓ 2-M	Word Analysis
9	0.047	0.000 ✳	1	0.025	0.041	1		Vocabulary
12	0.123	0.000 ✳	3	0.120	0.000 ✳	3	✓ 3-M	Vocabulary
24	0.040	0.004	1	0.059	0.000 ✳	2		Vocabulary
28	-0.025	0.098	1	-0.068	0.000 ✳	2		Vocabulary
29	0.029	0.036	1	0.001	0.969	1		Vocabulary
40	0.088	0.000 ✳	2	0.062	0.000 ✳	2	✓ 2-M	Vocabulary
44	0.053	0.000 ✳	2	0.057	0.000 ✳	2	✓ 2-M	Vocabulary
52	0.020	0.145	1	0.020	0.138	1		Vocabulary
55	0.079	0.000 ✳	2	0.050	0.001	1		Vocabulary
3	0.000	0.995	1	-0.007	0.487	1		Literal Comprehension
6	-0.012	0.282	1	-0.008	0.482	1		Literal Comprehension
7	-0.008	0.553	1	-0.048	0.000 ✳	2		Literal Comprehension
14	-0.010	0.394	1	-0.025	0.031	1		Literal Comprehension
26	-0.106	0.000 ✳	3	-0.121	0.000 ✳	3	✓ 3-F	Literal Comprehension
27	0.004	0.779	1	0.023	0.124	1		Literal Comprehension
38	0.021	0.138	1	-0.004	0.795	1		Literal Comprehension
39	-0.052	0.000 ✳	2	-0.036	0.011	1		Literal Comprehension
41	-0.051	0.000 ✳	2	-0.057	0.000 ✳	2	✓ 2-F	Literal Comprehension
1	0.069	0.000 ✳	2	0.055	0.000 ✳	2	✓ 2-M	Interpretive Comprehension
5	-0.027	0.052	1	-0.082	0.000 ✳	2		Interpretive Comprehension
11	-0.013	0.367	1	0.034	0.013	1		Interpretive Comprehension
15	-0.031	0.002	1	-0.055	0.000 ✳	2		Interpretive Comprehension
16	-0.076	0.000 ✳	2	-0.083	0.000 ✳	2	✓ 2-F	Interpretive Comprehension
20	-0.027	0.039	1	-0.055	0.000 ✳	2		Interpretive Comprehension
21	0.075	0.000 ✳	2	0.050	0.001	1		Interpretive Comprehension
32	-0.034	0.015	1	-0.073	0.000 ✳	2		Interpretive Comprehension
33	-0.042	0.005	1	-0.023	0.120	1		Interpretive Comprehension
43	-0.018	0.162	1	-0.037	0.004	1		Interpretive Comprehension

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

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ISAT Reading, Grade 10, Spring 2003
SIBTEST Cross Validation — Gender DIF

Focal Group: Female Students **Reference Group: Male Students**

	Group X			Group Y				
Item	Beta	P-Value	Class	Beta	P-Value	Class	DIF	Goal Area
8	-0.018	0.088	1	-0.031	0.004	1		Evaluative Comprehension
17	-0.012	0.367	1	-0.008	0.528	1		Evaluative Comprehension
22	0.021	0.066	1	-0.022	0.050	1		Evaluative Comprehension
23	-0.019	0.212	1	-0.051	0.001	1		Evaluative Comprehension
30	0.000	0.990	1	0.010	0.420	1		Evaluative Comprehension
47	0.003	0.812	1	-0.031	0.026	1		Evaluative Comprehension
49	0.081	0.000 ✳	2	0.085	0.000 ✳	2	✓ 2-M	Evaluative Comprehension
50	0.028	0.052	1	0.017	0.220	1		Evaluative Comprehension
51	0.021	0.141	1	0.034	0.018	1		Evaluative Comprehension
10	0.012	0.352	1	0.041	0.002	1		Literacy Analysis
13	-0.012	0.353	1	-0.017	0.199	1		Literacy Analysis
18	-0.071	0.000 ✳	2	-0.063	0.000 ✳	2	✓ 2-F	Literacy Analysis
31	0.031	0.034	1	0.026	0.075	1		Literacy Analysis
34	0.077	0.000 ✳	2	0.033	0.018	1		Literacy Analysis
46	0.043	0.002	1	0.034	0.013	1		Literacy Analysis
48	-0.025	0.093	1	-0.026	0.073	1		Literacy Analysis
53	0.011	0.446	1	0.029	0.040	1		Literacy Analysis
54	0.033	0.021	1	0.042	0.003	1		Literacy Analysis

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/55)

ISAT Mathematics, Grade 10, Spring 2003
SIBTEST Cross Validation — Gender DIF

Focal Group: Female Students **Reference Group: Male Students**

	Group X			Group Y				
Item	Beta	P-Value	Class	Beta	P-Value	Class	DIF	Goal Area
5	0.012	0.397	1	0.058	0.000 ✳	2		Estimation & Computation
32	0.020	0.154	1	0.066	0.000 ✳	2		`
33	-0.004	0.774	1	0.018	0.199	1		Estimation & Computation
48	0.008	0.518	1	-0.005	0.701	1		Estimation & Computation
51	0.093	0.000 ✳	2	0.120	0.000 ✳	3	✓ 2-M	Estimation & Computation
52	0.033	0.005	1	-0.026	0.030	1		Estimation & Computation
53	0.083	0.000 ✳	2	0.110	0.000 ✳	3	✓ 2-M	Estimation & Computation
56	-0.025	0.065	1	-0.013	0.337	1		Estimation & Computation
57	0.013	0.310	1	-0.014	0.289	1		Estimation & Computation
58	-0.022	0.119	1	-0.013	0.354	1		Estimation & Computation
60	-0.015	0.231	1	0.007	0.607	1		Estimation & Computation
15	0.013	0.325	1	0.045	0.001	1		Math Reasoning & Problem Solving
23	-0.002	0.891	1	0.035	0.020	1		Math Reasoning & Problem Solving
37	-0.036	0.007	1	-0.033	0.012	1		Math Reasoning & Problem Solving
42	0.046	0.001	1	0.027	0.058	1		Math Reasoning & Problem Solving
43	0.026	0.057	1	0.051	0.000 ✳	2		Math Reasoning & Problem Solving
47	0.017	0.024	1	0.004	0.565	1		Math Reasoning & Problem Solving
54	0.125	0.000 ✳	3	0.124	0.000 ✳	3	✓ 3-M	Math Reasoning & Problem Solving
1	0.039	0.001	1	0.060	0.000 ✳	2		Measurement
7	0.044	0.002	1	0.034	0.019	1		Measurement
10	0.110	0.000 ✳	3	0.092	0.000 ✳	2	✓ 2-M	Measurement
13	0.167	0.000 ✳	3	0.167	0.000 ✳	3	✓ 3-M	Measurement
20	0.098	0.000 ✳	2	0.091	0.000 ✳	2	✓ 2-M	Measurement
50	0.060	0.000 ✳	2	0.058	0.000 ✳	2	✓ 2-M	Measurement
55	0.137	0.000 ✳	3	0.145	0.000 ✳	3	✓ 3-M	Measurement
2	0.030	0.012	1	0.021	0.067	1		Algebra
18	-0.021	0.103	1	-0.016	0.206	1		Algebra
19	-0.028	0.029	1	-0.035	0.006	1		Algebra
26	-0.037	0.003	1	-0.022	0.084	1		Algebra
30	-0.062	0.000 ✳	2	-0.054	0.000 ✳	2	✓ 2-F	Algebra
31	0.020	0.164	1	0.012	0.399	1		Algebra
39	-0.061	0.000 ✳	2	-0.042	0.001	1		Algebra
44	-0.046	0.000 ✳	1	-0.036	0.004	1		Algebra
46	-0.024	0.065	1	-0.011	0.410	1		Algebra
49	-0.005	0.699	1	-0.021	0.097	1		Algebra
4	0.016	0.128	1	0.052	0.000 ✳	2		Geometry
11	0.067	0.000 ✳	2	0.052	0.000 ✳	2	✓ 2-M	Geometry
22	0.049	0.001	1	0.033	0.026	1		Geometry
25	-0.039	0.002	1	-0.008	0.506	1		Geometry
27	0.079	0.000 ✳	2	0.098	0.000 ✳	2	✓ 2-M	Geometry
35	-0.025	0.016	1	-0.021	0.039	1		Geometry
36	-0.011	0.420	1	-0.021	0.131	1		Geometry
41	0.005	0.715	1	0.022	0.089	1		Geometry
45	-0.020	0.152	1	-0.009	0.542	1		Geometry

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/60)

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ISAT Mathematics, Grade 10, Spring 2003
SIBTEST Cross Validation — Gender DIF

Focal Group: Female Students **Reference Group: Male Students**

	Group X			Group Y				
Item	Beta	P-Value	Class	Beta	P-Value	Class	DIF	Goal Area
3	0.019	0.071	1	0.044	0.000 ✳	1		Data Analyis, Probability & Stats
6	0.111	0.000 ✳	3	0.134	0.000 ✳	3	✓ 3-M	Data Analyis, Probability & Stats
8	0.016	0.075	1	0.005	0.550	1		Data Analyis, Probability & Stats
16	0.054	0.000 ✳	2	0.059	0.000 ✳	2	✓ 2-M	Data Analyis, Probability & Stats
24	-0.011	0.408	1	0.038	0.005	1		Data Analyis, Probability & Stats
29	0.168	0.000 ✳	3	0.133	0.000 ✳	3	✓ 3-M	Data Analyis, Probability & Stats
59	0.081	0.000 ✳	2	0.057	0.000 ✳	2	✓ 2-M	Data Analyis, Probability & Stats
9	-0.059	0.000 ✳	2	-0.021	0.108	1		Functions & Mathematical Models
12	0.006	0.579	1	0.014	0.214	1		Functions & Mathematical Models
14	-0.037	0.009	1	-0.005	0.745	1		Functions & Mathematical Models
17	-0.028	0.040	1	-0.007	0.611	1		Functions & Mathematical Models
21	-0.092	0.000 ✳	2	-0.047	0.000 ✳	1		Functions & Mathematical Models
28	-0.018	0.180	1	-0.016	0.229	1		Functions & Mathematical Models
34	-0.009	0.490	1	-0.003	0.826	1		Functions & Mathematical Models
38	-0.034	0.012	1	-0.017	0.213	1		Functions & Mathematical Models
40	-0.018	0.175	1	-0.015	0.272	1		Functions & Mathematical Models

✳ = Significant following a Bonferonni correction (i.e., critical value is .05/60)