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Analyzing the Reliability of the easyCBM Reading Comprehension Measures: Grade 6

P. Shawn Irvin

Julie Alonzo

Bitnara Jasmine Park

Cheng-Fei Lai

Gerald Tindal

University of Oregon

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Abstract

In this technical report, we present the results of a reliability study of the sixth-grade multiple choice reading comprehension measures available on the easyCBM learning system conducted in the spring of 2011. Analyses include split-half reliability, alternate form reliability, person and item reliability as derived from Rasch analysis, top / bottom reliability, and repeated measures analysis of variance (ANOVA). Results suggest adequate reliability for the sixth-grade multiple choice reading comprehension measures.

Analyzing the Reliability of the easyCBM Reading Comprehension Measures: Grade 6

Curriculum-based measures (CBMs) are standardized assessments with a rich history of use for screening students at risk for difficulty in reading as well as for tracking the progress students make in gaining essential skills over the course of a school year (Alonzo, Ketterlin-Geller, & Tindal, 2006). In recent years, the widespread adoption of Response to Intervention (RTI) as a model for instructional delivery and school-wide improvement efforts has resulted in renewed attention being given to CBMs and a greater emphasis being placed on their technical adequacy for a variety of uses. One concern expressed by practitioners and researchers alike is the degree to which the brief, individually-administered fluency-based probes most frequently identified with CBM are appropriate for use with older students. As students move from elementary to secondary school, there is some evidence to suggest that more complex CBMs, designed to measure more challenging constructs, such as reading comprehension and vocabulary in context may be more appropriate (Yovanoff, Duesbery, Alonzo, & Tindal, 2005). In this technical report, we describe a study of the reliability of the easyCBM sixth-grade multiple choice reading comprehension measures conducted in 2011.

Methods

In this section, we describe the methods used in conducting a study of the split-half and top-bottom reliability, as well as Rasch analyses of grade 6 multiple-choice reading comprehension (MCRC) measures from the easyCBM® assessment system.

Setting and Participants

The study was conducted in elementary and middle schools from two Pacific Northwest public school districts in the spring of 2011. *District A* was diverse, and comprised of approximately 8,900 students, of which approximately 56% were White, 11% Hispanic, 15%

Asian-Pacific Islander, 11% Multiracial, 7% Black, and 1% American Indian-Alaskan Native students. About 26% of students were eligible for free or reduced-priced meals. Students in District A outperformed their peers in the state on the statewide reading assessment. On average, more than 79% of students in grades 3-8 tested proficient on the statewide reading test, compared to about 67% for the state. In all, 27 teachers (six in grade 2, four in grade 3, five in grade 4, six in grade 5, and six in grade 6) and 715 students participated in the study from District A.

District B was a large and diverse school district, of approximately 14,000 students, with a demographic make-up of approximately 56% White, 15% Hispanic, 11% Asian-Pacific Islander, 11% Multiracial, 6% Black, and 2% American Indian-Alaskan Native students. About 34% of students in the district were eligible for free or reduced-priced meals. In 2010, students from District B slightly outperformed their peers in the state on the statewide reading assessment. On average, a little fewer than 69% of students in grades 3-8 tested proficient on the state reading test, compared to about 67% for the state. Fourth grade showed the largest difference between students scoring proficient for the district and state, 72% compared to 67%, respectively. Six teachers (two in grades 3 and 7, one in grades 4 and 8) and 317 students participated in the study from District B.

Because we wanted to investigate the reliability for the full grade range of easyCBM® MCRC tests, we recruited participants from grades 2-8, with a goal of recruiting six teachers, with a corresponding six classes of students, from each of these seven grades. We successfully recruited six teachers for grades 2-6. Two teachers were recruited for grade 7 (seven total classes of students), and one for grade 8 (three total classes). The average class size across all grades was 27 students. Teachers were recruited at the district level and were compensated $150 for participating in the study. The three participating teachers in grades 7 and 8 were given

additional stipend money because they administered comprehension measures to more than one class of students. All students in attendance on the days the MCRC tests were administered participated in the study.

Multiple-choice Reading Comprehension Measures

The reading comprehension measures on easyCBM® are designed for group administration and are available for grades 2-8. Students first read an original work of narrative fiction and then answer multiple-choice questions (12 questions on the grade 2 test, 20 questions on each of the grade 3-8 tests) based on the story. Multiple-choice questions are designed to assess literal and inferential comprehension on all grade level tests; evaluative comprehension is also assessed on the grade 3-8 tests. Each question is comprised of the question stem and three possible answer choices: the correct answer and two incorrect but plausible distractors. The comprehension measures have a total of 12 points (grade 2) or 20 points (grades 3-8) possible; students earn one point for every question they answer correctly.

We selected the format of the reading comprehension tests based on prior empirical work with local school districts (Alonzo & Tindal, 2004a, 2004b, 2004c). In this work, teachers had expressed their desire for tests that closely resembled the types of readings students regularly encountered in their classes. At the same time, concerns about increasing the reliability, ease of use, and cost-effectiveness of our measures prompted us to use selected response rather than open-ended question types in our comprehension measures. Accordingly, we developed the MCRC tests in a two-step process. First, we wrote the stories that were used as the basis for each test. Then, we wrote the test items associated with each story. We embedded quality control and content review processes in both these steps throughout instrument development.

Two people, selected for their expertise in instrument development and language arts,

were principally involved with overseeing the creation of the MCRC tests. The first person oversaw the creation and revision of the stories and test items earned her Bachelor of Arts degree in Literature from Carleton College in 1990, worked for twelve years as an English teacher in California public schools, was awarded National Board for Professional Teaching Standards certification in Adolescent and Young Adulthood English Language Arts in 2002, and earned her Ph.D. in the area of Learning Assessments/System Performance at the University of Oregon. The second person hired to write the MCRC items earned his Ph.D. in education psychology, measurement, and methodology from the University of Arizona. He has worked in education at the elementary and middle school levels, as well as in higher education and at the state level. He held a position as associate professor in the distance-learning program for Northern Arizona University and served as director of assessment for a large metropolitan school district in Phoenix, Arizona. In addition, he served as state Director of Assessment and Deputy Associate Superintendent for Standards and Assessment at the Arizona Department of Education. He was a test development manager for Harcourt Assessment and has broad experience in assessment and test development.

Grade 6 test development. The two individuals hired to develop the grade 6 measures worked together to create documentation for story-writers to use while creating their stories. This written documentation was provided to increase the comparability of story structure and reduce the likelihood of construct irrelevant variance related to variation in story type affecting student performance on the different forms of the comprehension measures. Story creation specifications provided information about the length of the stories (approximately 1,500 words), characters, settings, and plots. Stories, which were composed between January 2008 and March 2010, were written by a variety of people who were either elementary and secondary school

educators or graduate students and researchers in the College of Education at the University of Oregon.

The professional item writer we hired created 20 multiple-choice questions, each with three possible answer options, for each form of the grade 6 MCRC test. All sixth-grade questions were written between January 2008 and March of 2010. For each of the sixth-grade MCRC tests, we wrote seven questions targeting literal comprehension, seven questions targeting inferential comprehension, and six questions targeting evaluative comprehension, for a total of 20 items on each form of the test. Within each type of comprehension, item-writing specifications called for a range of difficulty such that each form of each test contained easy, moderate, and difficult items in each of the types of comprehension assessed on that test. Item-writing specifications also guided the ordering of the items on each form of the MCRC test. In all cases, we followed a similar pattern of item ordering, beginning with the easiest literal comprehension item and continuing with items of increasing difficulty, ending with an item designed to be one of the most challenging, pulled from the highest level of comprehension assessed in that grade level (evaluative comprehension in grade 6). Once the multiple-choice items were written, the stories and item lists were formatted into individual tests, each composed of a story and 20 multiple-choice test items. Twenty test forms were piloted at the sixth grade level. Park, Alonzo and Tindal (2011) provided a detailed description of the development of the grade 7 MCRC test, the same development process that was responsible for the grade 6 MCRC test.

Grade 6 test selection and administration. We selected a subset of MCRC grade 6 forms (roughly 60% of those available through the easyCBM® assessment system) to use in this study. We used forms 1, 2, 3, 4, 5, 6, 9, and 10 in this study. We selected the grade 6 forms

because they were more recently released for use in the easyCBM® assessment system relative to other grade level tests; thus, we deemed understanding form and item-level reliability statistics of the selected (and most often used) grade 6 forms a priority.

Each student participated in the testing on three separate testing occasions in three different sessions, roughly one week apart. Each comprehension measure was group administered by the classroom teacher. In the first session, students completed a comprehension form assigned by class. Roughly one week later, students completed an alternate form of the comprehension measure. On the final testing occasion, students completed a third alternate form. To reduce the possibility of the order of the forms completed adversely affecting testing results, we assigned comprehension forms within a given grade at the class level based on a two-group counterbalanced measure design. For instance, the first of the six participating grade 6 classes completed forms 1, 2, and 3, in that order, over the three testing occasions; the second grade 6 class completed forms 3, 2 and 1 (the opposite order of the first class). We used the same counterbalanced measure design for all classes and all grades in the study.

Analysis

We used a variety of approaches to study the reliability of the easyCBM comprehension assessments: repeated measures analysis of variance, split half reliability using the Guttman formula, top/bottom reliability, and Rasch analysis. Each of these analytic approaches is explained in more detail in the following section.

One-way repeated measures analysis of variance. To examine whether there was a significant difference in difficulty across the forms, we conducted one-way repeated measures analysis of variance (ANOVA). Each student completed three test forms in each grade. When there was a statistically significant within-subject effect, the mean differences among the three

forms were further analyzed to investigate where the significant within-subject difference resided.

Split-half reliability. We conducted form and item-level reliability analyses for all grades in this study. To assess overall reliability of the MCRC measure, we examined the internal consistency among items within each selected test form using split-half reliability coefficients calculated from the Guttman formula using SPSS 19 (SPSS Inc., 2010). We used the Guttman formula to calculate split-half reliability coefficients because the Guttman formula does not assume homogeneity of test halves and will not overestimate the full-form reliability (Kerlinger & Lee, 2000). Thus, we felt the Guttman formula provided a more conservative and reasonable estimate of full test form reliability.

Top-bottom reliability. We computed the total score based on the scored item-level data, with unanswered items scored as incorrect (i.e., "0"). The possible total score for grade 6 forms is 20. Because easyCBM® progress monitoring measures were developed to target students who are at-risk for academic failure, items should function differently for students who are at or below the 23rd percentile (i.e., lower percentiles) and those who are at or above the 78th percentile (i.e., higher percentiles). To evaluate the appropriateness of items, item functioning was compared between the two aforementioned groups. The scores corresponding to the 23rd and 78th percentiles were computed for each form. Then, the proportions of correct responses for each item for the two groups were analyzed. Both groups should demonstrate high proportions of correct responses for an easy item that functions appropriately. For a difficult item that is functioning appropriately, the proportion of correct responses for the lower percentile group should be lower than that for the higher percentile group. A higher proportion of correct

responses for the lower percentile group indicates that the item may not be functioning appropriately.

Rasch analyses. Data from the pilot testing of the MCRC measures were analyzed with a one-parameter logistic Rasch analysis using the software Winsteps 3.68.2 (Linacre, 2009). Unlike classical statistics, Rasch analyses consider patterns of responses across individuals, providing information at a level of specificity in results unattainable with approaches based on classical statistics used in the development of most CBMs. In a complex iterative process, a Rasch analysis concurrently estimates the difficulty of individual test items and the ability level of each individual test taker. The results, relevant to the discussion here, include an estimation of the difficulty (referred to as the 'measure') of each item, the standard error of measure associated with each item's estimated difficulty, and the degree to which each item 'fits' the measurement model (referred to as the 'mean square outfit'). In addition, a Rasch analysis can provide information about the average estimated ability of students who selected each of the possible answer choices. All of this information must be considered when evaluating the technical adequacy of the measures, as described below.

Considering item estimated difficulty. Rasch analyses, which examine each item's reliability, provide a more precise treatment of reliability than classical statistics, which examine the issue from a global test level. The most reliable estimation of a test-taker's ability can be gained from tests comprised of items that represent the fullest range of difficulty possible for the population for which the test is intended. Thus, to evaluate the technical adequacy of our MCRC measures, we looked for items representing a range of difficulties. In Rasch analyses, this information is gleaned from examining each item's *measure*. Easy items will have measures represented with negative numbers; difficult items will have measures represented with positive

numbers. A measure of zero indicates an item that a person of average ability would be expected to have a 50% chance of getting correct. Thus, we sought a full range of *measure* on every MCRC test form.

Examining the standard error of measure. Rasch analyses also provide information about the standard error of measure associated with the estimation of each item's measure. Generally, the smaller the standard error of measure, the more reliable the estimation is. We sought small standard errors of measure for all items on our MCRC tests.

Using the mean square outfit to evaluate goodness of fit. An additional piece of information used to evaluate technical adequacy in a Rasch model is the mean square outfit associated with each item. Values in the range of 0.50 to 1.50 are considered *acceptable fit*. Mean square outfits falling outside this acceptable range indicate the need for further evaluation of item functioning. In general, items with a mean square outfit less than 0.50 are considered less worrisome than items with mean square outfits higher than 1.50 because items falling into the former category perform more *consistently* (e.g., every student regardless of ability gets the item correct or incorrect) compared to items in the latter category that function more *inconsistently* (e.g., students who perform poorly on all other items, always get the item correct) (Linacre, 2002). In all cases, distractor analysis provides useful information to further evaluate the technical adequacy of each item.

Analyzing distractor selection information. A distractor analysis provides information on the average estimated ability of test takers who selected a particular distractor on a test. In evaluating the technical adequacy of an assessment instrument, one hopes to see that the correct answer is selected by test-takers with the highest average estimated ability and the remaining distractors are selected by test-takers with lower estimated abilities. In addition, every distractor

in a well-constructed measure will be selected by at least some test-takers. We considered all of these features in evaluating the technical adequacy of the MCRC measures.

Analyzing person and item reliability. Rasch analyses report both the person and item reliability. The person reliability is equivalent to the traditional test reliability. Low values indicate a narrow range of person measures, or a small number of items. Therefore, testing persons with more extreme abilities (high and low) or lengthening the measure would increase the person reliability. Winsteps' item reliability has no traditional equivalent. Low item reliability values indicate a narrow range of item measures or a small sample. A larger sample of persons would increase item reliability. Low item reliability means that the sample size is too small to precisely locate the items on the latent variable (i.e., ability).

Results

Grade 6 MCRC Equivalence by Form

In this section we report findings concerning the equivalence of MCRC forms. We used one-way repeated measures ANOVA to evaluate equivalence of difficulty across the MCRC forms. Because like groups of students took three MCRC forms, each roughly one week apart, we evaluated the difficulty equivalence of each set of the three forms that were taken by the same group of students. Mean differences across the forms of 1, 2, and 3 were statistically significant, $F(2, 98) = 28.92$, $p < .01$. Though forms 1 and 3 were not significantly different from each other, form 3 was significantly more difficult than form 2. Forms 4, 5, and 6 also significantly differed in their means, $F(2, 92) = 6.32$, $p < .01$. Though forms 5 and 6 were not significantly different from each other, form 6 was significantly more difficult than form 4. Forms 6, was also significantly different from forms 9 and 10, $F(2, 108) = 10.41$, $p < .01$. Though forms 9 and 10 were not significantly different from each other, form 6 was significantly

less difficult than forms 9 and 10. Tables 1-9 in Appendix A display descriptive statistics and the complete results of repeated measures ANOVA, as well as post-hoc analyses conducted to compare mean differences for the grade 6 MCRC measures used in the study.

Grade 6 MCRC Split-half Reliability

In this section we report overall reliability of the MCRC measure based on internal consistency among items within each selected test form using split-half reliability coefficients calculated with the Guttman formula. Split-half reliability coefficients were computed by comparing the results from the first 10 items of the MCRC measure to the second 10 items for all students in the sample taking each form. Some coefficients were calculated based on less than 20 items (*e.g.*, forms 2, 3 and 9 in grade 6) if a given item did not have enough variance to calculate reliability. For grade 6 MCRC forms 1 through 6, 9 and 10, Guttman split-half reliability coefficients ranged from .39 to .75. Specifically, the split-half coefficient for form 1 was .63 (n = 20 items); the split-half coefficient for form 2 was .39 (n = 17 items); the split-half coefficient for form 3 was .75 (n = 19 items); the split-half coefficient for form 4 was .66 (n = 19 items); the split-half coefficient for form 5 was .40 (n = 18 items); the split-half coefficient for form 6 was .52 (n = 20 items); the split-half coefficient for form 9 was .49 (n = 19 items); the split-half coefficient for form 10 was .43 (n = 20 items). Tables 1-16 in Appendix B display descriptive statistics and complete results of split-half reliability analyses by form for grade 6 MCRC measures used in this study.

Grade 6 Top-bottom Reliability

In this section we report results from top-bottom reliability analysis used to evaluate the appropriateness of items. The proportion of correct responses of each item for low-performing (at or below the 23rd percentile) and high-performing (at or above the 78th percentile) students

was evaluated from this analysis to examine the appropriateness of item functioning. For form 1, the proportion of correct responses ranged from .29 to .50 for the low-performing students. Every student in the high-performing group answered 8 out of 20 items correctly, and the proportion of correct responses for the remaining 12 items ranged from .43 to .96. For form 2, the proportion of correct responses ranged from .14 to .76 for the low-performing students. Every student in the high-performing group answered 2 out of 20 items correctly, and the proportion of correct responses for the remaining 18 items ranged from .39 to .98. For form 3, the proportion of correct responses ranged from .21 to .74 for the low-performing students. Every student in the high-performing group answered 2 out of 20 items correctly, and the proportion of correct responses for the remaining 18 items ranged from .60 to .96. For form 4, the proportion of correct responses ranged from .13 to .81 for the low-performing students. Every student in the high-performing group answered 6 out of 20 items correctly, and the proportion of correct responses for the remaining 14 items ranged from .45 to .97.

For form 5, the proportion of correct responses ranged from .13 to .69 for the low-performing students. Every student in the high-performing group answered 6 out of 20 items correctly, and the proportion of correct responses for the remaining 14 items ranged from .31 to .94. For form 6, the proportion of correct responses ranged from .09 to .60 for the low-performing students. Every student in the high-performing group answered 2 out of 20 items correctly, and the proportion of correct responses for the remaining 18 items ranged from .20 to .96. For form 9, the proportion of correct responses ranged from .21 to .77 for the low-performing students. Every student in the high-performing group answered 5 out of 20 items correctly, and the proportion of correct responses for the remaining 15 items ranged from .32 to .96. For form 10, the proportion of correct responses ranged from .18 to .73 for the low-

performing students. Every student in the high-performing group answered 2 out of 20 items correctly, and the proportion of correct responses for the remaining 18 items ranged from .10 to .98. The proportion of correct responses for the item 11 was higher for the low-performing students (.27) than the high-performing students (.10). Tables 1-10 in Appendix C display mean and percentile scores and the complete top-bottom reliability results for the grade 6 MCRC forms used in this study.

Grade 6 Item-level Rasch Analyses

Seven items on the grade 6 MCRC form 1 did not pass the pre-set adequate mean square outfit criteria range of 0.50 to 1.50. Items #1, #9, and #20 were over-fit, with mean square outfit values of 2.69, 1.54, and 4.38, respectively. Items that were under-fit were items #8, #11, #15 and #19, with mean square outfit values of 0.47, 0.47, 0.45, and 0.37, respectively. Distractor analysis indicated that items #1 and #20 might not be functioning appropriately. Almost all of the items on grade 6 MCRC form 2 were within the mean square outfit range of 0.5 to 1.5. Only item #8 did not meet the model fit selection criteria. This item was under-fit, with a mean square outfit value of 0.42. Analysis of the distractors, however, indicated that this item was functioning appropriately, though item #17 might not be. Several items on the grade 6 MCRC form 3 were not within the pre-set adequate model fit selection criteria of mean square outfit values between 0.5 to 1.5. Items # 1, #7, #9, #11, and #18 were over-fit, with mean square outfit values of 1.52, 2.16, 1.59, 2.09 and 1.57, respectively. Items #3, #4, #6 and #8 were under-fit, with mean square outfit values 0.46, 0.41, 0.57, and 0.49, respectively. Distractor analysis results, however, indicated that only item #7 was not functioning appropriately. On grade 6 MCRC form 4, all items fell within the accepted range of mean square outfit values between 0.50 and 1.50. Analysis of the distractors also indicated that all items on form 4 were functioning appropriately.

Almost all of the items on grade 6 MCRC form 5 were within the mean square outfit range of 0.50 to 1.50. The only exceptions were items #13 and #16, with mean square outfit values of 1.72 and 1.77, respectively. Item #8 was under-fit, with a mean square outfit of 0.38. Distractor analysis indicated that items #13 and #16 were not functioning appropriately, but that item #8 was functioning appropriately. Only item #15 on the grade 6 MCRC form 6 was over-fit, with a mean square outfit of 1.51. Item #2 was under-fit, with a mean square outfit of 0.56. Distractor analysis, however, indicated that both items were functioning appropriately. All items on the grade 6 MCRC form 9 were within the acceptable criteria of mean square outfit range between 0.50 and 1.50. Distractor analysis indicated that all items on form 9 were functioning appropriately. On the grade 6 MCRC form 10, almost all of the items were within the pre-set adequate model fit selection criteria, with mean square outfit values between 0.5 to 1.5. The only exceptions were items #1 and #11, with mean square outfit values of 1.52 and 1.87, respectively. Distractor analysis indicated that these two items were functioning appropriately.

Person reliability values varied from low to high overall, ranging from .00 to .83. Item reliability values generally high, falling in the .90s. It should be noted that the sample sizes were small in general (*n* ranges 49-79). Tables 1-16 in Appendix D display the item measure, standard error of measure, mean square outfit, and complete distractor analyses for the eight grade 6 MCRC measures used in this study.

Discussion

Our findings in this study suggest that the grade 6 easyCBM multiple choice reading comprehension measures have acceptable levels of reliability for the two purposes for which they are intended: as one part of a battery of assessments administered in the fall, winter, and spring to screen students at risk for reading difficulty, and as repeated measures over time as

used to monitor student progress in developing comprehension skill. Although we would have preferred to have even higher alternate form reliability coefficients, it appears likely that our results are dampened by two factors. First, sample sizes in our study were not as large as we would have liked, due to challenges related to participant recruitment. Second, it appears as though the test forms might have had a ceiling effect, with very little variation in scores for students who were in the top third (reducing the power of the top / bottom reliability analyses). Future research should address both these limitations.

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Appendix A

Table 1

Descriptive Statistics of Grade 6 Measures 1 to 3

	Mean	Std. Deviation	N
total_1	16.4600	2.54919	50
total_2	13.2400	2.21829	50
total_3	16.1200	3.11442	50

Table 2

Tests of Within-Subjects Effects for Grade 6 Measures 1 to 3

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
forms	Sphericity Assumed	312.973	2	156.487	28.916	.000
	Greenhouse-Geisser	312.973	1.931	162.086	28.916	.000
	Huynh-Feldt	312.973	2.000	156.487	28.916	.000
	Lower-bound	312.973	1.000	312.973	28.916	.000
Error(forms)	Sphericity Assumed	530.360	98	5.412		
	Greenhouse-Geisser	530.360	94.615	5.605		
	Huynh-Feldt	530.360	98.000	5.412		
	Lower-bound	530.360	49.000	10.824		

Note. Mauchly's Test of Sphericity: The assumption of sphericity was not violated, Mauchly's W was 0.96, χ^2 (2) = 1.75, $p > .05$.

Table 3

Tests of Within-Subjects Contrasts for Grade 6 Measures 1 to 3

Source	forms	Type III Sum of Squares	df	Mean Square	F	Sig.
forms	Level 1 vs. Level 3	5.780	1	5.780	.496	.485
	Level 2 vs. Level 3	414.720	1	414.720	34.485	.000
Error(forms)	Level 1 vs. Level 3	571.220	49	11.658		
	Level 2 vs. Level 3	589.280	49	12.026		

Table 4
Descriptive Statistics of Grade 6 Measures 4 to 6

	Mean	Std. Deviation	N
total_4	15.1702	2.48753	47
total_5	14.3191	2.45043	47
total_6	13.5532	2.75688	47

Table 5
Tests of Within-Subjects Effects for Grade 6 Measures 4 to 6

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
forms	Sphericity Assumed	61.504	2	30.752	6.317	.003
	Greenhouse-Geisser	61.504	1.808	34.021	6.317	.004
	Huynh-Feldt	61.504	1.877	32.760	6.317	.003
	Lower-bound	61.504	1.000	61.504	6.317	.016
Error(forms)	Sphericity Assumed	447.830	92	4.868		
	Greenhouse-Geisser	447.830	83.158	5.385		
	Huynh-Feldt	447.830	86.360	5.186		
	Lower-bound	447.830	46.000	9.735		

Note. Mauchly's Test of Sphericity: The assumption of sphericity was not violated, Mauchly's W was 0.89, χ^2 (2) = 5.06, $p > .05$.

Table 6
Tests of Within-Subjects Contrasts for Grade 6 Measures 4 to 6

Source	forms	Type III Sum of Squares	df	Mean Square	F	Sig.
forms	Level 1 vs. Level 3	122.894	1	122.894	18.408	.000
	Level 2 vs. Level 3	27.574	1	27.574	2.618	.112
Error(forms)	Level 1 vs. Level 3	307.106	46	6.676		
	Level 2 vs. Level 3	484.426	46	10.531		

Table 7
Descriptive Statistics of Grade 6 Measures 6, 9, and 10

	Mean	Std. Deviation	N
total_6	13.8909	2.86533	55
total_9	15.8364	2.98616	55
total_10	15.1455	2.94655	55

Table 8
Tests of Within-Subjects Effects for Grade 6 Measures 6, 9, and 10

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
forms	Sphericity Assumed	106.994	2	53.497	10.410	.000
	Greenhouse-Geisser	106.994	1.607	66.567	10.410	.000
	Huynh-Feldt	106.994	1.649	64.880	10.410	.000
	Lower-bound	106.994	1.000	106.994	10.410	.002
Error(factor1)	Sphericity Assumed	555.006	108	5.139		
	Greenhouse-Geisser	555.006	86.794	6.394		
	Huynh-Feldt	555.006	89.052	6.232		
	Lower-bound	555.006	54.000	10.278		

Note. Mauchly's Test of Sphericity: The assumption of sphericity was violated, Mauchly's W was 0.76, $\chi^2(2) = 14.85$, $p < .05$. Thus, for all within-subject effects, the Greenhouse-Geisser *F* was used.

Table 9
Tests of Within-Subjects Contrasts for Grade 6 Measures 6, 9, and 10

Source	forms	Type III Sum of Squares	df	Mean Square	F	Sig.
forms	Level 1 vs. Level 3	86.564	1	86.564	6.115	.017
	Level 2 vs. Level 3	26.255	1	26.255	2.348	.131
Error(forms)	Level 1 vs. Level 3	764.436	54	14.156		
	Level 2 vs. Level 3	603.745	54	11.180		

Appendix B

Table 1

Grade 6 Split-Half Coefficients for MCRC Form 1 with N = 20 Items

Cronbach's Alpha	Part 1	Value	.296
		N of Items	10[a]
	Part 2	Value	.571
		N of Items	10[b]
	Total N of Items		20
Correlation Between Forms			.479
Spearman-Brown Coefficient	Equal Length		.648
	Unequal Length		.648
Guttman Split-Half Coefficient			.628

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 2

Grade 6 Split-Half Scale Statistics for MCRC Form 1 with N = 20 Items

	Mean	Variance	Std. Deviation	N of Items
Part 1	8.53	1.573	1.254	10[a]
Part 2	7.96	2.907	1.705	10[b]
Both Parts	16.49	6.528	2.555	20

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 3

Grade 6 Split-Half Coefficients for MCRC Form 2 with N = 17 Items

Cronbach's Alpha	Part 1	Value	.188
		N of Items	8[a]
	Part 2	Value	.179
		N of Items	9[b]
	Total N of Items		17
Correlation Between Forms			.252
Spearman-Brown Coefficient	Equal Length		.403
	Unequal Length		.403
Guttman Split-Half Coefficient			.394

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr.

b. The items are: Q9_Corr, Q10_Corr, Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr.

Table 4

Grade 6 Split-Half Scale Statistics for MCRC Form 2 with N = 17 Items

	Mean	Variance	Std. Deviation	N of Items
Part 1	6.00	1.404	1.185	8[a]
Part 2	4.25	2.234	1.495	9[b]
Both Parts	10.25	4.532	2.129	17

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr.

b. The items are: Q9_Corr, Q10_Corr, Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr.

Table 5

Grade 6 Split-Half Coefficients for MCRC Form 3 with N = 19 Items

Cronbach's Alpha	Part 1	Value	.564
		N of Items	9[a]
	Part 2	Value	.591
		N of Items	10[b]
	Total N of Items		19
Correlation Between Forms			.614
Spearman-Brown Coefficient	Equal Length		.761
	Unequal Length		.761
Guttman Split-Half Coefficient			.754

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr.

b. The items are: Q10_Corr, Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr.

Table 6

Grade 6 Split-Half Scale Statistics for MCRC Form 3 with N = 19 Items

	Mean	Variance	Std. Deviation	N of Items
Part 1	7.51	2.422	1.556	9[a]
Part 2	7.73	3.407	1.846	10[b]
Both Parts	15.24	9.355	3.059	19

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr.

b. The items are: Q10_Corr, Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr.

Table 7

Grade 6 Split-Half Coefficients for MCRC Form 4 with N = 20 Items

Cronbach's Alpha	Part 1	Value	.164
		N of Items	10[a]
	Part 2	Value	.193
		N of Items	10[b]
	Total N of Items		20
Correlation Between Forms			.490
Spearman-Brown Coefficient	Equal Length		.658
	Unequal Length		.658
Guttman Split-Half Coefficient			.656

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 8

Grade 6 Split-Half Scale Statistics for MCRC Form 4 with N = 20 Items

	Mean	Variance	Std. Deviation	N of Items
Part 1	7.91	1.674	1.294	10[a]
Part 2	7.24	2.053	1.433	10[b]
Both Parts	15.16	5.543	2.354	20

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 9

Grade 6 Split-Half Coefficients for MCRC Form 5 with N = 20 Items

Cronbach's Alpha	Part 1	Value	.479
		N of Items	10[a]
	Part 2	Value	.230
		N of Items	10[b]
	Total N of Items		20
Correlation Between Forms			.253
Spearman-Brown Coefficient	Equal Length		.404
	Unequal Length		.404
Guttman Split-Half Coefficient			.404

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 10

Grade 6 Split-Half Scale Statistics for MCRC Form 5 with N = 20 Items

	Mean	Variance	Std. Deviation	N of Items
Part 1	7.96	2.433	1.560	10[a]
Part 2	6.51	2.212	1.487	10[b]
Both Parts	14.47	5.820	2.412	20

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 11

Grade 6 Split-Half Coefficients for MCRC Form 6 with N = 20 Items

Cronbach's Alpha	Part 1	Value	.180
		N of Items	10[a]
	Part 2	Value	.077
		N of Items	10[b]
	Total N of Items		20
Correlation Between Forms			.354
Spearman-Brown Coefficient	Equal Length		.523
	Unequal Length		.523
Guttman Split-Half Coefficient			.521

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 12

Grade 6 Split-Half Scale Statistics for MCRC Form 6 with N = 20 Items

	Mean	Variance	Std. Deviation	N of Items
Part 1	7.30	1.459	1.208	10[a]
Part 2	6.89	1.784	1.336	10[b]
Both Parts	14.19	4.385	2.094	20

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 13

Grade 6 Split-Half Coefficients for MCRC Form 9 with N = 19 Items

Cronbach's Alpha	Part 1	Value	.083
		N of Items	9[a]
	Part 2	Value	.349
		N of Items	10[b]
	Total N of Items		19
Correlation Between Forms			.336
Spearman-Brown Coefficient	Equal Length		.503
	Unequal Length		.503
Guttman Split-Half Coefficient			.491

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr.

b. The items are: Q10_Corr, Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr.

Table 14

Grade 6 Split-Half Scale Statistics for MCRC Form 9 with N = 19 Items

	Mean	Variance	Std. Deviation	N of Items
Part 1	7.53	1.177	1.085	9[a]
Part 2	7.66	1.959	1.400	10[b]
Both Parts	15.19	4.156	2.039	19

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr.

b. The items are: Q10_Corr, Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr.

Table 15

Grade 6 Split-Half Coefficients for MCRC Form 10 with N = 20 Items

Cronbach's Alpha	Part 1	Value	.207
		N of Items	10[a]
	Part 2	Value	.022
		N of Items	10[b]
	Total N of Items		20
Correlation Between Forms			.275
Spearman-Brown Coefficient	Equal Length		.432
	Unequal Length		.432
Guttman Split-Half Coefficient			.429

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Table 16

Grade 6 Split-Half Scale Statistics for MCRC Form 10 with N = 20 Items

	Mean	Variance	Std. Deviation	N of Items
Part 1	7.85	1.623	1.274	10[a]
Part 2	7.75	1.250	1.118	10[b]
Both Parts	15.60	3.657	1.912	20

a. The items are: Q1_Corr, Q2_Corr, Q3_Corr, Q4_Corr, Q5_Corr, Q6_Corr, Q7_Corr, Q8_Corr, Q9_Corr, Q10_Corr.

b. The items are: Q11_Corr, Q12_Corr, Q13_Corr, Q14_Corr, Q15_Corr, Q16_Corr, Q17_Corr, Q18_Corr, Q19_Corr, Q20_Corr.

Appendix C

Table 1
Grade 6 Mean and the Percentile Scores by Form

Form	Mean (*n*)	23rd Percentile (*n*)	78th Percentile (*n*)
1	14.75 (92)	13 (24)	18 (28)
2	11.74 (157)	10 (49)	14 (41)
3	13.72 (136)	12 (43)	16 (45)
4	14.08 (118)	12 (31)	17 (29)
5	13.30 (69)	11 (16)	16 (16)
6	12.53 (173)	11 (47)	15 (50)
9	14.57 (167)	12 (39)	17 (50)
10	13.62 (119)	12 (33)	16 (41)

Table 2
Item Statistics for Students for Grade 6 Form 1

	23rd Percentile or Below			78th Percentile or Above		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Q1_Corr	.38	.495	24	.79	.418	28
Q2_Corr	.29	.464	24	1.00	.000	28
Q3_Corr	.33	.482	24	.96	.189	28
Q4_Corr	.38	.495	24	.82	.390	28
Q5_Corr	.50	.511	24	1.00	.000	28
Q6_Corr	.50	.511	24	.96	.189	28
Q7_Corr	.46	.509	24	.89	.315	28
Q8_Corr	.38	.495	24	1.00	.000	28
Q9_Corr	.42	.504	24	.93	.262	28
Q10_Corr	.46	.509	24	.96	.189	28
Q11_Corr	.42	.504	24	1.00	.000	28
Q12_Corr	.46	.509	24	.96	.189	28
Q13_Corr	.75	.442	24	.96	.189	28
Q14_Corr	.29	.464	24	.82	.390	28
Q15_Corr	.50	.511	24	1.00	.000	28
Q16_Corr	.33	.482	24	.93	.262	28
Q17_Corr	.42	.504	24	1.00	.000	28
Q18_Corr	.42	.504	24	1.00	.000	28
Q19_Corr	.42	.504	24	1.00	.000	28
Q20_Corr	.29	.464	24	.43	.504	28

Table 3
Item Statistics for Students for Grade 6 Form 2

	23rd Percentile or Below			78th Percentile or Above		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Q1_Corr	.67	.474	49	.95	.218	41
Q2_Corr	.55	.503	49	.95	.218	41
Q3_Corr	.76	.434	49	.98	.156	41
Q4_Corr	.29	.456	49	.59	.499	41
Q5_Corr	.57	.500	49	.93	.264	41
Q6_Corr	.39	.492	49	.95	.218	41
Q7_Corr	.59	.497	49	.93	.264	41
Q8_Corr	.71	.456	49	1.00	.000	41
Q9_Corr	.37	.487	49	.93	.264	41
Q10_Corr	.35	.481	49	.49	.506	41
Q11_Corr	.22	.422	49	.68	.471	41
Q12_Corr	.22	.422	49	.39	.494	41
Q13_Corr	.22	.422	49	.51	.506	41
Q14_Corr	.53	.504	49	1.00	.000	41
Q15_Corr	.31	.466	49	.76	.435	41
Q16_Corr	.35	.481	49	.59	.499	41
Q17_Corr	.33	.474	49	.39	.494	41
Q18_Corr	.14	.354	49	.61	.494	41
Q19_Corr	.47	.504	49	.98	.156	41
Q20_Corr	.33	.474	49	.54	.505	41

Table 4
Item Statistics for Students for Grade 6 Form 3

	23rd Percentile or Below			78th Percentile or Above		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Q1_Corr	.74	.441	43	.96	.208	45
Q2_Corr	.65	.482	43	.89	.318	45
Q3_Corr	.70	.465	43	.93	.252	45
Q4_Corr	.70	.465	43	.91	.288	45
Q5_Corr	.67	.474	43	1.00	.000	45
Q6_Corr	.56	.502	43	.98	.149	45
Q7_Corr	.37	.489	43	.62	.490	45
Q8_Corr	.63	.489	43	1.00	.000	45
Q9_Corr	.21	.412	43	.82	.387	45
Q10_Corr	.60	.495	43	.93	.252	45
Q11_Corr	.58	.499	43	.91	.288	45
Q12_Corr	.40	.495	43	.96	.208	45
Q13_Corr	.23	.427	43	.82	.387	45
Q14_Corr	.30	.465	43	.67	.477	45
Q15_Corr	.21	.412	43	.84	.367	45
Q16_Corr	.51	.506	43	.89	.318	45
Q17_Corr	.51	.506	43	.96	.208	45
Q18_Corr	.33	.474	43	.89	.318	45
Q19_Corr	.37	.489	43	.84	.367	45
Q20_Corr	.26	.441	43	.60	.495	45

Table 5
Item Statistics for Students for Grade 6 Form 4

	23rd Percentile or Below			78th Percentile or Above		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Q1_Corr	.81	.402	31	1.00	.000	29
Q2_Corr	.58	.502	31	.97	.186	29
Q3_Corr	.61	.495	31	.90	.310	29
Q4_Corr	.29	.461	31	.93	.258	29
Q5_Corr	.81	.402	31	1.00	.000	29
Q6_Corr	.39	.495	31	.45	.506	29
Q7_Corr	.65	.486	31	1.00	.000	29
Q8_Corr	.16	.374	31	.90	.310	29
Q9_Corr	.32	.475	31	.90	.310	29
Q10_Corr	.39	.495	31	.93	.258	29
Q11_Corr	.13	.341	31	.83	.384	29
Q12_Corr	.61	.495	31	1.00	.000	29
Q13_Corr	.39	.495	31	.86	.351	29
Q14_Corr	.61	.495	31	.97	.186	29
Q15_Corr	.45	.506	31	.97	.186	29
Q16_Corr	.26	.445	31	.86	.351	29
Q17_Corr	.61	.495	31	1.00	.000	29
Q18_Corr	.55	.506	31	.76	.435	29
Q19_Corr	.16	.374	31	.59	.501	29
Q20_Corr	.55	.506	31	1.00	.000	29

Table 6
Item Statistics for Students for Grade 6 Form 5

	23rd Percentile or Below			78th Percentile or Above		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Q1_Corr	.56	.512	16	1.00	.000	16
Q2_Corr	.56	.512	16	1.00	.000	16
Q3_Corr	.44	.512	16	1.00	.000	16
Q4_Corr	.44	.512	16	.81	.403	16
Q5_Corr	.31	.479	16	.94	.250	16
Q6_Corr	.63	.500	16	.94	.250	16
Q7_Corr	.69	.479	16	.94	.250	16
Q8_Corr	.63	.500	16	1.00	.000	16
Q9_Corr	.38	.500	16	.94	.250	16
Q10_Corr	.31	.479	16	.56	.512	16
Q11_Corr	.69	.479	16	.94	.250	16
Q12_Corr	.19	.403	16	.63	.500	16
Q13_Corr	.50	.516	16	.31	.479	16
Q14_Corr	.56	.512	16	1.00	.000	16
Q15_Corr	.63	.500	16	.81	.403	16
Q16_Corr	.44	.512	16	.31	.479	16
Q17_Corr	.19	.403	16	.94	.250	16
Q18_Corr	.44	.512	16	.88	.342	16
Q19_Corr	.50	.516	16	1.00	.000	16
Q20_Corr	.13	.342	16	.94	.250	16

Table 7
Item Statistics for Students for Grade 6 Form 6

	23rd Percentile or Below			78th Percentile or Above		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Q1_Corr	.60	.496	47	.96	.198	50
Q2_Corr	.53	.504	47	1.00	.000	50
Q3_Corr	.57	.500	47	.92	.274	50
Q4_Corr	.34	.479	47	.78	.418	50
Q5_Corr	.53	.504	47	.98	.141	50
Q6_Corr	.30	.462	47	.76	.431	50
Q7_Corr	.09	.282	47	.20	.404	50
Q8_Corr	.66	.479	47	1.00	.000	50
Q9_Corr	.53	.504	47	.96	.198	50
Q10_Corr	.43	.500	47	.56	.501	50
Q11_Corr	.47	.504	47	.84	.370	50
Q12_Corr	.23	.428	47	.36	.485	50
Q13_Corr	.30	.462	47	.64	.485	50
Q14_Corr	.45	.503	47	.86	.351	50
Q15_Corr	.19	.398	47	.42	.499	50
Q16_Corr	.47	.504	47	.92	.274	50
Q17_Corr	.43	.500	47	.98	.141	50
Q18_Corr	.34	.479	47	.86	.351	50
Q19_Corr	.36	.486	47	.84	.370	50
Q20_Corr	.55	.503	47	.98	.141	50

Table 8
Item Statistics for Students for Grade 6 Form 9

	23rd Percentile or Below			78th Percentile or Above		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Q1_Corr	.77	.427	39	.96	.198	50
Q2_Corr	.67	.478	39	.92	.274	50
Q3_Corr	.44	.502	39	.86	.351	50
Q4_Corr	.44	.502	39	.80	.404	50
Q5_Corr	.67	.478	39	1.00	.000	50
Q6_Corr	.69	.468	39	1.00	.000	50
Q7_Corr	.44	.502	39	.96	.198	50
Q8_Corr	.59	.498	39	1.00	.000	50
Q9_Corr	.36	.486	39	.70	.463	50
Q10_Corr	.49	.506	39	.88	.328	50
Q11_Corr	.64	.486	39	.98	.141	50
Q12_Corr	.21	.409	39	.80	.404	50
Q13_Corr	.26	.442	39	.78	.418	50
Q14_Corr	.69	.468	39	.98	.141	50
Q15_Corr	.36	.486	39	.90	.303	50
Q16_Corr	.23	.427	39	.32	.471	50
Q17_Corr	.44	.502	39	.92	.274	50
Q18_Corr	.38	.493	39	.96	.198	50
Q19_Corr	.54	.505	39	1.00	.000	50
Q20_Corr	.67	.478	39	1.00	.000	50

Table 9
Item Statistics for Students for Grade 6 Form 10

	23rd Percentile or Below			78th Percentile or Above		
	Mean	Std. Deviation	N	Mean	Std. Deviation	N
Q1_Corr	.73	.452	33	1.00	.000	41
Q2_Corr	.73	.452	33	1.00	.000	41
Q3_Corr	.48	.508	33	.88	.331	41
Q4_Corr	.52	.508	33	.90	.300	41
Q5_Corr	.45	.506	33	.98	.156	41
Q6_Corr	.39	.496	33	.95	.218	41
Q7_Corr	.48	.508	33	.90	.300	41
Q8_Corr	.33	.479	33	.71	.461	41
Q9_Corr	.18	.392	33	.46	.505	41
Q10_Corr	.58	.502	33	.98	.156	41
Q11_Corr	.27	.452	33	.10	.300	41
Q12_Corr	.58	.502	33	.98	.156	41
Q13_Corr	.27	.452	33	.83	.381	41
Q14_Corr	.30	.467	33	.80	.401	41
Q15_Corr	.58	.502	33	.93	.264	41
Q16_Corr	.36	.489	33	.98	.156	41
Q17_Corr	.61	.496	33	.95	.218	41
Q18_Corr	.48	.508	33	.90	.300	41
Q19_Corr	.48	.508	33	.88	.331	41
Q20_Corr	.55	.506	33	.76	.435	41

Appendix D

Table 1
Item Statistics, Entry Order, Grade 6 MCRC Form 1

Item Number	Raw Score	Count	Measure	Model Standard Error	Mean Square Outfit
1	62	92	-0.31	4.05	2.69
2	53	92	0.37	-2.46	0.54
3	46	92	0.88	-2.87	0.51
4	40	92	1.32	0.53	1.10
5	75	92	-1.38	0.50	1.18
6	55	92	0.22	-0.79	0.81
7	74	92	-1.29	0.07	0.95
8	51	92	0.51	-3.10	0.47
9	57	92	0.07	1.96	1.54
10	51	92	0.51	-1.30	0.74
11	74	92	-1.29	-1.18	0.47
12	65	92	-0.54	-0.53	0.80
13	62	92	-0.31	-1.93	0.51
14	39	92	1.40	0.91	1.20
15	59	92	-0.08	-2.55	0.45
16	54	92	0.29	1.74	1.42
17	74	92	-1.29	0.12	0.98
18	74	92	-1.29	-0.69	0.63
19	58	92	-0.01	-3.19	0.37
20	28	92	2.21	5.85	4.38

Table 2
Distractor Analysis, Grade 6 MCRC Form 1

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
1	A	0	4	4	1.21	0.73
	B	0	26	28	0.43	0.33
	C	1	62	67	1.05	0.22
	Missing	**				
2	A	0	11	12	-0.64	0.21
	B	0	28	30	-0.74	0.09
	C	1	53	58	2.05	0.17
	Missing	**				
3	C	0	16	17	0.18	0.35
	A	0	30	33	-0.81	0.11
	B	1	46	50	2.22	0.14
	Missing	**				
4	B	0	23	25	0.70	0.32
	C	0	29	32	-0.61	0.15
	A	1	40	43	2.06	0.21
	Missing	**				
5	C	0	6	7	-1.26	0.21
	A	0	11	12	-0.22	0.41
	B	1	75	82	1.21	0.19
	Missing	**				
6	B	0	7	8	-0.64	0.44
	A	0	30	33	-0.47	0.18
	C	1	55	60	1.81	0.19
	Missing	**				
7	C	0	4	4	-0.93	0.33
	A	0	14	15	-0.68	0.31
	B	1	74	80	1.27	0.18
	Missing	**	0	0	0	0
8	B	0	6	7	-0.67	0.34
	C	0	34	37	-0.76	0.11
	A	1	51	55	2.13	0.15
	Missing	**	1	1	2.04	0
9	C	0	11	12	0.27	0.38
	A	0	23	25	-0.03	0.29
	B	1	57	62	1.34	0.23
	Missing	**	1	1	2.04	0.00
10	C	0	12	13	0.01	0.46
	A	0	29	32	-0.69	0.12
	B	1	51	55	1.97	0.17
	Missing	**				

Table 2
Distractor Analysis, Grade 6 MCRC Form 1 (Continued)

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
11	A	0	7	8	-1.04	0.24
	B	0	10	11	-1.00	0.14
	C	1	74	80	1.34	0.18
	Missing	**	1	1	-0.76	0.00
12	C	0	4	4	-0.83	0.19
	B	0	23	25	-0.65	0.18
	A	1	65	71	1.52	0.19
	Missing	**				
13	B	0	6	7	-1.11	0.22
	A	0	24	26	-0.79	0.06
	C	1	62	67	1.72	0.18
	Missing	**				
14	A	0	14	15	-0.34	0.43
	B	0	39	42	0.17	0.21
	C	1	39	42	2.02	0.22
	Missing	**				
15	A	0	9	10	-0.68	0.35
	C	0	24	26	-0.92	0.08
	B	1	59	64	1.85	0.16
	Missing	**				
16	B	0	11	12	0.15	0.55
	C	0	25	27	-0.57	0.18
	A	1	54	59	1.62	0.19
	Missing	**	2	2	2.97	0.41
17	B	0	8	9	-1.08	0.14
	C	0	10	11	-0.34	0.45
	A	1	74	80	1.25	0.18
	Missing	**				
18	A	0	5	5	-0.94	0.23
	C	0	13	14	-0.79	0.25
	B	1	74	80	1.29	0.18
	Missing	**				
19	A	0	9	10	-1.19	0.16
	B	0	25	27	-0.82	0.08
	C	1	58	63	1.93	0.15
	Missing	**				
20	B	0	20	22	0.43	0.35
	A	1	28	30	0.86	0.37
	C	0	43	47	1.09	0.24
	Missing	**	1	1	1.31	0.00

Table 3
Item Statistics, Entry Order, Grade 6 MCRC Form 2

Item Number	Raw Score	Count	Measure	Model Standard Error	Mean Square Outfit
1	136	157	-1.59	-0.85	0.78
2	108	157	-0.38	-0.41	0.95
3	140	157	-1.86	0.18	1.03
4	59	157	1.10	0.61	1.06
5	121	157	-0.86	-0.94	0.85
6	112	157	-0.52	-2.15	0.75
7	124	157	-0.99	-0.04	0.98
8	143	157	-2.09	-2.14	0.42
9	100	157	-0.12	-2.05	0.81
10	59	157	1.10	2.45	1.25
11	68	157	0.83	0.73	1.06
12	46	157	1.52	2.10	1.29
13	52	157	1.32	0.90	1.10
14	130	157	-1.26	-2.00	0.63
15	82	157	0.42	-0.42	0.97
16	67	157	0.86	3.36	1.31
17	49	157	1.42	3.08	1.41
18	61	157	1.04	0.95	1.09
19	119	157	-0.78	-1.64	0.76
20	67	157	0.86	1.50	1.13

Table 4
Distractor Analysis, Grade 6 MCRC Form 2

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
1	C	0	1	1	-0.50	0.00
	B	0	20	13	-0.26	0.17
	A	1	136	87	0.63	0.07
	Missing	**				
2	C	0	18	11	0.15	0.15
	A	0	31	20	0.01	0.16
	B	1	108	69	0.72	0.08
	Missing	**				
3	C	0	8	5	0.04	0.39
	A	0	9	6	-0.39	0.25
	B	1	140	89	0.6	0.07
	Missing	**				
4	C	0	22	14	-0.17	0.15
	A	1	59	38	0.88	0.12
	B	0	76	48	0.43	0.08
	Missing	**				
5	B	0	8	5	-0.82	0.32
	A	0	28	18	0.06	0.15
	C	1	121	77	0.71	0.07
	Missing	**				
6	A	0	15	10	-0.37	0.22
	B	0	30	19	-0.11	0.14
	C	1	112	71	0.80	0.07
	Missing	**				
7	B	0	15	10	-0.23	0.32
	C	0	18	11	0.07	0.14
	A	1	124	79	0.66	0.07
	Missing	**	0	0	0	0
8	A	0	6	4	-0.94	0.32
	C	0	8	5	-0.89	0.21
	B	1	143	91	0.65	0.06
	Missing	**				
9	A	0	13	8	-0.05	0.23
	B	0	44	28	-0.04	0.11
	C	1	100	64	0.83	0.07
	Missing	**	1	1	-0.23	0.00
10	A	0	42	27	0.21	0.14
	B	0	54	34	0.53	0.11
	C	1	59	38	0.67	0.10
	Missing	**	2	1	1.58	0.17

Table 4
Distractor Analysis, Grade 6 MCRC Form 2 (Continued)

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
11	B	0	41	26	0.21	0.12
	C	0	48	31	0.32	0.10
	A	1	68	43	0.83	0.11
	Missing	**				
12	C	0	36	23	0.28	0.12
	B	1	46	29	0.74	0.13
	A	0	75	48	0.48	0.10
	Missing	**				
13	A	0	16	10	-0.31	0.23
	C	1	52	33	0.77	0.11
	B	0	88	56	0.52	0.08
	Missing	**	1	1	-0.23	0.00
14	B	0	5	3	-1.01	0.35
	C	0	21	13	-0.30	0.14
	A	1	130	83	0.71	0.06
	Missing	**	1	1	-0.23	0.00
15	B	0	30	19	0.18	0.17
	A	0	44	28	0.18	0.11
	C	1	82	52	0.82	0.09
	Missing	**	1	1	-0.23	0.00
16	A	0	41	26	0.44	0.12
	C	0	48	31	0.34	0.11
	B	1	67	43	0.69	0.11
	Missing	**	1	1	-0.23	0.00
17	A	0	17	11	-0.28	0.21
	B	1	49	31	0.60	0.14
	C	0	90	57	0.62	0.07
	Missing	**	1	1	-0.23	0.00
18	C	0	36	23	-0.02	0.14
	B	0	59	38	0.49	0.10
	A	1	61	39	0.85	0.10
	Missing	**	1	1	-0.23	0.00
19	A	0	13	8	-0.44	0.23
	B	0	24	15	-0.10	0.16
	C	1	119	76	0.75	0.07
	Missing	**	1	1	-0.23	0.00
20	C	0	32	20	0.32	0.14
	B	0	57	36	0.37	0.11
	A	1	67	43	0.74	0.10
	Missing	**	1	1	-0.23	0.00

Table 5
Item Statistics, Entry Order, Grade 6 MCRC Form 3

Item Number	Raw Score	Count	Measure	Model Standard Error	Mean Square Outfit
1	118	136	-1.72	1.3	1.52
2	82	136	0.19	0.28	1.03
3	101	136	-0.67	-3.05	0.46
4	100	136	-0.62	-3.56	0.41
5	120	136	-1.89	0.08	0.98
6	90	136	-0.15	-3.06	0.57
7	37	136	2.02	3.82	2.16
8	95	136	-0.38	-3.42	0.49
9	76	136	0.44	3.85	1.59
10	86	136	0.02	-1.33	0.81
11	106	136	-0.94	3.42	2.09
12	73	136	0.56	-1.57	0.8
13	83	136	0.15	-2.45	0.68
14	61	136	1.03	2.08	1.32
15	76	136	0.44	-0.04	0.99
16	80	136	0.27	-2.31	0.71
17	106	136	-0.94	0.87	1.21
18	84	136	0.11	3.37	1.57
19	59	136	1.11	-1.27	0.82
20	62	136	0.99	1.14	1.16

Table 6
Distractor Analysis, Grade 6 MCRC Form 3

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
1	A	0	6	4	-1.04	0.33
	B	0	12	9	-0.05	0.46
	C	1	118	87	0.87	0.11
	Missing	**				
2	A	0	27	20	0.43	0.27
	C	0	27	20	-0.60	0.20
	B	1	82	60	1.23	0.10
	Missing	**				
3	C	0	12	9	-0.95	0.24
	B	0	23	17	-0.82	0.17
	A	1	101	74	1.25	0.09
	Missing	**				
4	B	0	13	10	-1.29	0.27
	A	0	23	17	-0.70	0.09
	C	1	100	74	1.29	0.09
	Missing	**				
5	C	0	5	4	-0.44	0.21
	A	0	11	8	-0.60	0.41
	B	1	120	88	0.88	0.11
	Missing	**				
6	B	0	13	10	-0.49	0.23
	C	0	33	24	-0.59	0.18
	A	1	90	66	1.36	0.09
	Missing	**				
7	C	0	18	13	1.26	0.26
	A	1	37	27	1.08	0.21
	B	0	81	60	0.42	0.14
	Missing	**				
8	B	0	9	7	-1.04	0.39
	A	0	32	24	-0.68	0.14
	C	1	95	70	1.34	0.09
	Missing	**				
9	C	0	20	15	-0.19	0.28
	A	0	39	29	0.75	0.19
	B	1	76	56	0.93	0.14
	Missing	**	1	1	0.49	0.00
10	C	0	7	5	-1.26	0.31
	B	0	43	32	-0.15	0.15
	A	1	86	63	1.30	0.11
	Missing	**				

Table 6
Distractor Analysis, Grade 6 MCRC Form 3 (Continued)

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
11	A	0	4	3	-0.63	0.64
	B	0	26	19	0.55	0.27
	C	1	106	78	0.80	0.12
	Missing	**				
12	C	0	21	15	0.31	0.26
	A	0	42	31	-0.45	0.14
	B	1	73	54	1.49	0.10
	Missing	**				
13	B	0	19	14	0.05	0.27
	C	0	34	25	-0.64	0.17
	A	1	83	61	1.41	0.09
	Missing	**				
14	C	0	31	23	-0.26	0.21
	A	0	44	32	0.74	0.18
	B	1	61	45	1.18	0.15
	Missing	**	0	0	0	0
15	A	0	11	8	-0.09	0.29
	B	0	49	36	-0.05	0.17
	C	1	76	56	1.31	0.12
	Missing	**				
16	B	0	16	12	-0.04	0.22
	A	0	40	29	-0.36	0.19
	C	1	80	59	1.39	0.10
	Missing	**				
17	C	0	9	7	-1.11	0.26
	B	0	21	15	0.21	0.28
	A	1	106	78	0.96	0.11
	Missing	**				
18	A	0	19	14	0.27	0.32
	C	0	33	24	0.54	0.19
	B	1	84	62	0.87	0.14
	Missing	**				
19	C	0	36	26	-0.42	0.19
	A	0	41	30	0.54	0.17
	B	1	59	43	1.52	0.12
	Missing	**				
20	B	0	28	21	-0.24	0.26
	A	0	45	33	0.69	0.15
	C	1	62	46	1.25	0.14
	Missing	**	1	1	-1.62	0.00

Table 7
Item Statistics, Entry Order, Grade 6 MCRC Form 4

Item Number	Raw Score	Count	Measure	Model Standard Error	Mean Square Outfit
1	111	118	-2.07	-0.63	0.58
2	95	118	-0.51	-0.45	0.87
3	95	118	-0.51	0.64	1.15
4	80	118	0.31	-0.96	0.85
5	110	118	-1.91	-0.88	0.52
6	55	118	1.41	3.46	1.48
7	96	118	-0.58	-0.26	0.91
8	67	118	0.9	-0.99	0.88
9	71	118	0.73	0.02	1
10	80	118	0.31	0.21	1.02
11	61	118	1.15	0.57	1.06
12	96	118	-0.58	-0.84	0.77
13	73	118	0.64	0.32	1.04
14	100	118	-0.87	-0.67	0.78
15	96	118	-0.58	-1.22	0.69
16	63	118	1.07	-0.14	0.98
17	103	118	-1.12	-1.08	0.62
18	75	118	0.55	1.38	1.2
19	42	118	1.97	2.49	1.44
20	92	118	-0.32	-0.8	0.81

Table 8
Distractor Analysis, Grade 6 MCRC Form 4

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
1	A	0	3	3	-0.89	0.42
	C	0	4	3	-0.05	0.59
	B	1	111	94	1.33	0.10
	Missing	**				
2	B	0	11	9	0.11	0.39
	C	0	12	10	0.32	0.25
	A	1	95	81	1.47	0.10
	Missing	**				
3	C	0	11	9	0.94	0.23
	A	0	12	10	0.24	0.35
	B	1	95	81	1.39	0.11
	Missing	**				
4	A	0	12	10	-0.14	0.33
	B	0	26	22	0.68	0.18
	C	1	80	68	1.61	0.11
	Missing	**				
5	C	0	2	2	-0.49	0.00
	B	0	6	5	-0.50	0.53
	A	1	110	93	1.35	0.10
	Missing	**				
6	A	0	12	10	0.36	0.35
	B	0	50	42	1.26	0.16
	C	1	55	47	1.39	0.15
	Missing	**	1	1	1.05	0.00
7	C	0	4	3	-0.71	0.54
	A	0	18	15	0.54	0.24
	B	1	96	81	1.44	0.10
	Missing	**				
8	B	0	21	18	0.46	0.26
	C	0	29	25	0.48	0.15
	A	1	67	57	1.76	0.11
	Missing	**	1	1	3.39	0.00
9	C	0	6	5	0.36	0.46
	A	0	40	34	0.67	0.14
	B	1	71	60	1.63	0.13
	Missing	**	1	1	0.26	0.00
10	A	0	16	14	0.16	0.26
	B	0	20	17	0.77	0.17
	C	1	80	68	1.55	0.12
	Missing	**	2	2	1.43	1.17

Table 8
Distractor Analysis, Grade 6 MCRC Form 4 (Continued)

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
11	A	0	21	18	0.65	0.17
	B	0	35	30	0.71	0.19
	C	1	61	52	1.74	0.13
	Missing	**	1	1	0.26	0.00
12	C	0	8	7	0.24	0.43
	A	0	13	11	0.18	0.25
	B	1	96	81	1.46	0.11
	Missing	**	1	1	0.26	0.00
13	B	0	12	10	0.5	0.37
	C	0	31	26	0.63	0.20
	A	1	73	62	1.61	0.11
	Missing	**	2	2	0.66	0.39
14	A	0	6	5	-0.25	0.26
	B	0	11	9	0.25	0.35
	C	1	100	85	1.43	0.10
	Missing	**	1	1	0.26	0.00
15	C	0	9	8	-0.22	0.39
	B	0	13	11	0.16	0.25
	A	1	96	81	1.51	0.10
	Missing	**				
16	A	0	23	19	0.50	0.23
	B	0	32	27	0.84	0.16
	C	1	63	53	1.69	0.13
	Missing	**				
17	C	0	7	6	-0.42	0.48
	A	0	8	7	0.14	0.21
	B	1	103	87	1.42	0.10
	Missing	**				
18	C	0	3	3	-0.09	1.00
	B	0	40	34	0.91	0.16
	A	1	75	64	1.45	0.13
	Missing	**				
19	B	0	16	14	0.26	0.25
	C	1	42	36	1.72	0.18
	A	0	59	50	1.16	0.13
	Missing	**	1	1	0.26	0
20	C	0	12	10	0.62	0.18
	A	0	14	12	0.03	0.31
	B	1	92	78	1.49	0.11
	Missing	**				

Table 9
Item Statistics, Entry Order, Grade 6 MCRC Form 5

Item Number	Raw Score	Count	Measure	Model Standard Error	Mean Square Outfit
1	57	69	-0.87	-0.52	0.82
2	60	69	-1.24	-0.63	0.74
3	53	69	-0.47	-1.37	0.69
4	43	69	0.32	-0.56	0.92
5	42	69	0.39	-1.38	0.82
6	47	69	0.02	0.42	1.06
7	61	69	-1.39	-0.27	0.84
8	63	69	-1.73	-1.48	0.38
9	49	69	-0.13	-0.27	0.94
10	26	69	1.48	1.28	1.18
11	56	69	-0.77	0.1	1
12	32	69	1.06	0.75	1.08
13	24	69	1.62	3.95	1.72
14	54	69	-0.57	-0.94	0.76
15	47	69	0.02	0.57	1.09
16	19	69	2.01	3.21	1.77
17	46	69	0.1	-1.66	0.75
18	45	69	0.17	0.14	1.01
19	53	69	-0.47	-0.81	0.8
20	41	69	0.46	-1.5	0.82

Table 10
Distractor Analysis, Grade 6 MCRC Form 5

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
1	B	0	2	3	0.87	0.14
	C	0	10	14	0.09	0.23
	A	1	57	83	1.04	0.11
	Missing	**				
2	B	0	2	3	-0.39	0.37
	C	0	7	10	0.24	0.24
	A	1	60	87	1.02	0.10
	Missing	**				
3	B	0	3	4	-0.18	0.08
	A	0	13	19	0.16	0.18
	C	1	53	77	1.14	0.10
	Missing	**				
4	B	0	11	16	0.15	0.27
	A	0	15	22	0.66	0.17
	C	1	43	62	1.17	0.12
	Missing	**				
5	A	0	13	19	0.40	0.20
	C	0	14	20	0.34	0.17
	B	1	42	61	1.24	0.12
	Missing	**				
6	B	0	10	14	0.38	0.23
	A	0	11	16	0.80	0.23
	C	1	47	68	1.04	0.13
	Missing	**	1	1	0.22	0.00
7	C	0	3	4	-0.34	0.22
	A	0	5	7	0.41	0.40
	B	1	61	88	1.00	0.10
	Missing	**				
8	B	0	3	4	-0.59	0.08
	C	0	3	4	-0.43	0.17
	A	1	63	91	1.03	0.1
	Missing	**	0	0	0	0
9	B	0	9	13	0.44	0.33
	C	0	11	16	0.22	0.20
	A	1	49	71	1.13	0.11
	Missing	**				
10	C	0	12	17	0.40	0.21
	B	1	26	38	1.15	0.18
	A	0	31	45	0.87	0.14
	Missing	**				

Table 10
Distractor Analysis, Grade 6 MCRC Form 5 (Continued)

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
11	A	0	3	4	0.07	0.36
	B	0	10	14	0.61	0.21
	C	1	56	81	0.99	0.12
	Missing	**				
12	A	0	14	20	0.20	0.17
	C	0	21	30	1.00	0.20
	B	1	32	46	1.15	0.13
	Missing	**	2	3	0.61	0.39
13	A	0	10	14	0.55	0.20
	C	1	24	35	0.73	0.20
	B	0	33	48	1.14	0.13
	Missing	**	2	3	0.61	0.39
14	C	0	4	6	-0.26	0.10
	A	0	8	12	0.23	0.24
	B	1	54	78	1.09	0.11
	Missing	**	3	4	0.74	0.26
15	A	0	7	10	0.84	0.23
	C	0	13	19	0.51	0.20
	B	1	47	68	1.02	0.13
	Missing	**	2	3	0.61	0.39
16	B	0	16	23	0.79	0.21
	C	1	19	28	0.78	0.22
	A	0	33	48	1.05	0.14
	Missing	**	1	1	-0.26	0.00
17	C	0	6	9	0.31	0.24
	B	0	16	23	0.23	0.18
	A	1	46	67	1.23	0.11
	Missing	**	1	1	-0.26	0.00
18	B	0	7	10	0.55	0.31
	A	0	16	23	0.58	0.18
	C	1	45	65	1.09	0.13
	Missing	**	1	1	-0.26	0.00
19	A	0	6	9	0.08	0.32
	C	0	9	13	0.38	0.23
	B	1	53	77	1.10	0.11
	Missing	**	1	1	-0.26	0.00
20	C	0	11	16	0.35	0.16
	B	0	16	23	0.39	0.20
	A	1	41	59	1.27	0.11
	Missing	**	1	1	-0.26	0.00

Table 11
Item Statistics, Entry Order, Grade 6 MCRC Form 6

Item Number	Raw Score	Count	Measure	Model Standard Error	Mean Square Outfit
1	145	173	-1.24	-0.59	0.86
2	147	173	-1.34	-2.23	0.56
3	134	173	-0.76	0.39	1.05
4	108	173	0.1	-0.29	0.97
5	132	173	-0.69	-1.5	0.78
6	82	173	0.82	1.35	1.11
7	23	173	2.82	1.4	1.39
8	153	173	-1.68	-1.43	0.63
9	137	173	-0.88	-1.22	0.8
10	83	173	0.8	4.45	1.39
11	110	173	0.04	0.61	1.06
12	47	173	1.84	2.89	1.47
13	80	173	0.88	1.67	1.14
14	121	173	-0.3	0.01	1
15	48	173	1.81	3.18	1.51
16	123	173	-0.37	-0.94	0.88
17	139	173	-0.97	-2.35	0.62
18	107	173	0.13	0.6	1.05
19	103	173	0.24	-0.57	0.95
20	145	173	-1.24	-1.86	0.64

Table 12
Distractor Analysis, Grade 6 MCRC Form 6

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
1	A	0	6	3	-0.1	0.27
	C	0	22	13	-0.2	0.21
	B	1	145	84	0.84	0.07
	Missing	**				
2	C	0	11	6	-0.51	0.21
	B	0	14	8	-0.65	0.18
	A	1	147	85	0.89	0.06
	Missing	**	1	1	0.46	0.00
3	A	0	3	2	-0.45	0.64
	C	0	35	20	0.21	0.15
	B	1	134	77	0.82	0.08
	Missing	**	1	1	0.46	0.00
4	B	0	20	12	-0.34	0.17
	A	0	43	25	0.42	0.15
	C	1	108	62	0.99	0.07
	Missing	**	2	1	-0.64	1.10
5	B	0	14	8	-0.21	0.25
	C	0	25	14	-0.19	0.18
	A	1	132	76	0.93	0.07
	Missing	**	2	1	0.60	0.14
6	C	0	20	12	0.13	0.18
	A	0	70	40	0.42	0.10
	B	1	82	47	1.03	0.10
	Missing	**	1	1	0.46	0.00
7	B	0	10	6	0.05	0.30
	C	1	23	13	1.04	0.19
	A	0	139	80	0.66	0.08
	Missing	**	1	1	0.46	0.00
8	C	0	8	5	-0.79	0.23
	B	0	12	7	-0.19	0.20
	A	1	153	88	0.82	0.07
	Missing	**				
9	A	0	10	6	-0.25	0.27
	B	0	26	15	-0.22	0.19
	C	1	137	79	0.91	0.07
	Missing	**				
10	C	0	41	24	0.39	0.17
	A	0	49	28	0.75	0.11
	B	1	83	48	0.77	0.10
	Missing	**				

Table 12
Distractor Analysis, Grade 6 MCRC Form 6 (Continued)

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
11	B	0	31	18	0.45	0.18
	C	0	31	18	0.02	0.17
	A	1	110	64	0.92	0.08
	Missing	**	1	1	1.37	0.00
12	C	1	47	27	0.85	0.14
	B	0	61	35	0.63	0.12
	A	0	63	36	0.59	0.12
	Missing	**	2	1	0.75	0.29
13	A	0	30	17	0.18	0.18
	B	0	62	36	0.54	0.11
	C	1	80	46	0.96	0.10
	Missing	**	1	1	1.04	0.00
14	C	0	11	6	-0.06	0.27
	A	0	41	24	0.16	0.16
	B	1	121	70	0.92	0.07
	Missing	**				
15	B	0	18	10	-0.05	0.25
	A	1	48	28	0.91	0.14
	C	0	107	62	0.69	0.08
	Missing	**				
16	A	0	22	13	-0.28	0.18
	B	0	28	16	0.25	0.18
	C	1	123	71	0.94	0.07
	Missing	**				
17	B	0	10	6	-0.43	0.27
	C	0	23	13	-0.50	0.17
	A	1	139	80	0.96	0.06
	Missing	**	1	1	-0.84	0.00
18	C	0	18	10	-0.21	0.21
	A	0	46	27	0.40	0.12
	B	1	107	62	0.95	0.08
	Missing	**	2	1	0.47	0.27
19	B	0	16	9	0.54	0.2
	A	0	53	31	0.10	0.12
	C	1	103	60	1.00	0.08
	Missing	**	1	1	0.19	0.00
20	C	0	6	3	-0.82	0.22
	A	0	22	13	-0.42	0.19
	B	1	145	84	0.90	0.06
	Missing	**				

Table 13
Item Statistics, Entry Order, Grade 6 MCRC Form 9

Item Number	Raw Score	Count	Measure	Model Standard Error	Mean Square Outfit
1	151	167	-3.71	0.9	1.24
2	144	167	-3.28	0.04	0.99
3	39	167	0	0.26	1.03
4	59	167	-0.63	-0.3	0.97
5	9	167	1.77	-0.42	0.8
6	5	167	2.4	-0.56	0.65
7	38	167	0.04	-0.12	0.98
8	12	167	1.45	-0.28	0.88
9	13	167	1.36	-0.95	0.71
10	40	167	-0.03	0.31	1.03
11	140	167	-3.09	1.36	1.26
12	64	167	-0.77	-0.55	0.96
13	16	167	1.12	-1.27	0.68
14	12	167	1.45	0.36	1.08
15	97	167	-1.66	1.97	1.13
16	45	167	-0.2	-0.01	0.99
17	47	167	-0.27	-0.67	0.93
18	17	167	1.05	0.15	1.02
19	21	167	0.8	-0.26	0.93
20	6	167	2.2	-0.65	0.66

Table 14
Distractor Analysis, Grade 6 MCRC Form 9

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
1	B	0	4	2	-1.45	0.40
	C	0	12	7	-1.46	0.18
	A	1	151	90	-1.28	0.06
	Missing	**				
2	B	0	5	3	-1.54	0.25
	A	0	18	11	-1.69	0.17
	C	1	144	86	-1.24	0.05
	Missing	**				
3	C	0	12	7	-1.03	0.20
	B	1	39	23	-0.98	0.11
	A	0	116	69	-1.43	0.06
	Missing	**				
4	A	0	12	7	-1.61	0.18
	C	1	59	35	-1.00	0.08
	B	0	95	57	-1.45	0.07
	Missing	**	1	1	-0.79	0.00
5	A	1	9	5	-0.68	0.25
	B	0	12	7	-1.21	0.22
	C	0	146	87	-1.34	0.05
	Missing	**				
6	A	1	5	3	-0.42	0.39
	C	0	8	5	-0.86	0.16
	B	0	154	92	-1.35	0.05
	Missing	**				
7	C	0	5	3	-0.22	0.37
	B	1	38	23	-0.98	0.09
	A	0	124	74	-1.44	0.06
	Missing	**				
8	A	0	6	4	-1.13	0.36
	C	1	12	7	-0.85	0.14
	B	0	149	89	-1.34	0.05
	Missing	**				
9	B	1	13	8	-0.65	0.12
	C	0	56	34	-1.41	0.09
	A	0	98	59	-1.32	0.07
	Missing	**				
10	C	0	8	5	-1.03	0.36
	A	1	40	24	-1.01	0.10
	B	0	119	71	-1.41	0.06
	Missing	**				

Table 14
Distractor Analysis, Grade 6 MCRC Form 9 (Continued)

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
11	B	0	13	8	-1.33	0.15
	A	0	14	8	-1.50	0.23
	C	1	140	84	-1.27	0.06
	Missing	**				
12	C	0	15	9	-1.08	0.16
	A	1	64	38	-1.01	0.08
	B	0	88	53	-1.54	0.06
	Missing	**				
13	B	1	16	10	-0.49	0.17
	C	0	56	34	-1.29	0.08
	A	0	95	57	-1.44	0.07
	Missing	**				
14	C	0	7	4	-1.00	0.24
	A	1	12	7	-0.90	0.25
	B	0	148	89	-1.34	0.05
	Missing	**				
15	B	0	27	16	-1.46	0.11
	A	0	43	26	-1.36	0.11
	C	1	97	58	-1.22	0.07
	Missing	**				
16	B	1	45	27	-1.02	0.08
	A	0	56	34	-1.35	0.11
	C	0	66	40	-1.43	0.07
	Missing	**				
17	A	0	4	2	-1.61	0.19
	C	1	47	28	-0.93	0.09
	B	0	116	69	-1.44	0.06
	Missing	**	0	0	0	0
18	A	1	17	10	-0.93	0.18
	B	0	23	14	-0.98	0.15
	C	0	127	76	-1.40	0.06
	Missing	**				
19	A	0	12	7	-1.08	0.25
	B	1	21	13	-0.84	0.14
	C	0	134	80	-1.39	0.05
	Missing	**				
20	B	1	6	4	-0.43	0.33
	C	0	15	9	-1.01	0.15
	A	0	146	87	-1.36	0.05
	Missing	**				

Table 15
Item Statistics, Entry Order, Grade 6 MCRC Form 10

Item Number	Raw Score	Count	Measure	Model Standard Error	Mean Square Outfit
1	6	119	1.88	1.11	1.52
2	4	119	2.31	-0.75	0.53
3	86	119	-2.32	0.31	1.04
4	2	119	3.02	-0.37	0.54
5	12	119	1.11	0.74	1.21
6	84	119	-2.23	1.02	1.13
7	8	119	1.56	-0.54	0.75
8	55	119	-1.08	-1.97	0.87
9	36	119	-0.33	0.01	1
10	18	119	0.62	-0.33	0.91
11	9	119	1.43	1.98	1.87
12	101	119	-3.18	0.83	1.19
13	41	119	-0.54	-1.67	0.84
14	75	119	-1.85	1.22	1.11
15	96	119	-2.85	0.3	1.05
16	21	119	0.43	1.41	1.3
17	18	119	0.62	0.43	1.08
18	25	119	0.2	-0.43	0.92
19	24	119	0.25	0.69	1.12
20	14	119	0.93	-0.04	0.96

Table 16
Distractor Analysis, Grade 6 MCRC Form 10

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
1	A	1	6	5	-1.16	0.38
	B	0	6	5	-0.81	0.23
	C	0	107	90	-1.31	0.08
	Missing	**				
2	C	1	4	3	-0.31	0.21
	B	0	10	8	-1.46	0.48
	A	0	105	88	-1.29	0.07
	Missing	**				
3	A	0	7	6	-2.02	0.68
	C	0	26	22	-1.56	0.13
	B	1	86	72	-1.13	0.07
	Missing	**				
4	A	1	2	2	-0.39	0.17
	B	0	41	34	-1.20	0.14
	C	0	76	64	-1.34	0.08
	Missing	**				
5	A	0	10	8	-1.1	0.24
	C	1	12	10	-1.02	0.22
	B	0	97	82	-1.32	0.08
	Missing	**				
6	C	0	9	8	-1.48	0.28
	A	0	26	22	-1.61	0.22
	B	1	84	71	-1.15	0.07
	Missing	**				
7	C	1	8	7	-0.65	0.16
	B	0	25	21	-1.47	0.21
	A	0	85	71	-1.26	0.07
	Missing	**	1	1	-2.65	0.00
8	A	0	7	6	-1.58	0.15
	B	1	55	46	-0.89	0.07
	C	0	56	47	-1.59	0.11
	Missing	**	1	1	-2.65	0.00
9	A	1	36	30	-0.95	0.10
	B	0	39	33	-1.49	0.15
	C	0	43	36	-1.32	0.10
	Missing	**	1	1	-2.65	0.00
10	A	0	3	3	-1.84	0.79
	C	1	18	15	-0.85	0.12
	B	0	97	82	-1.32	0.08
	Missing	**	1	1	-2.65	0.00

Table 16
Distractor Analysis, Grade 6 MCRC Form 10 (Continued)

Entry #	Data Code	Score Value	Count	%	Average Measure	S.E. Mean
11	B	1	9	8	-1.12	0.35
	A	0	15	13	-1.40	0.34
	C	0	94	79	-1.25	0.06
	Missing	**	1	1	-2.65	0.00
12	C	0	4	3	-2.02	1.24
	B	0	13	11	-1.62	0.22
	A	1	101	85	-1.19	0.06
	Missing	**	1	1	-2.65	0.00
13	A	0	10	8	-1.14	0.31
	C	1	41	34	-0.78	0.09
	B	0	67	56	-1.57	0.09
	Missing	**	1	1	-2.65	0.00
14	C	0	10	8	-1.5	0.32
	B	0	33	28	-1.47	0.17
	A	1	75	63	-1.14	0.07
	Missing	**	1	1	-2.65	0.00
15	A	0	11	9	-1.89	0.26
	B	0	11	9	-1.63	0.43
	C	1	96	81	-1.15	0.06
	Missing	**	1	1	-2.65	0.00
16	C	0	8	7	-1.93	0.54
	B	1	21	18	-0.96	0.19
	A	0	89	75	-1.27	0.06
	Missing	**	1	1	-2.65	0.00
17	C	0	7	6	-1.36	0.35
	A	1	18	15	-0.91	0.16
	B	0	93	78	-1.33	0.08
	Missing	**	1	1	-1.69	0.00
18	B	0	8	7	-2.05	0.19
	C	1	25	21	-0.87	0.11
	A	0	85	71	-1.31	0.09
	Missing	**	1	1	-1.69	0.00
19	A	0	5	4	-1.51	0.58
	B	1	24	20	-1.06	0.13
	C	0	89	75	-1.31	0.08
	Missing	**	1	1	-1.69	0.00
20	A	1	14	12	-0.95	0.12
	C	0	22	18	-1.45	0.24
	B	0	82	69	-1.28	0.08
	Missing	**	1	1	-1.69	0.00