

Alternate Kentucky Summative Assessment



Kentucky Department of
E D U C A T I O N

2021-22 Technical Manual

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CHAPTER 1: OVERVIEW OF THE ASSESSMENT SYSTEM

Kentucky Board of Education Vision and Mission

The vision of the Kentucky Board of Education (KBE) is that each and every Kentucky learner will become a productive, engaged citizen, prepared for school, work and a happy life. Their mission is to improve the future of all Kentuckians by providing leadership, advancing policy and cultivating community partnerships *to ensure every student has equitable access to high-quality, lifelong learning*. The use of standardized state assessments is one strategy for understanding if students are moving toward attainment of the Board's vision.

Kentucky Summative Assessments

The Kentucky Summative Assessments (KSA), previously titled the Kentucky Performance Rating for Educational Progress (K-PREP) is an assessment for grades 3-8, 10 and 11. It is a criterion-referenced test (CRT) with items consisting of multiple-choice (mc), multiple select (ms), technology enhanced (te), extended-response (er) and short answer (sa). The KSA is customized for Kentucky.

Alternate KSA Assessments

The Kentucky Alternate Assessment Program, originally developed in 1990 because of the Reform Act of 1990, is to provide schools and programs with a valid and reliable means of assessing the instruction provided to students with moderate and significant disabilities. These students represent less than 1% of the total assessed population in Kentucky. The Alternate KSA includes 2 components: Attainment Tasks (AT) for grades 3-8 and grades 10-11 and the Transition Attainment Record (TAR) for students in grade 11 with students able to complete at grades 12 and 14 to meet the post-secondary readiness indicator in the state accountability system. These assessments meet federal requirements for Every Student Succeeds Act (ESSA, 2015) and Individuals with Disabilities Education Act (IDEA).

Attainment Tasks (AT)

The AT are individually administered grade level content items that require students to respond to a fully scripted assessment directed by the test administrator.

Transition Attainment Record (TAR)

The TAR is a rating scale that evaluates the student's readiness in reading, mathematics, and science.

The assessment and accountability model represents a balanced approach that incorporates all aspects of school and district work.

Rationale for Approach

The AT format was implemented as a way for students with severe cognitive disabilities to have access to the Kentucky Academic Standards through engaged instruction as all Kentucky students should be provided. Unlike regular multiple-choice assessments where most students independently respond to assessment items, assessment formats for alternate assessments are heavily dependent on teacher intervention. As such, minimizing the assessment burden on teachers is especially important.

The Kentucky Department of Education values all students and demonstrates that by including all students in assessments and school accountability. Assessments are developed to allow all students to participate regardless of cognitive abilities, cultural backgrounds, or language development.

State Accountability Model

Kentucky's new accountability system has students at its center—ensuring they are well-rounded, postsecondary ready and prepared with knowledge, skills and essential dispositions to successfully pursue the pathway of their choice after graduating from high school.

SB 158 (2020) amended KRS 158.6455, Section 1 to create an accountability system that will include an annual meaningful differentiation of all public schools in the state using multiple measures that describe the overall performance of each district, school, and student demographic group. Results are reported in an online Report Card including disaggregation of individual student group data and include reported-only measures.

This more robust next-generation model also includes student achievement growth measures, emphasis on college and career readiness, high school graduation rates, student achievement in writing and social studies, and increased focus on the lowest-performing schools. Additionally, the new accountability model holds all schools and districts accountable for improving student performance and creates five performance levels that determine consequences and guide interventions and supports. School and district classifications are based on an exclusive list of six state indicators that measure school performance:

- State Assessment Results in reading and mathematics
- State Assessment Results in science, social studies, and writing
- English Learner Progress
- Quality of School Climate and Safety
- Postsecondary Readiness (high school only)
- Graduation Rate (high school only)

The Alternate KSA is fully represented within Kentucky's Accountability System. Table 1 identifies how these components are represented for both the Alternate KSA, KSA, and other indicator measures.

Table 1: Overview of the Assessment System

Indicator	Data Source	Notes
State Assessment Results in Reading and Mathematics	Alternate KSA (Attainment Tasks) in reading and mathematics	
State Assessment Results in Science, Social Studies and Writing	Alternate KSA (Attainment Tasks) in science, social studies and writing	
Quality of School Climate and Safety	Quality of School Climate and Safety Survey (The survey is modified for students in the Alternate Assessment program.)	
English Learner Progress	Alternate ACCESS	
Postsecondary Readiness (Students earn credit for demonstrating academic or career readiness.)	<p><u>Academic Readiness</u> Benchmarks from Transition Attainment Record at grade 11 (and/or grade 12) **Reading-18 *Mathematics-13 *Science- 16</p> <p><u>Career Readiness</u> The Career Work Experience Certification (CWEC) is a sequence of four courses with work experience embedded within the pathway. The CWEC is one of four components of the Kentucky Alternate Assessment. The achievement of the CWEC is a process, not an assessment. The CWEC along with the Employability Skills Attainment Record (ESAR) is designed to provide a measure of career readiness within the Postsecondary Readiness component of Kentucky’s Accountability System.</p>	High School Only
Graduation Rate	Students are included in 4- and 5-year cohort calculations. Federal guidelines do not identify an Alternate Assessment student as meeting requirements for a regular diploma.	High School Only

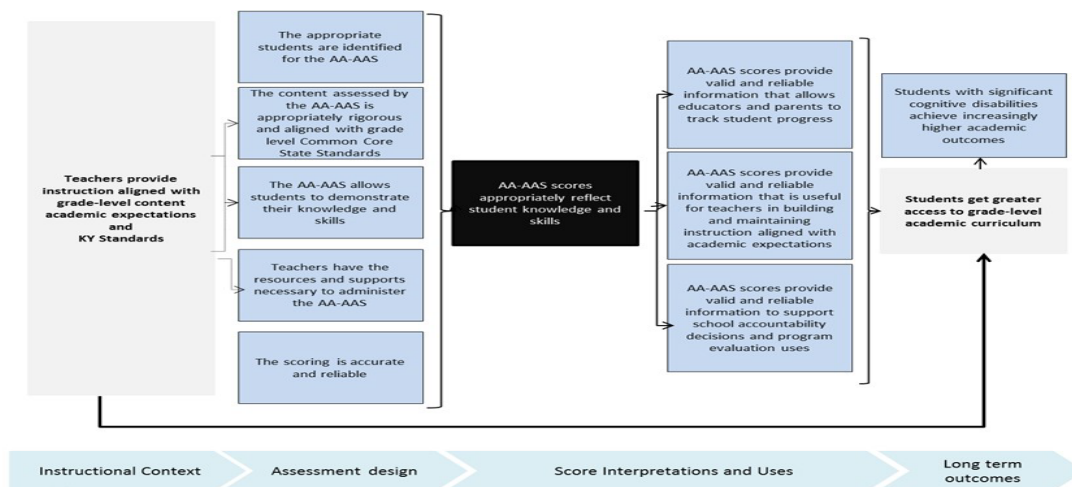
****Transition Attainment Record (TAR) Reading score includes Reading/Language Arts content areas.**

Theory of Action for the Alternate KSA

A Theory of Action (TOA) was developed to focus elements for the validity argument. The TOA displays the claims that will be made about the system and is divided into components that are the focus of the Alternate Kentucky Summative Assessment (AKSA) including instructional context, assessment design, implementation, and appropriate use of results – that lead to short-term assessment outcomes and long-term student outcomes. See Figure 1 for graphic illustration of the Theory of Action.

The TOA starts with the assumption that there are pre-requisites to delivering quality instruction to students with significant cognitive disabilities that is linked to grade specific academic standards. For the assessment system to produce valid and useful results, students participating in the Alternate KSA must be appropriately identified, their instruction must be aligned with the content assessed, and the AKSA must be administered as intended.

Figure 1: Theory of Action for Alternate KSA



CHAPTER 2: WHO ARE THE STUDENTS?

This section describes the policy and procedures for correctly identifying participants for the alternate assessment and the characteristics of those students. Monitoring characteristics of alternate assessment participants as the population has a wider range of knowledge and skills as well as characteristics that may need accommodations to participate meaningfully. Matching the assessment design with the population is an important feature of validity (Pellegrino, Chudowsky, Glaser, 2001).

Participation Policy and Procedures

The following participation criteria were updated in 2018 and are now included in ***Kentucky Statutes 703 Kentucky Administrative Regulation (KAR) 5:070***. In response to the ESSA requirement to limit the participation in alternate assessments to 1% and maximize participation in the state's general assessment; the KDE convened an expert panel, reviewed the participation guidelines, developed training materials for IEP teams, and conducted monitoring visits to assist districts in identifying the population of students who should participate in the alternate assessment. In addition, access to high school diploma was also provided as required by ESSA.

Participation Guidelines

[The Participation Guidelines document](#)

KY's 1% Participation Waiver

KY applied for and received a waiver to the ESSA 1% requirement. Documentation is listed below:

[Commissioner's Letter](#)

[2018-2019 1% Waiver Submission Attachment List](#)

Participation Resources for IEP Teams

Individual Education Program (IEP) teams are required to participate in training regarding the participation of students in the Alternate KSA.

[Guidance document on participation](#)

[Parent Guidance Document](#)

Participation Rate for 2021-22 Administration

The total number of student participants in the 2021-22 for the Alternate KSA was 3,725 for reading, 3,703 for math, 1559 for science, 1607 for social studies, and 1589 for writing. The Participation percentage of 1.1% for Reading and 1.1% for math of the total assessed population in Kentucky. Table 2 below describes the population by grade level in terms of the total population of students assessed in the Alternate KSA and the number of students.

Table 2: Number and Percentage of Students Participating in Alternate KSA

Grade	Content	Number	%
3	Reading	530	1.1
4	Reading	533	1.2
5	Reading	533	1.1
6	Reading	478	1.0
7	Reading	538	1.1
8	Reading	564	1.1
11	Reading	549	1.2
Totals		3,725	1.1%

Grade	Content	Number	%
3	Math	527	1.1
4	Math	512	1.2
5	Math	533	1.1
6	Math	480	1.0
7	Math	538	1.1
8	Math	564	1.1
11	Math	549	1.2
Totals		3,703	1.1%

Grade	Content	Number	%
4	Science	511	1.1
7	Science	538	1.2
11	Science	510	1.1
Total		1559	1.1%

Grade	Content	Number	%
5	Social Studies	511	1.1
8	Social Studies	564	1.1
11	Social Studies	532	1.1
Total		1607	1.1%

Grade	Content	Number	%
5	Writing	522	1.1
8	Writing	559	1.1
11	Writing	498	1.1
Total		1589	1.1%

With the implementation of the ESSA 1% policy, current student participation in Kentucky’s alternate KSA has represented approximately 1.1% of the total population.

Alternate KSA Learner Characteristics

In addition to these participation guidelines, the Kentucky Department of Education conducts an annual survey of characteristics of the learners who participate in the Alternate KSA. The Learner Characteristics Inventory LCI (Kearns, Kleinert, Towles-Reeves, 2006) includes items related to the characteristics of students participating in alternate assessments as an important validity indicator (Pellegrino, Chudowsky & Glaser 2001). Currently, the KDE collects data annually using 7 items from the LCI (Kearns, Kleinert, Kleinert, Towles-Reeves, 2016) through an electronic portal. The LCI can be found in **Appendix A**. The LCI data allows the KDE to monitor the characteristics of the Alternate KSA population. The inventory samples expressive and receptive communication, mobility, engagement, service delivery placement, as well as one reading and one math item. The student’s teacher or the IEP team completes the inventory for each student.

The data from the Learner Characteristics Inventory collected in Kentucky resembles LCI data from other states (Kearns et. al, 2011) and large assessment consortium (Towles-Reeves, Kearns, Kerbel, Kleinert, Quenemoen, and Thurlow (2012). The student population characteristics for 2022 included: 1) disability label, English language status, classroom setting, expressive communication, receptive communication, Augmentative Alternative Communication (AAC) Use, Motor function, social engagement, Attendance/Health, and two items related to current performance in reading and math. Table 3 below summarizes the current LCI data.

Table 3: Alternate KSA Learner Characteristics 2021-2022

Alternate KSA Learner Characteristics					
IDEA Label	Intellectual Disability	Multiple Disabilities	Autism	Other	
	45%	15%	34%	6%	
Expressive Communication	Symbolic Language	Emerging Symbolic	Pre-Symbolic		
	69.4%	20.74%	8.30%		
Receptive Communication	Follows Directions	Requires Cues	Requires Assistance	Uncertain Response	
	30.7%	58.5%	8.15%	1.66%	
AAC Use	Yes	No			
	25%	72.8%			
English Language Status	Yes	No			
	9.89%	89.2%			
Engagement	Initiates and Sustains Social Interactions	Responds to social interactions	Alerts to others	Does not alert to others	
	44.15%	43.55%	10.52%	1.16%	
Educational Placement	Special Classroom only	Special Classroom with General Education 61%	Resource Room	Inclusive Classroom	Segregated School
	31.57%	54.73%	8.99%	.54%	3.74%
Health Attendance	Regular Attendance 90%	Regular Attendance 75%	Attendance 50%	Home Bound health related	Homebound not health related
	84.26%	7.85%	1.27%	4.24%	1.7%
Reading Performance	Fluent Reader interprets passages	Fluent Reader short passages literal understanding	Reads basic items simple sentences	Uses pictures to tell a story identifies sight words	No observable awareness of print or braille
	1.12%	14.95%	44.26%	24.09%	15.03%
Math Performance	Applies Computational procedures	Does basic computational procedures with or without a calculator	Counts with correspondence	Counts by rote	No observable awareness
	1.76%	41.76%	30.45%	10.26%	15.18%

Learner Characteristics Inventory

Students who participate in the Alternate KSA represent approximately 1.1% of the total assessed population. Among this very small population of students with disabilities, 3 disability categories are represented including intellectual disabilities, autism, and multiple disabilities.

Participants communicate primarily with symbolic language using words, oral speech, or symbolic AAC device at 70%, however approximately 30% are emerging in their use of symbols words, and 10% do not use symbols to communicate. Symbolic language use and support is essential for meaningful participation in academic content. Receptive language or understanding directions/sentences/words is necessary for following assessment administration. Currently most 90% alternate KSA participants require additional cues to follow directions or are independent in following directions. While approximately 8.5% need significant support to follow directions and 1.5% have uncertain responses to directions. In addition, approximately 10% of Alternate KSA are English Learners.

Most Alternate KSA participants attend school regularly, although approximately 6% have irregular attendance or receive homebound instruction. Most students receive special education services in self-contained classrooms with some inclusion for music, art, and physical education. Very few students receive services in supportive inclusive grade-level classrooms. Student skills in reading and math include reading basic sight-words and reading short passages with literal interpretation, basic math computation with a calculator or simple counting with correspondence. Approximately, 15% of students in both reading and math have no observable skills in either reading or math.

Implications for Learner Characteristics

The Learner Characteristics for the population of students participating in the Alternate KSA do resemble characteristics of students cited in previous studies (Kearns et. al 2011; Towles-Reeves et. all 2012) about this population. While these students do have intellectual disabilities, communication is essential for access to the general curriculum. Most students are using symbolic language to communicate but almost 30% are emerging in their use of symbolic and about 25% have access to augmentative alternative communication. Most of the population does have skills in reading and math although very basic skills in those content areas and not necessarily grade-specific content at the assessed grades. Most students attend school regularly as a result of improving access, although the pandemic significantly impacted that access with implications for student performance. Approximately 10% receive homebound instruction or have irregular attendance for health or other issues.

CHAPTER 3: CONTENT STANDARDS

Content Standard Regulations/Procedures

[KY Senate Bill 175 \(2019\)](#) calls for the Kentucky Department of Education (KDE) to implement a process for reviewing all academic standards and aligned assessments beginning in the 2017-18 school year. The current schedule calls for one or two content areas to be reviewed each year and every six years thereafter on a rotating basis. The rotation schedule began in the summer of 2017 by soliciting feedback on English/language arts, mathematics and health/physical education standards. The [Kentucky Academic Standards review process regulations](#) can be found on the KDE's website.

Advisory Panels (APs)

Advisory panels for each content area will review the standards and assessments and make recommendations for changes to a Standards and Assessments Review Committee. APs will consist of at least six public school educators who teach the content standards being reviewed along with a representative from an institution of higher education in Kentucky for each grade band: elementary (K-5), middle (6-8) and high school (9-12).

Standards Review Committees (RCs)

The Standards and Assessments Review Committee for each content area will review findings, including public comments/feedback and make recommendations to revise or replace existing standards and review assessments to ensure alignment with the standards. A minimum of six public school educators, who teach in the academic content area being reviewed, at least one representative from higher education, as well as other community shareholders comprise each committee.

Standards and Assessments Process Review Committee (SAPRC)

The Standards and Assessments Process Review Committee (SAPRC) is made up of the Commissioner of Education, or his designee, as a non-voting member and nine voting representatives of public schools, including two parents of public-school students, one language arts teacher, one math teacher, one science teacher, one social studies teacher, two principals, two superintendents, and one school board member, appointed by the Governor and confirmed by the Senate. The SAPRC will review the process to ensure shareholders had adequate opportunity for input. If the process is found sufficient, the recommendations (without amendment) go to the KBE for consideration. If the process is found to be deficient, the recommendations may be returned to the appropriate standards and assessments review committee for additional work.

Once the KBE approves the revised standards and they clear the traditional regulatory review process, which provides yet an additional opportunity for public input, they will be implemented in all Kentucky public schools no later than the second academic year following the process. Existing standards will stay in place until new standards are approved.

Content Standards

The *Kentucky Academic Standards (KAS)* contain the minimum required standards that all Kentucky students should have the opportunity to learn before graduating from Kentucky high schools. The standards address what is to be learned, but do not address how learning experiences are to be designed or what resources should be used. Please visit KYstandards.org to access KAS documents and resources for implementing the KAS

[**Reading and Writing Standards \(Adopted 2019\)**](#)

[**Mathematics Standards \(Adopted 2019\)**](#)

[**Social Studies \(Adopted 2019\)**](#)

[**Science \(Adopted 2015\)**](#)

The KDE Standards Website includes modules to support teacher training on the content standards.

[**Teacher Training on Content Standards**](#)

In addition, KY Regional Education Cooperatives provide teacher training on implementation and curriculum development using the content standards the Alternate KSA for both general and special educators.

Resources for Families

[**Resources supporting family understanding**](#) of the content standards can be found on the KY Standards website. The standards for each grade are presented in separate documents in both English and Spanish.

[**Grade 3 Family Example**](#)

CHAPTER 4: TEST DEVELOPMENT

Test Design Overview

The Alternate KSA test design features include 6 sets of 5 scenario related multiple-choice items designed based on the Test Blueprint. The items are individually administered by a qualified assessment administrator (e.g., trained teacher) and administered in Fall and Spring testing windows. The two windows reduce the number of items that need to be administered at one time to address the characteristics of the learner and the time availability of the test administrator.

Each task contains five related multiple-choice items based on a scenario presented at the beginning of the task. Illustrated response options are presented for each of the items. The response options include one correct answer and two distractors. In some instances, additional materials such as maps, graphs, equations, or sentence templates are provided for use in the administration of the task. In addition, reading items include a passage. Each passage has a corresponding illustrated story board. The individual illustrations in the story board are numbered and these numbers are entered at the appropriate place in the passage in the form of superscript numbers to cue the administrator to present or indicate the appropriate illustration as needed.

Test Blueprint Policy and Procedures

KRS 158.6453 calls for the Kentucky Department of Education (KDE) to implement a process for reviewing all academic standards and aligned assessments with one or two content areas to be reviewed each year, and every six years after that on a rotating basis.

Throughout the months of July 2019 to August 2020, KDE aligned assessment blueprints to the newly adopted standards in Reading/writing, mathematics, and social studies. The KDE releases the blueprints listed below as a resource for curricular and instructional decisions for schools.

The Kentucky Academic Standards for Science are currently under revision and the alignment of the assessment blueprint is not yet available.

Standard Prioritization

In September 2019, alternate assessment teachers and content teachers from across the state were tasked with prioritizing 10 Kentucky Academic Standards per content area (except writing, it will continue to have 6) and grade, based on instructional significance. These standards would be the foundation for the development of the assessments for students who participate as part of the Kentucky Alternate Assessment.

Alternate Assessment Targets

The Kentucky Academic Standards are the foundation and focus for content and the development of state summative assessments. However, there are times when test

development occurs where the need to reduce the depth and breadth of a standard is necessary. The requirement to maintain content alignment based on the grade level standard is non-negotiable, but the ability to reduce the complexity of the standards initial foundation for assessment purposes is often considered. This process does not create a new standard, but in this case develops an Alternate Assessment Target. The current definition of an Alternate Assessment Target is provided below:

Alternate Assessment Targets: (not a standard)

An Alternate Assessment Target represents limits to a selected Kentucky Academic Standard. An Alternate Assessment Target may reduce parts of the standard with specific guidance to what an assessment item could represent. Not all Kentucky Academic Standards selected for assessments will have an Alternate Assessment Target and may display the language: “No limitations. All parts of the Kentucky Academic Standard are eligible to be included as an assessment item.” This would mean that the entire standard in its original form is reduced in depth and breadth and is eligible in its entirety to be used in the development of assessment items

Links to Assessment Targets Documents

[Reading](#)

[Mathematics](#)

[Science](#)

[Social Studies](#)

[Writing](#)

Test Blueprint

The Alternate KSA Blueprint development begins with a review and prioritization of the content standards (See Chapter 2) at each grade by stakeholders to ensure that the standards included in the Blueprint for the Assessment targets identified in the standards prioritization process follow a learning progression framework (Hess, 2007) and identify assessment targets used in item development. Alternate KSA are appropriately aligned to the KY Assessment Blueprint ensuring that the content standards follow a learning progression across grades and represent essential learning targets for learners who need additional time and support for learning to be most effective.

The Alternate KSA Blueprints include the standards across the content areas in reading, mathematics, science, social studies, and writing. Each content area includes the key domains

in the content area, the percentage of each key domain, the number of standards represented in the domain to match the general education test blueprint percentages as closely as possible.

The reading content area includes 10 content standards matching the blueprint for the general assessment. Emphasis varies slightly in the number of standards per domain across grades, but the percentages remain consistent across the domains. From these 10 standards, thirty items will be developed and administered in two assessment windows. **Table 4** below is the blueprint for reading.

Table 4: Alternate KSA Blueprint for Reading

Grades 3, 4, and 5

DOMAIN	TARGET PERCENTAGE AND # OF STANDARDS					
	Grade 3	# Stds	Grade 4	# Stds	Grade 5	# Stds
Key Ideas and Details	30-35%	4	30-35%	3	30-35%	3
Craft and Structure	30-35%	3	30-35%	4	30-35%	3
Integration of Knowledge and Ideas	30-35%	3	30-35%	3	30-35%	4

Grades 6, 7 and 8

DOMAIN	TARGET PERCENTAGE AND # OF STANDARDS					
	Grade 6	# Stds	Grade 7	# Stds	Grade 8	# Stds
Key Ideas and Details	30-35%	3	30-35%	3	30-35%	3
Craft and Structure	30-35%	3	30-35%	3	30-35%	4
Integration of Knowledge and Ideas	30-35%	4	30-35%	4	30-35%	3

Grade 10

DOMAIN	TARGET PERCENTAGE AND # OF STANDARDS	
	Grade 10	# Stds
Key Ideas and Details	30-35%	3
Craft and Structure	30-35%	4
Integration of Knowledge and Ideas	30-35%	3

In the area of Mathematics, five domains are represented in the blueprint with 10 standards associated across the entire blueprint. The number of standards varies slightly by domain and grade. Domains in Grades 3 – 5 consider to operations and algebraic thinking and Numbers and Operations in base 10 and numbers and operations in fractions are weighted more heavily in the target percentage representing 8 standards, while the areas of measurement and data and geometry represent 10-15% or 15-20% of the content and represent 2 standards.

For Grades 6 and 7, the domains focus on Ratios and Proportions, Number system, Expressions and Equations, Geometry, and Statistics and Probability. Similar distributions of the number of content standards across the domains and the percentage of weighting.

While the domains represented in grades 8 and 10 are slightly different, the number and distribution of the standards are similar with emphasis on Expressions and Equations, Functions, and Geometry. The representations are illustrated in **Table 5** below.

Table 5: Alternate KSA Blueprint for Mathematics

Grades 3, 4, and 5

DOMAIN	TARGET PERCENTAGE AND # OF STANDARDS					
	Grade 3	# Stds	Grade 4	# Stds	Grade 5	# Stds
Operations and Algebraic Thinking	25-30%	3	15-20%	2	15-20%	2
Number and Operations in Base Ten	15-20%	2	25-30%	3	25-30%	3
Number and Operations - Fractions	25-30%	3	25-30%	3	25-30%	3
Measurement and Data	15-20%	1	10-15%	1	10-15%	1
Geometry	10-15%	1	10-15%	1	10-15%	1

Grades 6 and 7

DOMAIN	TARGET PERCENTAGE AND # OF STANDARDS			
	Grade 6	# Stds	Grade 7	# Stds
Ratios and Proportional Relationships	10-15%	1	20-25%	2
The Number System	30-35%	3	15-20%	2
Expressions and Equations	25-30%	3	20-25%	2
Geometry	10-15%	1	20-25%	2
Statistics and Probability	20-25%	2	20-25%	2

Grade 8

DOMAIN	TARGET PERCENTAGE AND # OF STANDARDS	
	Grade 8	# Stds
The Number System	10-15%	1
Expressions and Equations	25-30%	2
Functions	25-30%	3
Geometry	25-30%	3
Statistics and Probability	10-15%	1

Grade 10

DOMAIN	TARGET PERCENTAGE AND # OF STANDARDS	
	Grade 10	# Stds
Number and Quantity	10-15%	1
Algebra	22-27%	3
Functions	22-27%	2
Geometry	25-30%	3
Statistics and Probability	10-15%	1

Similar domain weighting and standard distribution across domains is evident in social studies, science, and writing. Assessment Blueprints for Social Studies, Editing and Mechanics, and On-Demand Writing are found in **Appendix B**.

Item Development Procedures

KY Senate Bill 175 (2019) requires stakeholder participation in all aspects of item development. Stakeholders (e.g., special education teachers and content area experts) develop the items based on the test blueprint with assistance from content experts at the Kentucky Department of Education (KDE).

Stakeholder recruitment considers statewide representation and diversity, content expertise, population expertise. Item stakeholders receive training in item development prior to participating in item writing. Items are then reviewed for Bias and Sensitivity see Chapter 5 of this document. In addition to the stakeholder content alignment review, KDE content experts review the assessment items for content alignment.

Stakeholder Item Development

Stakeholders from across the state, representing all geographic areas of the state, were brought together to develop items for science in 2016 and 2017. Stakeholders were brought together to develop items for reading, writing, mathematics and social studies in 2019, 2020 and 2021. Stakeholders met in person for the 2015, 2016 and 2019 item development meetings. Due to the Covid-19 pandemic, stakeholder meetings were held online during 2020.

The stakeholder diversity of the 2021 panel is representative of all sessions of item development. Present during the 2021 item development session, there were 34 stakeholders from across the state. Representing all geographic locations, 22% were from urban areas, 31% from suburban areas, and 47% rural areas of the state. Of the 34 stakeholders, 5 were (15%) were male and 29 (85%) were female. Additionally, 13% identified as African American, 3% as Asian, 3% as Hispanic and another 3% as Other, while the remaining 78% identified as Caucasian. The geographic representation of the panelists for item development can be found in Table 6 below.

Table 6: Regional Representation of Item Development Participants

Content Area	Grade	# of Unique Districts Represented on Panel	Kentucky Geographic Regions Represented by Education Cooperative
Reading/Writing	3 - 5	4	Central, Green River, Eastern, Mountain
	6-8	4	Central, Green River, Eastern, Eastern Mountain, Ohio Valley
	High School	4	Central, Green River, Eastern Mountain
Mathematics	3–5	4	Central, Eastern
	6–8	4	Central, Green River, Eastern Mountain
	High School	4	Central, Green River, Eastern, Eastern Mountain,
Social Studies	5	2	Central, Green River, Eastern Mountain, Greater Louisville
	8	3	Eastern, Eastern Mountain, Central
	11	3	Central, Greater Louisville, Green River

Item Writing Training

Item writers received training (See **Appendix C** for item writing training) to write scripted sets of item sets (tasks) to the Kentucky prioritized academic content standards in each content area. Each task contains five related multiple-choice items based on a scenario presented at the beginning of the task. The response options include two distractors, and one correct answer. All attainment tasks include directions for test administrator to facilitate the standardization of the administration process. During the initial item writing phase, 30 items (or 6 tasks) were written per grade per content area tested.

Upon completion of the draft items, the items were entered into a template and sent to illustrators for rendering. Illustrated response options are presented for each of the items. In some instances, additional materials such as maps, graphs, equations, or sentence templates are provided for use in the administration of the task. In addition, reading tasks include a passage and a corresponding illustrated story board. The individual illustrations in the story board are numbered and these numbers are entered at the appropriate place in the passage in the form of superscript numbers to cue the administrator to present or indicate the appropriate illustration as needed. A total of 692 items were written.

KDE Content Expert Review

Once the task is in the template with appropriate illustrations, KDE’s Office of Teaching and Learning conducts a review to ensure content alignment. Then another stakeholder group of general and special educators convene for a final content review. A second group of stakeholders is convened for a bias review. The debrief meeting for both groups is done simultaneously so the two groups can discuss potential issues and resolve any concerns (see **Chapter 5** for Bias Review).

Item Writing Content Review

Stakeholders including content experts and special educators were convened to review the new items to ensure accurate alignment to the content standards in reading, mathematics, social studies, and writing. Thirty-two experts were convened representing districts from Eastern KY to the Green River region in mid-western Kentucky. Table 7 below shows the participant and Geographic regions.

Table 7: Regional Representation of Content Review Participants

Content Area	Grade	# of Unique Districts Represented on Panel	Kentucky Geographic Regions Represented
Reading/Writing	3 - 5	4	Central KY, Green River, Eastern, Eastern Mountain
	6-8	4	Central, Green River, Eastern, Ohio Valley
	High School	3	Central KY, Green River, Eastern,
Mathematics	3–5	4	Central, Eastern
	6–8	4	Central, Green River, Eastern
	High School	4	Central, Louisville, Green River, Eastern Mountain
Social Studies	5	3	Central, Eastern, Eastern Mountain
	8	3	Eastern, Eastern Mountain, Green River
	11	3	Central, Louisville, Green River

For ELA, Mathematics and Social Studies content review, there were 34 stakeholders from across the state. Representing all geographic locations, 23% were from urban areas, 29% from suburban areas, and 48% from rural areas of the state. Of the 34 stakeholders, 6 were (18%) were male and 28 (82%) were female. Additionally, five (15%) identified as African American while the remaining 29 identified as Caucasian.

Training to review the content items was provided. Stakeholders receive training about the assessment item design, appropriate accommodations, population, and specific instructions related to the content review. Stakeholders review all components of the item including supplemental materials, illustrations, scripts, animations, etc. Participants consider the following components:

- content is represented appropriately,
- content is aligned to the content standards,
- application of knowledge and skills,
- age/grade appropriate language and processes,
- essential practices.

Participants respond to a survey following the review of the items and participate in a discussion. Survey items can be found in Appendix C.

Content Review Results

The data in the table below are based on review of 30 items per grade for each content area or 120 items per content area in reading and math and 90 items per content area in social studies, science, and writing. A total of 89 items, from the original 690 items, were identified as being a concern, approximately 12.8%. Content reviewers identified concerns in their survey or comments. All items that panelists found to have a concern that was content-related were resolved after group debrief discussions except for 2 items in mathematics grade 5 that were removed. These two items were rewritten. Some comments resulted in revisions to simple typographical errors and some revisions were based on bias review comments pertaining to content concerns.

*Many of these occurrences reference a social studies term formally adopted by Kentucky that could not be changed. **Table 8** provides a summary of the number of items identified as potentially concerning, items removed, and items revised.

Table 8: Content Review Item Analysis

READING Grade Level 210 Items	# of Items Identified with Concerns	# of Items Removed due to Concerns	# of Items Revised due to Concerns
3	13	0	6
4	7	0	4
5	7	0	3
6	15	0	7
7	5	0	2
8	14	0	8
10	4	0	4
Total	65	0	34
%	30%	0	16%

MATHEMATICS Grade Level	# of Items Identified with Concerns	# of Items Removed due to Concerns	# of Items Revised due to Concerns
3	10	0	7
4	9	0	6
5	16	2	8
6	8	0	5
7	5	0	1
8	3	0	1
10	5	0	3
Total	56	0	31
%	27%	2	14%

SCIENCE (2017) Grade Level	# of Items Identified with Concerns	# of Items Removed due to Concerns	# of Items Revised due to Concerns
4	1	0	1
7	3	0	1
11	4	0	3
Total	8	0	5
%	14%	0	11%

SOCIAL STUDIES+ Grade Level	# of Items Identified with Concerns	# of Items Removed due to Concerns	# of Items Revised due to Concerns
5	9	0	4
8	10	0	4
11	10	0	5
Total	29	0	13
%	32%	0	14%

WRITING Grade Level	# of Items Identified with Concerns	# of Items Removed due to Concerns	# of Items Revised due to Concerns
5	8	0	3
8	4	0	2
11	1	0	1
Total	13	0	6
%	14%	0	1%

While approximately 30% of the items across content areas were identified for discussion, only 2 items were removed, and revisions were made to approximately 15% of the items.

Operational Field Test

Due to the Covid-19 pandemic and the cancellation of school in the spring of 2020, the small-scale field test was canceled, and accountability was suspended for 2020-2021. The full

assessment with the new items was administered as an operational field test in both the Fall and Spring testing windows of 2021-22.

Participant Process Evaluations

Following the completion of the item review, participants evaluate the process. The evaluation results were that 100% of participants strongly agreed that they understood the purpose of the workshop, they were able to ask questions and openly discuss their thoughts, their opinions were welcomed and valued, the facilitators effectively managed the discussion, and they were able to effectively describe their bias concerns. Furthermore, 94% of respondents indicated they strongly agreed that they felt they contributed in a meaningful way, the technology platform was appropriate to the task, and the rating form was easy to use. Additionally, 81% of the participants indicated that they strongly agreed that the support materials were clear. For all ratings that were below 100%, the lowest rating received was “Somewhat Agree” (See **Appendix D**).

Equipercntile Linking

Classification into performance levels requires a standard setting process for new tests. Standard setting establishes the minimum scores necessary to be classified into each performance level (i.e., cut scores). Because the Covid pandemic caused problems with attendance, resulting in cancellation of the field test in 2020-21, and a request for the waiver of federal accountability requirements in 2020-2021, KDE decided to postpone formal standard setting until after the spring 2022 administration, at which time it can be expected that the full student population (with few exclusions) will be tested. This ensured that the standards of student performance going forward are based on representative student data from a more typical school year.

To allow for the reporting of comparable proficiency level classifications in spring 2021, HumRRO proposed conducting an equipercntile linking process (Kolen and Brennan, 2004) to identify cut scores for classifying students into NAPD levels.

The purpose of this task was to implement a sound methodology for identifying performance level cuts scores on an operational field test. An equipercntile linking approach enabled KDE to use past statewide performance to determine cut scores that would result in a reasonable distribution of students across the four levels of student performance. A full report for Equipercntile linking can be found in **Appendix E**.

CHAPTER 5: BIAS AND SENSITIVITY

Policy & Procedures

All assessment items are subjected to bias and sensitivity review (Senate Bill 175 (2019)). Bias is defined as non-curriculum-relevant factors that tend to lower scores of an identifiable. Sensitivity is defined as non-curricular-relevant issues that may offend or dismay significant numbers of students. Bias and Sensitivity reviews are conducted on all new items. As noted previously in the section entitled “Assessed Population,” the diversity of the population is such that it is necessary to consider bias in terms of specific characteristics of the population. All existing items are reviewed annually for alignment, Bias & Sensitivity, and relationship to the performance level descriptors in the Achievement Standards.

Stakeholder Recruitment

Stakeholders are recruited for the Bias/Sensitivity Review to represent diversity, state geographical representation, as well as educators with experience in teaching the population of students participating in this assessment. Stakeholders receive training about content bias and sensitivity prior to beginning the process. The recruitment process resulted in approximately 18 participants per content area with 5-6 at each grade span, (e.g., elementary, middle, and high school). The geographic representation spans the state from Jackson Purchase in the west, to the Eastern Mountain Coal Fields with six geographical regions represented at each grade span. The geographical representation is found in Table 9:

Table 9: Bias Review Participant Geographic Representation

Content Area	Grade	# of Unique Districts Represented on Panel	Kentucky Geographic Regions Represented
Reading/Writing	3 - 5	6	Bluegrass, Eastern Mountain Coal Fields, Pennyriple, Western Coal Fields
	6-8	6	Bluegrass, Eastern Mountain Coal Fields, Jackson Purchase, Western Coal Fields
	High School	6	Bluegrass, Eastern Mountain Coal Fields, Knobs Arc, Pennyriple
Mathematics	3–5	5	Bluegrass, Eastern Mountain Coal Fields, Jackson Purchase,
	6–8	6	Bluegrass, Eastern Mountain Coal Fields, Jackson Purchase, Pennyriple
	High School	6	Bluegrass, Eastern Mountain Coal Fields, Knobs Arc, Pennyriple
Social Studies	All Grades	6	Bluegrass, Eastern Mountain Coal Fields, Knobs Arc, Western Coal Fields
Science (2017)	All Grades	6	Bluegrass, Eastern Mountain Coal Fields, Knobs Arc, Pennyriple

Diversity Representation

The Bias/Sensitivity review was conducted two times in the Fall of 2020 and spring of 21 and included 36 participants in each group, for a total of 72 participants across the two sessions. The ethnicity of the participants included 13 African American, 21 Caucasian, and 0 Asian, 1 Hispanic and one who identified as Other. This reflects the attendance at both the fall and the spring meeting. The gender of the participants was primarily female with 32 females and 4 males, also attending both the fall and the spring meeting. The successive data in the table is based on 53 responses to the final evaluations (N=53, 74%). Demographic areas of rural and suburban were equally represented in the respondents with 14 respondents in each group and urban area respondents were slightly higher with 25. The expertise represented included 14 general educators, 12 special educators, 2 English Learner educators, 4 higher education participants, and 4 non-educator community members representing education related organizations (i.e., Parent Teacher Organizations). Among the participants, disability expertise included vision, hearing, and intellectual disabilities. Table 10 includes the demographic representation of the Bias Review participants. Those data fields with an asterisk are based on the 53 returned evaluations (N=53, 74%).

Table 10: Bias Review Participant Demographic Representation

Race Ethnicity	African-American	Asian	Caucasian	Hispanic	Other
# Participants	13	0	21	1	1
Gender	Male	Female	Other		
# Participants	4	32	0		
*Demographic Area	Rural	Urban	Suburban		
# Participants	14	25	14		
Expertise	English Learner	General Education	Special Education	Higher Education	Community Members
# Participants	2	14	12	4	4
*Content Area	Reading	Mathematics	Social Studies		
# Participants	21	24	4		

*Data provided by final evaluation (N=53).

Bias Review Procedures and Training

Stakeholders convene via distance technology to review items for bias at each grade-level. Stakeholders receive training about the assessment item design, appropriate accommodations, population, and specific instructions related to the bias review. Stakeholders review all components of the item including supplemental materials, illustrations, scripts, animations, etc. Participants consider the extent to which

- The content of the items did not intrude on the privacy of the values and beliefs of students or their families, or offend students, parents, or the public of Kentucky
- The items approached issues and/or themes in a manner that does not demean, offend, or inaccurately portray any race, ethnicity, religious group, disability, culture, gender, social group, or region
- The items avoided topics that arouse strong emotions unless those topics are curriculum relevant
 - Interfere with students understanding of the item
 - Interfere with student performance
 - Confuse the messages about the content standards and assessment.

Participants considered all five items and supplemental materials for each of the seven questions on the survey. The process is then repeated all test items in each task. Each task consists of five items.

The survey items consider the extent to which the content of the items provided with a fair opportunity for students to demonstrate knowledge, regardless of race, ethnicity, gender, religion, disability, socioeconomic status, or geographic region in which they live. Specifically,

- What is being assessed with this item?
- Is this a topic that should be used to assess content on a state assessment?
- How might the item and related materials affect a child who has recently had a personal experience with this content?
- Will the related materials; graphics/passages be perceived as biased or offensive?
- Is the treatment of the topic in the passage appropriate for the age/grade level of the student?
- Are there alternative assessment items that do not include sensitive issues?

Following completion of the survey, participants in the bias review convene with the content review participants via distance technology to discuss their responses and identify concerns with the items and any suggested revisions that might be needed.

Bias Review Results

The results of the Bias and Sensitivity review and combined discussion between the Content reviewers and the Bias and Sensitivity review resulted in discussion of 219 items out of 690 total items (30 items per grade and content) across grades and content or 32% of the total number of times. Of the 219 identified items identified, 64 items or 29% were revised following the combined discussions. No items were removed. **Table 11** below includes the number and percentage of times at each grade level identified as having a concern.

Table 11: Bias Review Item Analysis

READING Grade Level	# of Items Identified as Possible Concern	# of Items Removed due to Concerns	# of Items Revised due to Concerns
3	5	0	3
4	3	0	1
5	2	0	1
6	8	0	3
7	6	0	2
8	5	0	2**
10	9	0	4
Total	38	0	16
%	18%	0	8%

MATHEMATICS Grade Level	# of Items Identified as Possible Concern	# of Items Removed due to Concerns	# of Items Revised due to Concerns
3	8	0	3
4	9	0	5
5	7	0	4
6	10	0	4
7	11	0	5
8	4	0	2
10	8	0	3
Total	57	0	26
%	27%	0	12%

SCIENCE (2017) Grade Level	# of Items Identified as Possible Concern	# of Items Removed due to Concerns	# of Items Revised due Concerns
4	2	0	0
7	1	0	0
11	4	0	1
Total	7	0	1
%	7%	0	.01%

SOCIAL STUDIES Grade Level	# of Items Identified as Possible Concern	# of Items Removed due to Concerns	# of Items Revised due to Concerns
5	11	0	5
8	10 ⁺⁺	0	4
11	14 ⁺	0	3
Total	34	0	12
%	38%	0	13%

WRITING Grade Level	# of Items Identified as Possible Concern	# of Items Removed due to Concerns	# of Items Revised due to Concerns
5	9	0	3
8	11	0	4
11	6	0	2
Total	26	0	9
%	29%	0	10%
Total 690 Items	291	0	64
%	32%	0	29%

The number and percentage of items identified in the Bias Review ranged from 18 to 37% with a relatively large percentage of items identified with potential problems in social studies. None of the items were removed. Item revisions occurred for 64 items or 29% of the total number of items across content areas.

Items were identified for the following reasons: 1) content concerns; 2) a bias and sensitivity concern, or 3) identified by multiple panelists, or 4) listed as a concern multiple times by one panelist. Some items were deemed appropriate by the panelists following the discussion. All items that panelists found to be a concern of bias or sensitivity after group debrief discussions were resolved. Finally, some revisions were simple typographical errors.

** One of these edits was to a passage to reduce potential bias. The change impacted only one item. *Seven of these references were to people's names used in the tasks, the panelists ultimately decided exclusion of diverse names would be an issue of bias. **Many of these occurrences reference a social studies term formally adopted by Kentucky.

Participant Process Evaluations

Following the completion of the item review, participants evaluate the process. The evaluation results were that most participants strongly agreed or agreed that they were able to openly ask questions and discuss thoughts, their opinions were valued, they were able to contribute to the discussion and were able to effectively communicate their concerns. Participant comments in the evaluation reflected positive participation with suggestions for limiting content-related discussions that did not have an impact on the bias discussion (See **Appendix F**) for list of all questions.

CHAPTER 6: ALIGNMENT

Relationship of Grade-Level Content and Content for AA-AAS

The alignment between the Kentucky Summative Assessments (KSA) and the Kentucky Academic Standards, and between the Alternate KSA and the Kentucky Academic Standards Alternate Assessment Targets. Alignment studies are required as part of the federal assessment peer review process, provide validity evidence that the assessment is measuring the intended content, and inform future assessment item development. Alignment studies are typically conducted by an external contractor. The following are excerpts from the HumRRO report (See **Appendix G** for the complete report).

Context and Overview of the Study

Kentucky legislation requires that all academic standards and aligned assessments be routinely reviewed, typically 1-2 content areas each year and on a rotating basis every six years thereafter. This schedule began in the summer of 2017, and current mathematics, reading, social studies, and writing standards were adopted in 2019. Science standards have also gone through a review process, but those standards have not yet been formally adopted. For each content area, the Kentucky Academic Standards go through an additional review process to identify Alternate Assessment Targets “for assessing the instruction provided to students with moderate and significant disabilities (i.e., for the less than 1% of the total student population for whom traditional assessments would be an inappropriate measure of progress).”¹

In spring 2022, Kentucky also transitioned to the Kentucky Summative Assessment (KSA) and the Alternate KSA for annual summative assessment. Given the new academic standards and associated assessments, the Kentucky Department of Education (KDE) contracted with the Human Resources Research Organization (HumRRO) to conduct a study of the alignment between the Alternate KSA and the Kentucky Academic Standards Alternate Assessment Targets. Results from the alignment study are intended to provide evidence of high-quality annual statewide assessment as required under the Every Student Succeeds Act (ESSA).

To evaluate the alignment between the Alternate KSA and the Kentucky Academic Standards Alternate Assessment Targets, we first investigated the standards development process, test design details, and item development processes and procedures. Secondly, we modified traditional alignment methods to account for the test structure and design, a process in keeping with best practices in test validation that facilitates using alignment study results in an overall validity argument.

Conclusions

1. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect the Kentucky Academic Standards/Alternate Assessment Targets?

Results from this alignment study provide strong evidence that items on the KSA measure content outlined in the Kentucky Academic Standards. However, less strong is the evidence that the operational item pool currently covers the breadth of the Kentucky Academic Standards. This is particularly an issue for the grade banded tests (science, social studies, and writing), which draw standards from multiple grades. Also of concern is the representation of the content domains in both the operational item pool and in student test forms. Because Kentucky is moving to a design that reports domain scores at the school level, it is essential that the operational items administered across forms represent the content domains as intended. Similarly, multiple test forms should be as parallel as possible in terms of content coverage. The KSA is a new assessment; item development is ongoing, and the operational item pool will continue to expand. Results from this study can inform content areas and domains where future item development should be focused.

Results from this alignment study also provide strong evidence that items on the Alternate KSA measure the content outlined in the Kentucky Academic Standards and cover the prioritized Kentucky Academic Standards Alternate Assessment Targets. There are a small number of areas where domain coverage did not meet the criterion established for this study. KDE and its alternate assessment vendor should consider evaluating the available items for these content domains and target future item development to address any gaps in covering the breadth or depth of the Alternate Assessment Targets.

Recommendations

- 1) Future reading item development should ensure adequate numbers of items measure the Integration of Ideas domain.
- 2) Future writing item development should focus on ensuring that the breadth of the Composition domain is being measured.
- 3) Future writing item development should ensure that an adequate number of Conventions of Standard English are available for inclusion on test forms.
- 4) Review the structure of the science assessment. The current cluster-based design with relatively large item clusters may be contributing to the limited coverage of the breadth of the standards. Consider updating test specifications to include smaller item clusters.
- 5) Consider prioritizing standards for grade banded assessments (e.g., science, social studies), or outline in the test specifications how the breadth of the standards across the grade levels will be assessed.

2. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect a range and distribution of cognitive complexity?

KSA test items across the content areas, except for mathematics, tended to minimize the number of recall items (Webb’s DOK Level 1), and include items that require application of skills and integration of concepts. Future mathematics item development should focus on developing items at higher complexity levels. In addition, KDE should consider establishing cognitive complexity targets in its test specifications that would guide form construction.

Alternate KSA test forms reflect a reasonable distribution of cognitive complexity, based on panelists’ ratings of Webb’s DOK. This is consistent across content areas.

Recommendations

- 6) Future mathematics item development efforts should focus on developing more complex items.
- 7) Consider adding to test specifications guidelines for the distribution of cognitive complexity levels.

3. To what extent do the Spring 2022 Alternate KSA test items allow students to demonstrate performance on grade-level academic content?

Kentucky educators with content and special education expertise consistently found that the Alternate KSA items and aligned Kentucky Academic Standards Alternate Assessment Targets allow students to demonstrate performance on grade level content.

CHAPTER 7: ADMINISTRATION AND SECURITY

Procedures for administering the assessment

The task must be administered by a certified staff member (e.g., teacher, counselor, related service provider, etc.). The test administrator must qualify by completing the Attainment Task online training and complete the qualifying quiz.

The task is scripted and is to be read to the student as written or using acceptable adjustments as described in the *Steps to Administering* section. “Quotation marks” signify the scripted portions to be read to the student.

The task may be administered in more than one session, allowing for a smaller amount of time for each session. One content area may be administered to an individual student each day. A five-minute break is allowed between each section of the item sets and is noted in the testing materials. If a student is having difficulty attending, is having medical or behavioral difficulties, the task can be stopped within a section. Then resumed at the point stopped during the prior session. The administrator can orient the student to where he or she was in the process.

[The Alternate KSA Assessment Administration Guide](#)

Teacher Training

All teachers must complete the Administration Code Inclusion training, and alternate assessment trainings following state and district procedures). A mandatory online training and qualifying quiz is required of all certified personnel who plan to administer the Alternate KSA. There is an administration guide, and a qualifying quiz for the Alternate KSA; Administration Guide Overview, as well as the administration manuals are all available as downloadable on-line resources. Once the administration materials are posted, they remain on-line for the remainder of the accountability cycle. Teacher training materials can be found on the KDE website in the following link:

[Attainment Task Training](#)

*Note, the training is in two parts and can be found in the quick links along the right side of the page.

Administration Security and Quality Control

The Alternate KSA is considered secure testing material and must follow the administration code and 703 KAR 5:070 established for the general assessment. The following is information from the administration code training that is adapted to address the Alternate KSA.

District assessment coordinators, administrators, and teachers must ensure the security of the assessment materials before, during, and after test administration. When not being used for testing sessions, all attainment tasks and materials shall be stored in a secure location with access granted to authorized personnel only.

A detailed list of practices that are appropriate for test administration and practices that are not appropriate for alternate KSA administration are provided in the Administration manual.

Test Security

Test security of the Alternate Kentucky Summative Assessment (AKSA) is implemented throughout the development, storage, and delivery processes. Through training, software protocols, documentation, and secure storage, access to the assessment is limited to project personnel and is role-based in that access is provided on a need-to-know basis.

All personnel involved in the development of the AKSA receive training specific to their role in development. In the training they are instructed in the use of the UK AKSA SharePoint site and general rules involving test security and confidentiality. All participants in the development of the AKSA that are not University of Kentucky (UK) employees are required to sign a non-disclosure agreement prior to working on the AKSA.

The UK AKSA SharePoint is used to post and edit AKSA documents and share information. Access to AKSA documents is limited and monitored. Shareholder participants only have access to specific documents and their access is limited to timeframes for collaborative work processes. UK AKSA program documents are stored online using Azure. Azure provides document security with a breadth of configurable security options and the ability to control them. UK can customize security to meet requirements of AKSA deployments. Microsoft Sentinel and Microsoft Defender for the cloud allow for identification, analysis, and reporting of security threats and suggest strategies for threat hunting and response through the Azure Advisor. The Application Performance Management (APM) system, Application Insights, monitors the ongoing use and performance of live web applications.

The AKSA is printed and distributed to students throughout the state of Kentucky. All documentation related to the development of the AKSA and copies of the Assessments that comprise the AKSA (the Attainment Tasks) are stored on site at the Coldstream Campus of UK. Documents are stored in locked offices of UK employees during the development process. The printed Attainment Tasks ready for distribution are stored in locked PODS on the UK campus. There are two keys held by the staff of UK.

Documents that stress the importance of test security accompany each shipment and direct both district assessment coordinators and building assessment coordinators in security procedures. Test Administrators are trained and instructed in security measures and must pass a qualification quiz prior to administration of the assessment. Student assessment scores are

recorded on a score sheet and then transferred to the Student Registration Database, an online application that can only be accessed through username and password. The hard copy of the score sheet is stored in a secure student file.

Any documentation that is reviewed by the Kentucky Department of Education is accessed through File Transfer Protocol (ftp) sites. This is also the method used to transfer any student data and student scores in the final data export.

Monitoring of Test Administration

The KDE staff monitors the administration of both the KSA and the Alternate KSA by conducting site visits. The survey used in these visits can be found in **Appendix H**.

CHAPTER 8: SCORING

Recording Student Responses

During the administration of the items, the assessment administrator records the student responses on a paper score sheet provided in the assessment materials. The test administrator then enters those student responses recorded on the score sheet into the Student Registration Database (SRD). The paper copy of the student responses is stored at the district level in a designated secure location.

Student Registration Database (SRD)

The Student Registration Database (SRD) is an automated system for collecting alternate assessment student data. Student responses for the Alternate KSA items in reading, writing, mathematics, science, and social studies are entered into the SRD and a raw score is derived. The SRD applies the answer key to the entered scores and applies the cut scores to determine the student's performance level. The cut scores are determined during the Standard Setting process (see **Chapter 11**).

Response Key Development

There is a 10-step process for developing the response keys to ensure that the application is accurate and verified repeatedly in the transfer to the SRD administrator, and to the KDE. The steps of this process are identified below:

1. During the development phase, stakeholder item writers provide the correct response and two incorrect responses
2. During content and bias review, stakeholders verify that for each item a correct response is present and accurate.
3. The contractor develops a response key for each assessment based on stakeholder review outlined in the previous two steps.
4. Response keys are verified internally by the contractor.
5. Response keys are provided to the data system manager who maintains the Student Registration Database (SRD).
6. The response keys are entered into the automated system.
7. The response keys in the SRD are verified by contract staff.
8. Response keys are provided to the Office of Assessment and Accountability (OAA) at the Kentucky Department of Education (KDE).
9. One final check of the response key accuracy with the data and the application of performance level cut scores is conducted by the contractor.
10. The contractor exports a final data file to the KDE.

If at any point in the process, an error is discovered in the keys, the situation is reviewed, discussed, corrections applied, and resolved.

CHAPTER 9: TECHNICAL INFORMATION AND COMPARABILITY

Technical Information

The 2021-22 academic year assessment was field-tested during the 2020-21, immediately following the disruptions caused by the pandemic. Operational scoring and reporting were completed following Classical Test Theory (CTT) using raw scores. Moving forward, Item Response Theory (IRT/Rasch model) will be used to scale, equate, and report results. Technical analyses of the 2021-22 results will be done using tools from both test theories.

Analyses completed for each of the 23 tests in Reading, Mathematics, Science, Social Studies, and Writing in grades 3-8 and 11 for reading and mathematics and the appropriate grade-levels 4/5 or 7/8 and 10 for science, social studies and writing included the following: Item statistics; Raw Score Frequencies, Distractor Analysis, Item Difficulty/Wright Map, Summary Fit Statistics, Reliability, Standard Error of Measurement, Differential Item and Test Functioning, Classification Accuracy and Decision Consistency.

Four additional analyses were conducted to determine the validity of the assessments. Evidence that a test is valid is the observation of a direct relationship between the test scores and a separate measure of the student's ability. KDE requires teachers to fill out the Learner Characteristic Inventory (LCI – see **Appendix A**). Four of the learner characteristic descriptions that teachers make are expected to be related to the scores in Reading, Math and Science.

Of the 23 tests in this analysis, which included 7 reading tests, 7 math tests, 3 science tests, 3 social studies, and 3 writing tests; only two math tests at grades 7 and 8 had results that were outside the statistical quality parameters.

The reliabilities shown in Table 7 for Math Grade 7 and Table 7 for Math Grade 8 are lower than desired. Statistically, this is due to the test being very difficult for most students. This is seen in Figure 2 for both grades 7 and 8 where the distribution of students indicates that about half the students scored at a level below the easiest items. This means that the test does not effectively differentiate the ability of students performing at the lower end of the ability scale (i.e., below the lowest PLD cut). Teacher reports indicate that this result may be due to students working with the new and more complex mathematics content standards. Teachers at the middle school level (both general and special education) reported that the new standards required innovative instructional methods. The challenge this entailed was made more difficult by interruptions to instruction due to COVID-19. The state expects improvements in student scores as instruction that is well-matched to the standards is implemented. Currently, test developers are instructing item writers to develop items that incorporate more supports and a range of complexity (reducing the overall complexity of these two tests), with the goal of building an item pool that

better matches the characteristics of learners within this population as indicated by the LCI analysis. Full results of the **Technical Analyses Report** can be found in **Appendix I**.

CHAPTER 10: STANDARD SETTING

Standard Setting Methodology

The **Modified-Angoff** standards setting method (Angoff, 1984) is a procedure where stakeholders use their professional judgment to determine how much is just enough for a student's score to be considered "just barely" about minimum performance. Minimum performance is determined for each performance level (Novice, Apprentice, Proficient and Distinguished) as described in the Performance Level Descriptors. When the minimum cuts are determined for each performance level, then a range is also determined. Stakeholders use both performance level descriptors and assessment items to make these determinations for the Alternate Kentucky Summative Assessment (AKSA).

The **Modified-Angoff** method involves three rounds of work. In round one, stakeholders individually review and rate the items for the top three performance levels (Apprentice, Proficient and Distinguished), beginning work with proficient. The stakeholders review each question and ask themselves, "Would a student who is 'barely proficient,' be able to answer this question correctly?" Each participant responds "yes" or "no" to that question. Once they have rated all items for proficiency, the process begins again with ratings for "barely apprentice" using the same criteria. Finally, participants review the questions for a third time and rate each item for "barely distinguished." Once all participants have reviewed and rated all items for proficient, apprentice and distinguished performance levels the facilitator reviews the data and leads a large group discussion about the item ratings. This includes the range of "yesses" at each performance level and discussions of item discrepancies across panelists.

Upon completion of group discussions, each panelist reviews all items independently for a second time. During this independent review, panelists may consider feedback from other panelists for their independent ratings. Once all participants have reviewed and rated all items for a second time the facilitator reviews the data and leads another large group discussion following the steps of the first discussion.

The third and final round is a discussion between panelists where they make recommendations about the number of correct items required for each performance level based on their independent ratings and group discussions. A consensus is not required; however, a simple majority of the group must agree. During the third-round discussion, the stakeholders will receive impact data on their recommendations and review score distribution based on the recommended cut scores and discuss one more time. The groups make final cut score recommendations for the grade level. This process is repeated for each grade that a stakeholder group is setting standards.

Selection of Standard Setting Participants

The standard setting participants are selected from a pool of qualified content experts in reading, writing, mathematics, science and social studies and special education teachers who are knowledgeable and/or have direct experience with the range of students who participate in the Alternate KSA assessment. Consideration is also given to diversity and geographical representation across KY. Teachers and content experts could self-nominate or be nominated by their principal, special education director, superintendent or other knowledgeable official. Each nominee is required to be a current district or state employee with verifiable experience.

For the 2022 Standard Setting in Reading, Writing, Mathematics and Social Studies, sixty invitations were sent. Thirty-nine percent of the invitations were sent to individuals who did not indicate race/ethnicity on their application. Of the remaining 41% of the invitations, 22% were sent to individuals who identified as Black, Asian or Other. Of those who accepted the invitation, two individuals identified as having an “Other” racial identity and one identified as Asian, however during final evaluation all stakeholders identified as “White.” Fifty percent of the panelists were general education/content experts and the remaining 50% were special educators or related service personnel. The panelist had a range of educational experience from 6 – 27 years with a mean of 15.33 years of teaching experience. Seventy-three percent of the panelists were female and the remaining 27% were male. Geographic regions from across the state were represented and 15% of panelists were from an urban area, 31% from a suburban area and 54% represented rural districts.

Standard Setting for Science was conducted in 2017, 18 stakeholders met the criteria with twelve stakeholders participating as panelists with four in each grade-band (e.g., elementary, middle, high) group. The representation of this group included 50% general educators with content experience and the remaining 50% of the panelists were special educators. Seventy-five percent of the panelists were female and the remaining 25% were male. Geographic regions from across the state were represented: 17% of panelists were from an urban area, 25% from a suburban area, and 58% represented rural districts (see [Map of Educational Cooperatives](#)). Table 8 describes the panelists.

Table 12: Regional Representation of Standard Setting Participants

Content Area	Grade	# of Unique Districts Represented on Panel	Kentucky Educational Cooperative Represented
Reading/Writing	3 - 5	4	CKEC, GRREC, NKYCES
	6-8	4	CKEC, GLEC, WKEC
	High School	4	CKEC, GLEC, SCEC
Mathematics	3–5	4	GLEC, NKYES, WKEC
	6–8	4	KEDC, CKEC,SESC, WKEC
	High School	4	CKEC, KVEC, GRREC, WKEC
Social Studies	5	3	KEDC, NKYCES, GRREC
	8	3	CKEC, GRREC, KVEC
	11	3	GRREC, WKEC, SESC
Science (2017)	4	4	CEC, CKEC, GRREC, WKEC
	7	4	KEDC, OVEC, NKYCES
	11	4	KEDC, OVEC, CKEC, SESC

Training

An electronic training was recorded and provided to all participants in advance of the standard setting sessions, see **Appendix J** the training slides. The training provides background information including role and purpose of the panelists, what the alternate assessment attainment tasks are, what they look like and how they are scored, who the student population is and allowable accommodations, as well as the previous steps taken (e.g., content, and bias review committee meetings) previously.

Panelists learn the difference between content standards and achievement standards. Additionally, they are introduced to the Kentucky Alternate Assessment Performance Level Descriptors. Next, panelists are introduced to the **Modified-Angoff** (1984) method and the process they will be using for the day. Within the training there are video clips to help panelists understand the concept of borderline performance and the importance of using their professional judgement.

The final step in the training process is an introduction to the secure online site where they record their ratings. Screen shots of the forms are shared with the panelists along with an explanation of how to find the rating forms, the performance level descriptors, and the

assessment items. Upon completion of the online training, all participants completed an initial evaluation form to ensure their readiness to continue, see **Appendix K** for full list of questions. Responses from the evaluation forms were anonymous, each content area grade band was given its own link to ensure all panelists had completed the evaluation prior to beginning the process. All participants indicated they felt ready to begin the standard setting process and the vast majority of participants agreed or strongly agreed with these questions: “I understand the purpose of this workshop.”; “I understand the purpose of the assessment.”; “I understand who the students are that take this assessment.”; “I have a clear understanding of the content standards.”; “I have a good sense of what it means to be ‘Proficient’ on this assessment.”; “I have a good sense of what it means to be ‘Apprentice’ on this assessment.”; “I have a good sense of what it means to be ‘Distinguished’ on this assessment.”; “The training on the Angoff method was sufficient and gave me the information I needed to make my first set of ratings.” and “I feel prepared to make my first set of ratings.”

Performance Level Descriptors

The instructional program promotes learning in the general curriculum as there is only one set of content standards in Kentucky. Performance level descriptors are written specifically to reflect the content performance requirements of the AKSA. These descriptors list skills and concepts that a student scoring on the low end of the cut score meets a particular performance level (Novice, Apprentice, Proficient or Distinguished) can demonstrate. The performance level descriptors are written during Content Committee meetings involving general education and special education stakeholders with expertise in reading, writing, mathematics, science, and social studies at grades 3–8 and high school.

Prior to commencing the standard setting work, all content area stakeholder groups were asked to review and vet the **Performance Level Descriptors** for each grade in their content area grade band as well as the grade just before and/or just after (e.g., elementary reading reviewed grades three through five as well as grade six – the next immediate grade in the progression).

Performance Level Descriptor Links

[Third Grade](#)

[Fourth Grade](#)

[Fifth Grade](#)

[Sixth Grade](#)

[Seventh Grade](#)

[Eighth Grade](#)

[Tenth Grade](#)

[Eleventh Grade](#)

Prior to convening the standard setting work, all content area stakeholder groups were asked to review the Performance Level Descriptors for each grade in their content area grade as well as the grade just before and/or just after (e.g., elementary reading reviewed grades three through five as well as grade six – the next immediate grade in the progression).

Procedures

All meetings were held via distance technology. Prior to making any ratings, facilitators reviewed the process again and asked if anyone had any questions. Facilitators ensured everyone had access to the content standard documents, the Performance Level Descriptors, the assessment items for the correct grade/content they were going set the performance standards, and access to their rating forms. Facilitators assigned panelists unique rater identification numbers to use during the process, which allowed for anonymity during group discussions when facilitators would share panelist ratings. Panelists could only see their own rating; however, facilitators were able to watch the ratings in real time to ensure there was no confusion.

Only one grade per content area was reviewed and discussed per day per panelist group. Two groups would begin the session together and facilitators would break into breakout rooms to ensure effective use of time and discussions. As discussed above, panelists reviewed all items independently three times, once for each performance level of proficient, apprentice and distinguished. When all panelists had completed their independent review, the facilitator led a large group discussion looking at ranges and discrepancies across panelists. Upon completion of the first-round discussions, panelists repeated the process for round two. During round three panelists came to a majority agreement for cut score recommendations, reviewed impact data and made final recommendations.

Standard setting took place by grade band (e.g., elementary, grades 3-5; middle school, grades 6 – 8; high school) as appropriate. When a group of content area panelists completed the standard setting process for their grade band, they would review the recommended cut scores from grade to grade within the grade band to ensure vertical alignment across grade levels.

Results

Upon completion of the standard-setting process, Participants overwhelming agreed or strongly agreed that the training prepared them for the process, that the training material and facilitator instructions were clear, the process was appropriate to the task. Furthermore, all participants

agreed or strongly agreed that they would recommend the process to a peer. When asked “Do you feel the Final Cut Scores are too low, too high, or about right?” All participants, or 100% of respondents, indicated they believed the cut scores to be “about right.” The final evaluation can be found in **Appendix K**.

Standard Setting Results

Cut Scores resulting from the standard setting and approved by KDE can be found in **Appendix L**.

CHAPTER 11: REPORTING

Multiple reports are used to document student performance on the Kentucky State Assessments and the Alternate KSA assessments. These reports present different levels of summary information about the KSA and target different audiences. This chapter discusses the various score reports used for Alternate KSA, including specific pieces of information as well as general cautions on using the reports. Sample reports are provided.

Appropriate Uses for Scores and Reports

The Alternate KSA constructed covers a sample of curriculum content as specified through test blueprints; the tests do not assess all possible content in one test. Also, the content is assessed through a limited range of item types. Furthermore, the Alternate KSA is administered once two testing windows to address the characteristics of the learner and accommodate the individual administration required. Given these limitations of assessment, test scores should only be interpreted and used in the context from which they are obtained. In other words, Alternate KSA test scores should be used to describe student achievement on the content assessed (i.e., grade level) and not used to generalize achievement beyond the test. In addition, academic placement decisions and promotions should not be based on Alternate KSA test scores but should include other indicators of achievement.

Individual Student Report

The Individual Student Report (ISR) communicates an individual student’s test scores and interpretations of achievement based on those scores. The types of score information presented on an ISR depend on the grade level of the student and will be discussed later in this chapter. The ISR provides the “snapshot” of achievement and explains the meaning of each piece of information provided, providing valuable information to students and parents. It is important that users of these reports do not extend the score information beyond the interpretations provided.

Kentucky Performance Report

Test scores are also summarized in reports at the school, district, and state levels, providing valuable achievement information to educators and administrators. These reports are useful for evaluating curriculum and instruction, delineating areas, at a group level, where progress in achievement may be necessary.

Student Performance Level

Student achievement on the Alternate KSA is defined by performance levels, within a classification system of achievement from low proficiency to high proficiency. In Kentucky, there are four levels of achievement—Novice, Apprentice, Proficient, and Distinguished. These labels are accompanied by performance level descriptors (PLDs) that define the knowledge and

skills typical in each category. Performance level summaries are included on the Alternate KSA score reports at all levels of reporting— student, school, district, and state. The performance level descriptor, however, is only included on the student report (ISR) since it provides a description of individual student achievement. See the [Parent Guide to Assessment](#) for more information.

CHAPTER 12: INTRODUCTION OF THE VALIDITY FRAMEWORK AND ARGUMENT

This chapter presents the intended interpretations and uses of the assessment scores derived from the Alternate KSA. Evidence supporting these assumptions and interpretations is provided by critical elements of the validity process. As outlined in the Theory of Action in Chapter 1, for the assessment to produce valid and useful results, the technical defensibility of content and construct validity must reflect student knowledge and skills.

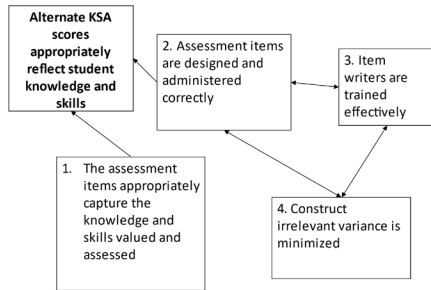
It is important to note that the current Alternate KSA in reading and math was developed beginning in 2021 through 2022, immediately following the pandemic school interruptions. While schools in Kentucky had returned to in-person school the effects of extended school closures present significant implications for the entire assessment system. The Alternate KSA assessments were administered as operational field tests at this time, as school accountability was suspended during this time. New assessment items were integrated into existing forms of the assessment allowing for comparisons with previously used items. However, student performance among this population of students is likely significantly impacted.

Validity is defined as the degree to which the theory and evidence support the interpretations of the scores for the intended uses (*Standards for Educational and Psychological Testing*, 2014). Therefore, determining the extent to which the interpretations of the test scores that is subject to evaluation rather than the test itself. In the example below, propositions underlying a claim follow the intended outcome. As alternate KSA scores appropriately reflect knowledge and skills, the assessment items appropriately capture the knowledge and skills, the items are designed to reflect the knowledge and skills and are administered correctly, the item writers are trained effectively which minimizes construct irrelevant variance.

Figure 2: Propositions Underlying a Validity Claim

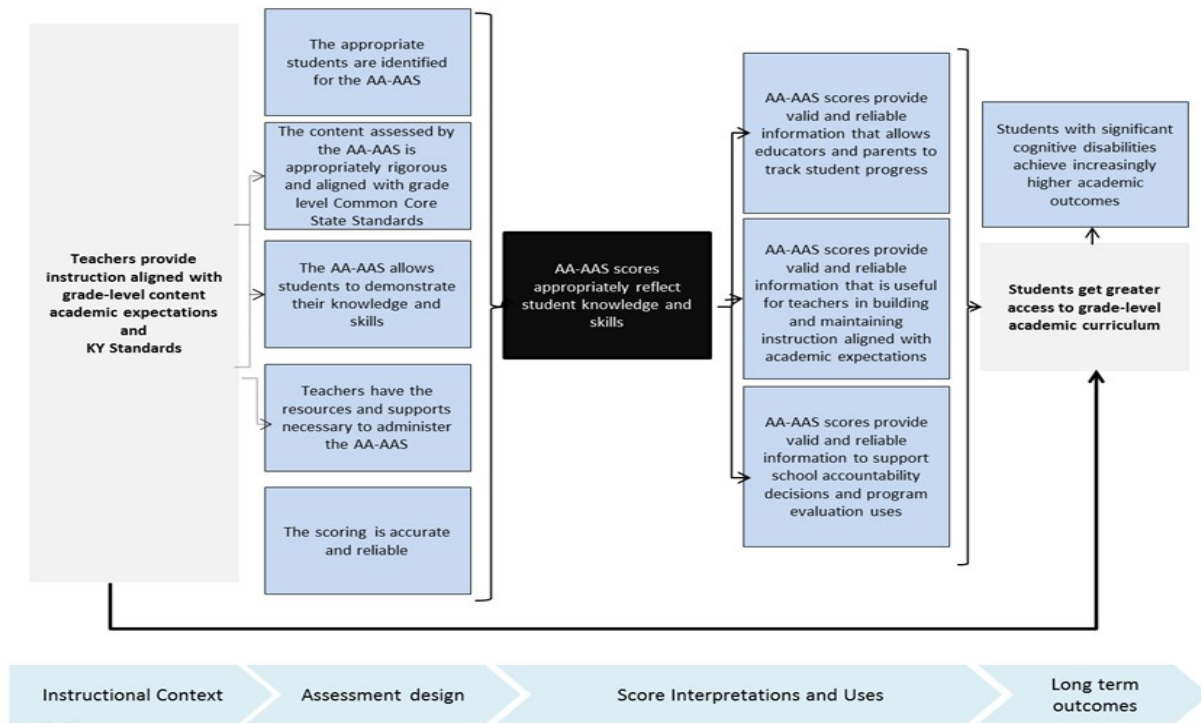
Adapted from National Alternate Assessment Center (2008).

Propositions underlying a single claim



NAAC/Center for Assessment, CCSSO
Assessment Conference June 2008

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As outlined in the Theory of Action in Chapter 1, for the assessment to produce valid and useful results, the technical defensibility of content and construct validity must reflect student knowledge and skills. Student scores should provide useful information for teachers to inform instruction, and for parents to monitor progress. The KY assessment system is anchored in the

long-term goals that students with significant cognitive disabilities should achieve increasingly higher academic outcomes and post-secondary readiness.

The relationships among the score interpretations and uses, assumptions, and elements appear in **Table 13**. Each entry in the table is presented following the table, with descriptions and summaries of the supporting evidence.

Table 13: Primary Assumptions

Primary Assumptions
Intended Score Interpretation
The Alternate KSA scores provide valid and reliable information that is useful to teachers in building and maintaining instruction aligned with academic expectations.

- 1.0 The appropriate students are identified as participants in the AKSA.
- 1.1 The Content assessed by the Alternate KSA is appropriately rigorous and aligned with grade level state standards
 - 1.1.1 The AKSA items are aligned to the grade-level content standards
 - 1.1.2 The content standards are represented in the Performance Level Descriptors
- 1.2 Alternate KSA test items are construct relevant. The elements corresponding to this assumption are concerned with the skills and cognitive processes required to understand and respond to an item, and the extent to which they correspond to the skills and processes required in the PLDs.
 - 1.1.1. Items require application of the KSAs of the targeted construct.
 - 1.1.2. Items are accessible to all students.
 - 1.1.3. Appropriate accommodations are provided to meet student needs.
 - 1.1.4. Item administration does not interfere with student access to test content.
 - 1.1.5 Items are free of bias and sensitive issues
- 1.2 Test administrators followed prescribed, standardized procedural requirements.
 - 1.2.1. Test Administrators and School and District Coordinators understood and performed their roles properly.
 - 1.2.2. Test security concerns were limited.
- 1.3 Test scores on the Alternate KSA provide reliable information about student performance and accurate classifications into performance levels.
 - 1.3.1. Alternate KSA scores and categorizations into performance levels are adequately reliable for their intended purpose.
 - 1.3.2. Item characteristics support intended interpretations about all students who take the Alternate KSA.

- 1.4 Item and test scoring in 2021 were implemented accurately.
 - 1.4.1. Items were scored accurately.
 - 1.4.2 Scores were uploaded correctly.
- 1.5 Alternate KSA scores in reading and math correlate as expected with external indicators of student proficiency.
 - 1.5.1. Alternate KSA scores correlate as expected with other measures of student proficiency.

Evidence to Support the Claim

The evidence presented in the technical manual substantiates the extent to which the Alternate KSA follows the seven primary assumptions related to the intended score interpretation required to meet this claim. It is important to note that the assessment is new and was field tested in 2021 following a year of school disruption due to the pandemic. External studies including the Equipercentile Linking and Alignment studies substantiate this claim even with recommended changes for future item development. While scaling and equating of the assessment will be forth coming, the test design process has followed the protocol as required to meet this intended interpretation.

Intended Score Usage
The Alternate KSA scores provide valid and reliable information to support school accountability decisions and program evaluation uses

- 2.0 Alternate KSA scores for groups of students are adequately reliable and valid to enable school, district, and state leaders to monitor changes in means, standard deviations, and proficiency level percentages for classroom, school, district, and state groups
 - 2.1.1. Alternate KSA scores for groups of students are adequately reliable and valid to enable school, district, and state leaders to monitor changes in means, standard deviations, and proficiency level percentages for classroom, school, district, and state groups.
 - 2.1.2. Alternate KSA scores and proficiency level categorizations of groups of students are adequately reliable and valid to enable monitoring of grade-level performance.
 - 2.1.3. The relationship between Alternate KSA scores and external measures of student achievement and growth is as expected, compared to grade-level assessments and other alternate assessments.
 - 2.1.4 Alternate KSA results are used to design professional development for teachers.

Evidence to Support the Claim

The evidence presented in this document, including surveys, suggest that the reliability and validity of the scores are sufficient for program evaluation uses. This is a challenging assumption for this population as they experience disabilities that impact perceptions of their ability to learn even among trained professionals as well as the community at large. The external measures of student achievement for this population may be significantly different than the grade-level content standards. The KDE provides additional support for teacher training in the content standards, and interpretation of student scores. Extensive stakeholder involvement also provides opportunities for educators to be involved in all parts of the assessment development process, increasing their knowledge and skills.

Intended Score Usage
The Alternate KSA scores provide valid and reliable information that is useful to teachers in building and maintaining instruction aligned with academic expectations.

3.0 Teachers use the Alternate KSA and its results to better integrate assessment with their instructional planning

3.1.1. Teachers find the performance level descriptors and their students’ performance levels useful for planning instruction, especially students in performance levels 1 and 2.

3.1.2. Teachers find students’ score information useful for planning instruction, especially students at levels novice and apprentice.

3.1.3 Teachers use Alternate KSA scores and other information for instructional planning.

Evidence to Support the Claim

Resources and training materials such as the PLDs, assessment targets, as well as training materials provided by the regional special education cooperatives to support instructional planning are provided. More evidence about teacher use of these materials would further support this claim.

Intended Score Usage
The Alternate KSA scores provide information that allows educators and parents to track student progress

- 4.0 Parents find Alternate KSA scores and other information useful for understanding what their child knows and can do.
 - 4.1.1. Parents understand and interpret correctly Alternate KSA scores and other information to understand what their child knows and can do.
 - 4.1.2. Parents use Alternate KSA scores and other information appropriately to understand what their child knows and can do and make decisions about their child's education and learning needs.
- 4.1 Parents find scores and other information useful for understanding their child's progress from year to year.
 - 4.1.2. Parents understand and interpret correctly Alternate KSA scores and other information to understand their child's progress from year to year.
 - 4.2.2. Parents use Alternate KSA scores and other information appropriately to understand their child's progress from year to year and make decisions about their child's education and learning needs.

Evidence to Support the Claim

Parents receive a report about the AKSA participation and scores. However, limited evidence is available to describe the extent to which parents understand and use the information in understanding progress and in making decisions about their child’s education and learning needs.

Intended Score Usage
Students with significant cognitive disabilities achieve higher academic outcomes.

Evidence to Support the Claim

The relative performance distribution suggests that students with significant cognitive disabilities are achieving academic outcomes. However, external evidence is minimal to support this claim.

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Appendix A: Learner Characteristics Inventory

Learner Characteristics Inventory for Alternate Assessments Based on Alternate Achievement Standards

Version 3: 2016

Adapted by the KDE (Some Items may have been deleted from this version)

Citation: Kearns, J., Kleinert, H., Kleinert, J., & Towles-Reeves, E. (2006). *Learner characteristics inventory*. Lexington, KY: University of Kentucky, National Alternate Assessment Center.

Purpose: This inventory will be used to assist states in describing the population of students who take alternate assessments based on alternate achievement standards. These students represent less than 1% of the total student population and come from a variety of disability categories but represent students with the “most significant cognitive disabilities”.

Student ID number: _____

Student’s Grade-Level (choose one):

- 3rd
- 4th
- 5th
- 6th
- 7th
- 8th
- 9th
- 10th
- 11th
- 12th

Student’s IDEA disability label (choose only the student’s primary handicapping condition):

- 1 Intellectual Disability (includes Mild, Moderate, and Profound)
- 2 Multiple Disabilities
- 3 Autism
- 4 Speech/Language Impairment
- 5 Hearing Impairment
- 6 Visual Impairment
- 7 Traumatic Brain Injury
- 8 Emotional Disability
- 9 Deafblind
- 10 Other Health Impairment
- 11 Orthopedic
- 12 Other

Does the student’s family primarily speak a language other than English (e.g., Spanish, French, Russian)?

- 1 Yes
- 0 No

Classroom Setting (check the best description)

- 1 Special school
- 2 Regular school, self-contained classroom for almost all activities
- 3 Regular school self-contained classroom except for homeroom, lunch, and “specials”
- 4 Self-contained (children go to some general education academic classes but return to special education (61% or more of school day in special education classes)
- 5 Resource room (e.g. children come for services and then go back to their general education classroom (at least 40% of the school day in general education classes)
- 6 Inclusive/Collaborative – students based in general education classes, special education services delivered in the general education class (at least 80% of the school day in general education classes)

Augmentative Communication System (check the best description)

Does your student use augmentative communication systems (e.g., pictures, signs, electronic devices) in addition to or in place of oral speech?

- 1 Yes
- 0 No

Expressive Communication (check one answer that best describes your student)

- 1 Uses symbolic language to communicate: Student uses verbal or written words, signs, Braille, or language-based augmentative systems to request, initiate, and respond to questions, describe things or events, and express refusal.
- 2 Uses intentional communication, but not at a symbolic language level: Student uses understandable communication through such modes as gestures, pictures, objects/textures, points, etc., to clearly express a variety of intentions.
- 3 Student communicates primarily through cries, facial expressions, change in muscle tone, etc., but no clear use of objects/textures, regularized gestures, pictures, signs, etc., to communicate.

Receptive Language (check the best description)

- 1 **Independently follows 1-2 step directions** presented through words (e.g. words may be spoken, signed, printed, or any combination) and **does NOT need additional cues**.
- 2 **Requires additional cues** (e.g., gestures, pictures, objects, or demonstrations/models) to follow 1-2 step directions.

3 **Alerts** to sensory input from another person (auditory, visual, touch, movement) **BUT requires actual physical assistance** to follow simple directions.

4 Uncertain response to sensory stimuli (e.g., sound/voice; sight/gesture; touch; movement; smell).

Oral Speech to Communication

0 Yes

0 No

Motor (check the best description)

1 No significant motor dysfunction that requires adaptations.

2 Requires adaptations to support motor functioning (e.g., walker, adapted utensils, and/or keyboard).

3 Uses wheelchair, positioning equipment, and/or assistive devices for most activities.

4 Needs personal assistance for most/all motor activities.

Engagement (check the best description)

1 Initiates and sustains social interactions.

2 Responds with social interaction but does not initiate or sustain social interactions.

3 Alerts to others.

4 Does not alert to others.

Health Issues/Attendance (check the best description)

1 Attends at least 90% of school days.

2 Attends approximately 75% of school days; absences primarily due to health issues.

3 Attends approximately 50% or less of school days; absences primarily due to health issues.

4 Receives Homebound Instruction due to health issues.

- 5 Highly irregular attendance or homebound instruction due to issues *other* than health.

Reading (check the best description)

- 1 Reads fluently with critical understanding in print or Braille (e.g., to differentiate fact/opinion, point of view, emotional response, etc). **(OPTIONAL FOR STATES)**
- 2 Reads fluently with basic (literal) understanding from paragraphs/short passages with narrative/informational texts in print or Braille.
- 3 Reads basic sight words, simple sentences, directions, bullets, and/or lists in print or Braille.
- 4 Aware of text/Braille, follows directionality, makes letter distinctions, or tells a story from the pictures that is not linked to the text.
- 5 No observable awareness of pictures, print or Braille.

Mathematics (check the best description)

- 1 Applies computational procedures to solve real-life or routine word problems from a variety of contexts.
- 2 Does computational procedures with or without a calculator.
- 3 Counts with 1:1 correspondence to at least 10, and/or makes numbered sets of items.
- 4 Counts by rote to 5.
- 5 No observable awareness or use of numbers.

Appendix B: Test Blueprints (Social Studies, Editing and Mechanics, and On - Demand Writing)

- Standards selected from Stakeholder prioritized standards.
- 10 standards across every grade.
- 30 items across two assessment windows.
- Each domain is represented 3 times across all grade spans (5, 8, & 12); each domain is consistently represented within 5% of general education blueprint range.

Table B1
Grades 5, 8, and 12

DOMAIN	TARGET PERCENTAGE AND # OF STANDARDS					
	Grade 5	# Standards	Grade 8	# Standards	Grade 12	# Standards
Civics	25-30%	3	25-30%	3	20-25%	2
Economics	20-25%	2	20-25%	2	25-30%	3
Geography	25-30%	3	20-25%	2	20-25%	2
History	20-25%	2	25-30%	3	25-30%	3

WRITING

Writing is measured by a combination of the Editing and Mechanics and a brief On-Demand writing multiple choice test.

EDITING AND MECHANICS BLUEPRINT

Assessments are based on the Kentucky Academic Standards for Language. The editing and mechanics assessment will focus primarily on Conventions of Standard English (L.1 and L.2); however, some items will ask students to demonstrate knowledge of language and vocabulary use (L.3-L.5).

Table B2
Editing and Mechanics Blueprint

Grade	Prompt Mode	Percentage of Domain Coverage Target %
5	Conventions of Standard English	80
	Knowledge of Language & Vocabulary Acquisition and Use	20
8	Conventions of Standard English	80
	Knowledge of Language & Vocabulary Acquisition and Use	20
11	Conventions of Standard English	80
	Knowledge of Language & Vocabulary Acquisition and Use	20

ON-DEMAND WRITING BLUEPRINT

Assessments are based on the Kentucky Academic Standards for Composition. The On-Demand Writing (ODW) blueprint focuses on C.1. Students will respond to one prompt, which is based on a text set.

Table B3
On-Demand Writing

Grade	Mode	Percentage of Domain Coverage Target %
5	Opinion	100
8	Argumentative	100
11	Argumentative	100

Alternate Assessment Attainment Tasks Item Development

New Item Development
Fall 2022



Welcome and we want to let you know how much we appreciate your assistance.

Confidentiality

- All work done for item development is considered highly secure
 - Cannot discuss with anyone outside these meetings
 - **Cannot maintain on public or personal computers**
 - Cannot provide individuals with ideas or concepts used in the development of the items
 - Everyone's non-disclosure agreement is still in effect

Purpose

- Develop items for Alternate Assessment Attainment Tasks
- Reading and Math
 - Grades 3, 4, 5, 6, 7, 8, 10
- Writing and Social Studies
 - Grades 5, 8, 11

Attainment Tasks are for students who are participating in the alternate assessment. These students have significant cognitive disabilities and make up about 1% of the student population. This will be the first draft of these Attainment Task. After your initial development, you will review one another's work and add comments and/or provide suggested feedback in track changes. After our debrief meeting, illustrators will work on completing your vision and finally all items will go to another content review, to a bias review committee, field testing, and review by KDE assessment and exceptional children's department so there may be some changes. We are writing items for all content areas except science, because science has a full test bank and the standards are currently under review.

What is the Alternate Assessment?

- ▶ Students with the most significant cognitive disabilities may require an alternate means of participation in the required state tests to demonstrate achievement.
- ▶ Kentucky's Alternate Assessment is designed to address the needs of these students by allowing adaptations, modifications and alternative modes of participation.
- ▶ Reduced in depth, breadth and complexity



 Human Development
Institute

4

- Students must meet the 14 required participation guidelines set forth by the Kentucky Department of Education.
- The student population taking the alternate assessment represents approximately 1% of the total student populations and the learners are likely more diverse than the remaining 99% of the student population.

Access to the General Curriculum (Required by IDEA 2007)

- Age/grade appropriate context
- Age/grade appropriate learning
- Prerequisite for future learning
- Helpful for participating in life environments and experiences

It is important to keep the items connected with the context that is taught in the general education classrooms. In addition to the requirement of IDEA that student have access and show progress in the general curriculum it is important to encourage inclusion into general education classrooms. The difference between this assessment and what is asked of the general assessment will be at the difficulty level, narrowing of the standards assessed, and the cut scores. We have been seeing an increase in what students can show us they are capable of learning and we need to continue to challenge this population.

Standard Grouping

- In full administration, we have 6 tasks with 5 items per task – 30 total questions
- The standards are already grouped by task and there are a specific number of items to be written to each standard
- Review the standard grouping requirements for each task
- Each item should relate to only one standard

Some tasks may have only one standard, where as other tasks may have as many as four standards. EACH item should relate to one standard. **You will be assigned 3 tasks in which to write the 5 items** – the items must match the standards for that task and the number of items per standard.

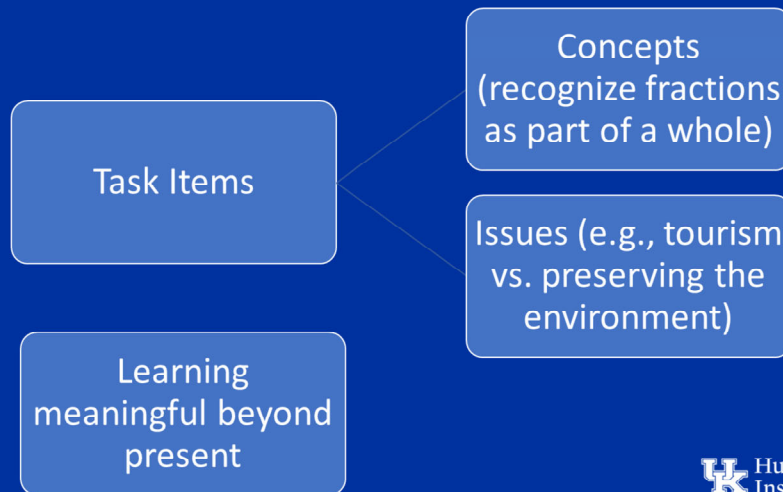
Item Development

- Task scenario
 - Authentic
 - Meaningful
- Multiple choice response format (3 responses)
 - Questions that respond to the task scenario
 - Answers paired with picture symbol cues
- Short accompanying materials (e.g., journal entry, charts, graphs, pictures, etc.)

The design of the Attainment Tasks is intended to be based on an authentic activity or original passage (or one that has been adapted from something in public domain). The scenarios should be either something that the student could currently experience (e.g., making a poster for a poster contest) or one that could happen as an adult (e.g., as an employer you want to give your employer's safety rules). The items will be developed in groups of 5 items and each group should center around one scenario or passage. The response is multiple choice and will have picture response options. Some additional materials may need to be developed – like animations in reading or maps in social studies. These must be described in the area listed as “Supplemental Materials”

You will each be writing 15 items (or 3 tasks) per content/grade. So in Social Studies you are writing 15 items regardless of your grade level, because social studies is tested at only one grade per grade band. However, if you are writing for ELA, that includes both reading and writing – so at elementary school for instance, you will be writing 15 items for grade 3, 15 items for grade 4, 15 items for grade 5 and 15 items for grade 5 writing – for a total of 60 items – or 12 tasks. Describe in detail any supplemental material needed – if you have specific images/maps/etc... provide a URL for the illustrators.

Focus on the Big Idea or Enduring Understanding



Understanding by Design by Wiggins and McTighe has been used to assist in the development process. Big Ideas and enduring understanding are two things that the book speaks to and that KDE has incorporated in unpacking the standards. This is very important to think about when working with students with significant disabilities. Rather than automatically moving to a lower level skill or what is considered an “out of level” test it is more helpful to think in terms of enduring understanding which increases the meaningfulness.

Examples –

Stage 1 – If the desired result is for learners to...	Stage 2 – So, the assessments need to include some things like...
Adapted from Understanding by Design Professional Development Workbook, MCTighe & Wiggins, 2004, ASCD	
<p>Student needs to understand</p> <ul style="list-style-type: none"> •Geographic tools (map) help interpret information. •How to locate and describe major landforms in KY and US. •How to analyze and compare patterns in early settlements of KY and provide examples of how physical factors impacted early settlement. 	<ol style="list-style-type: none"> 1. Your friend asks how to get to a store. Your job is to use the following map to help him find the store. 2. Your family is planning a vacation and want to see what is possible. They have asked you to find possible places to go if they want to snow ski, swim at a beach, and fish at a lake. 3. Pretend you are a teacher and you want to use a map to show where people explored in KY and how the land affected the exploration.

This information is from the Understanding by Design Workbook and is to give you an idea of some scenarios. In stage 1 you look at what you want to see if your student knows/understands. Then in stage 2 you determine how the student can demonstrate the knowledge/understanding.

Task Templates

- Vary by content
- Are developed in word and can expand as needed
- Provide a place for you to provide all needed information within the task
 - Reading
 - Writing Editing and Mechanics
 - Writing On-demand
 - Math
 - Social Studies



When using the template, make sure all information is provided. In reading, if you wrote the passage, put the title under Passage written by item writer – if you adapted it from public domain – put the title and the citation or URL from where it was adapted.

Be sure to include a scenario in Math, Social Studies and Writing that can connect all the items together. You may add to the scenario as the task progress. Each of the 3 tasks that you have been assigned per grade must have UNIQUE scenarios or passages – this cannot be duplicated across tasks.

Process

- I. Review the KY Core Academic Standards and targets prioritized for assessment.
 - a) Create a scenario that allows a connection to the items (math, social studies and writing).
 - b) In reading, you must write an original text or passage that will meet the intent of the standards (or find a public domain text that works or can be adapted).

The Standard Documents with the alternate assessment target documents are provided in your folders online.

This is the process that you will use to develop the items. Look at the content area template that you have. The first thing you will do is to review your standards. Then you will develop a scenario or write an original passage (or adapt one from public domain).

Process Continued

- Write 5 items related to the scenario or passage.
- USE the standards grouping document to ensure the correct number of items are written to each standard.
- Ensure the construct of each item links back to the standard and assessment target.
- Describe and/or find accompanying items (e.g., pictures, illustrations, animations)
- Ensure a range of DOK, difficulty, and skill progression
- Vary the placement of the correct answer



Use the template. Make sure all information is provided. In reading, if you wrote the passage, put the title under Passage written by item writer – if you adapted it from public domain – put the title and the citation or URL from where it was adapted.

Be sure to include a scenario in Math, Social Studies and Writing that can connect all the items together. You may add to the scenario as the task progress. Each of the 3 tasks that you have been assigned per grade must have UNIQUE scenarios or passages – this cannot be duplicated across tasks.

Ensure you are measuring what you think you are measuring and that you have not gone beyond the assessment target if one is present.

Describe or provide links to any accompanying materials you would like incorporated into the task. If you need a specific graph or map that is already published – please provide the URL along with the description. Indicate if the supplemental material needs to be in color or if B/W will suffice. If you are requesting an animation, be specific about what you want. If it is for reading – the animation likely has to be DIFFERENT than the passage – be sure to include those differences.

Make sure there is a variety of DOK levels in the task - recall are often the most difficult for this student population – so ensure they have questions that allow them to apply the skills and knowledge that they have.

Finally, please take the time to vary the placement of the correct answer within your five items and always mark the correct answer.

Things to Ensure

- **Social Studies**
 - All items in grades 5 and 8 MUST focus on their corresponding themes.
 - Grade 5: Colonization to Constitution
 - Grade 8: The United States: 1600-1877
- **Mathematics**
 - Use of mathematical practices in all items
- **Writing**
 - Tasks A – C assess editing and mechanics
 - Tasks D – F are the alternate for the on-demand
 - Task D builds the introductory paragraph
 - Task E builds the body paragraph
 - Task F builds the concluding paragraph

In Social Studies – all standards are linked to a theme in grades K – 8. Those MUST be incorporated with your item development. For Grade 5 the theme is Colonization to Constitution and all items MUST be in relation to this time period in the US whereas the theme at grade 8 is The United States: 1600-1877 and all questions must relate to this theme.

In math, you must incorporate the mathematical practices into the items. The practices can be found at the beginning of each grades standard and assessment target document.

In writing – the first 3 tasks are all about editing and mechanics – see the standard grouping form to see the breakdown. Tasks D – F are using multiple choice questions to develop a written piece aligned to standard (persuasive/argumentative). Task D must develop the introductory paragraph, task E the body paragraph and Task F the concluding paragraph.

Things that we don't want

- Discrete facts (e.g., definitions, terminology, dates, names, etc.)
- Contextually void items (e.g., no connection to what other students are learning)
- Only functional academics (e.g., bus route map, shopping, etc.)
- Too many words, lengthy passages, unusual words

It is important to avoid definitions and the need to learn discrete definitions, terminology, dates, names, etc. Instead concentrate on the concepts and understandings. As mentioned in the previous slide it is important to keep connected to the general education curriculum (same grade level). While not all students are included in general education class, many are and the intent of the Least Restrictive Environment in IDEA is that most students would be included in general education classrooms. Additionally, these are the classes that are often selected for inclusion. Avoid looking at what is viewed as “what these students need.” The curriculum is designed for all students and we are short sighted when we say that this population of students doesn’t need this information. Not everything is “functional” for all students. For example, a bus route map would not be functional for most students in Kentucky who live in rural areas. Shopping is not the most functional skill for students who are dependent upon others to provide mobility. Lastly, keep passages short to reduce memory load. Split information into separate pieces if a lot of information is needed. Keep the vocabulary simple and familiar to most teachers in KY.

Consider Bias

- Disability (vision/hearing/physical)
- Ethnicity
- Religion
- Geographic location
- Socio-economic status
- Etc.

The tasks will go before a bias review committee but the more we can avoid bias at this time the less changes that may be needed later. While considering biases do not exclude any particular standards. For instance, rather than completely avoiding visual arts for a blind student write the item(s) so that access can be provided.

Before Submitting

- Ensure task prompt is included and clear (e.g., You are using a map to plan possible locations for your family's vacation) – Items may build on scenario
- Mixture of DOK levels
- Write multiple choice items (3 response options).
- Provide correct answer and applicable number of distractors.
- Describe any accompanying materials (e.g., map, chart, animation clip, etc. that will need to be provided – be as detailed as possible)



Guidelines to follow as you develop items. Remember that sometimes our students can demonstrate complexity at Depth of Knowledge (DOK) 2 or 3 just by reducing the difficulty level or providing the correct prompts. Be sure to not dwell on recall, which is not a strength of this population. Provide as much description as possible for any accompanying material that will need to be developed. For instance, a map of the US that shows natural resources including corn, cattle, energy, etc.

Before Submitting: Review Items

- Answer the following questions:
 - Do the items link back to the standard(s) within the confines of the assessment target?
 - Do the items provide evidence of the referenced understanding, skills, or concepts?
 - Have the items avoided discrete facts?
 - Do the items relate to what is taught at the current grade level?
 - Is there a range of DOK?
 - Is the correct answer noted and plausible distracters recorded?

Once each task is completed, review it one more time asking the following questions.

You will also use these questions when reviewing other's tasks.

Task Reviews

- When you have completed your writing and your final review of one of your tasks - rename the file to include "Final".
- Post all assigned tasks as "Final" by the deadline provided in the initial email
- Review all tasks posted by other members of your group
 - Turn on track changes and edit/make suggestions
 - Add comments where needed
 - If you are reviewing someone else's task and do not find anything of issue (e.g. you think the whole task is well-written and all necessary components are present), then add a comment - "Ready" with your initials (e.g., Ready -jmn)

Reminders

- NOTHING can be saved to your personal computer (this includes screen shots/pictures).
 - You must use the templates provided and work online. Save your file as "Content, Task x, Last Name" on the appropriate SharePoint Folder. (e.g., Reading 3 A Norman)
 - When you are ready for others to review, add "Final" (e.g., Reading 3 A Norman Final)
- Attend your scheduled debrief meetings to discuss suggested edits and revisions

Next Steps

- You will receive an email from me that will include:
 1. Which tasks you are being asked to write
 2. Links to your folder
 3. Timeline reminders
 4. You may begin writing as soon as you have received the three things listed above

Questions?

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ELA – Anne

Mathematics – Connie

General Information – Jaci



Appendix D: Final Evaluation for Content Review

<p>Content area(s) of your review</p> <p><input type="checkbox"/> Mathematics</p> <p><input type="checkbox"/> Reading/Writing</p> <p><input type="checkbox"/> Social Studies</p> <p>Grade level of your review</p> <p><input type="checkbox"/> Elementary</p> <p><input type="checkbox"/> Middle</p> <p><input type="checkbox"/> High</p>	<p>Stakeholder group(s) (check all that apply)</p> <p><input type="checkbox"/> Educator</p> <p><input type="checkbox"/> Educational Administrator</p> <p><input type="checkbox"/> Other _____</p> <p>Area(s) of expertise (check all that apply)</p> <p><input type="checkbox"/> English Language Learner</p> <p><input type="checkbox"/> General Education</p> <p><input type="checkbox"/> Special Education</p> <p><input type="checkbox"/> Higher Education</p> <p>Type of area in which you teach or work</p> <p><input type="checkbox"/> Urban</p> <p><input type="checkbox"/> Suburban</p> <p><input type="checkbox"/> Rural</p>	<p>Gender</p> <p><input type="checkbox"/> Male</p> <p><input type="checkbox"/> Female</p> <p><input type="checkbox"/> Other _____</p> <p>Race/ethnicity</p> <p><input type="checkbox"/> African American</p> <p><input type="checkbox"/> Asian</p> <p><input type="checkbox"/> Caucasian</p> <p><input type="checkbox"/> Hispanic</p> <p><input type="checkbox"/> Other _____</p>
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Using your professional judgement, please check the box that that most closely reflects your opinion.

	Strongly agree	Agree somewhat	Disagree somewhat	Strongly disagree
1. I understand the purpose of this workshop.				
2. The training was clear and laid out the expectations for this workshop.				
3. The support materials were clear and provided necessary information				
4. The rating form was easy to use.				
5. The process used was appropriate to the work.				
6. The technology platform(s) were appropriate to the task.				
7. I was able to ask questions and openly discuss my thoughts/opinions in my group.				
8. My opinions were welcomed and valued by my group/facilitator.				
9. The facilitator effectively managed discussions with differing points of view.				
10. I was able to contribute in a meaningful way to the bias review.				
11. I am confident that I was able to effectively describe my concerns of bias.				



2021 No. 056

Equipercentile Linking for the 2021 Alternate K-PREP Final Report

Prepared for: Kentucky Department of Education
Office of Assessment and Accountability
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Frankfort, KY 40601

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Equipercetile Linking for the 2021 Alternate K-PREP

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Equipercentile Linking for the 2021 Alternate K-PREP

Introduction

In Spring 2021, the Alternate Kentucky Performance Rating for Educational Progress (Alternate K-PREP) was administered as an operational field test. This administration replaced the field testing originally planned for spring 2020, which was cancelled due to the COVID-19 pandemic. The purpose of field testing is to gather student performance data on newly developed test items. New Alternate K-PREP items were developed to measure the Kentucky Academic Standards (KAS), specifically new Alternate Assessment Targets derived from the KAS.

Unlike typical field testing that is conducted separately or in addition to operational testing, an operational field test has the dual purpose of providing data to evaluate item quality as well as providing data on student performance on the content targets. Several states have recently administered operational field tests for alternate assessments (e.g., California Department of Education, 2021; Ohio Department of Education, 2021).

The 2020-2021 school year was atypical; all Kentucky students spent some portion of the school year participating in Non-Traditional Instruction (NTI) programs. Districts varied in terms of how (e.g., hybrid models combining NTI with in-person instruction, reduced in-person schedule) and when they returned to in-person instruction, and individual families had the option to continue NTI after schools had reopened to in-person instruction.

In planning for the 2021 Alternate K-PREP test administration, the Kentucky Department of Education (KDE) had to anticipate that not all students would participate in testing. Districts were instructed to test any student with whom they had in-person access during the testing window, assuming the test could be given by a certified test administrator and following social distancing guidelines. Students who chose not to return to in-person instruction would not be required to participate in testing, and districts would likely vary in their capacity to safely test all students who were in person.

Because participation rates were an unknown during planning, KDE made the decision to calculate number-correct raw scores rather than conducting item response theory (IRT) scaling, as is typical. This addressed the potential issue that final sample sizes would not be sufficient for accurately estimating IRT item parameters.

Although the scale on which student scores would be reported would be different from prior years, KDE still wanted to report student performance levels using the existing classification schema. Kentucky reports four student performance levels (Novice, Apprentice, Proficient, and Distinguished; NAPD). KDE also wanted stakeholders to have a point of comparison between spring 2021 performance level classifications with those of prior years.

Classification into performance levels requires a standard setting process for new tests. Standard setting establishes the minimum scores necessary to be classified into each performance level (i.e., cut scores). Because of previously described issues, along with the waiver of federal accountability requirements in 2020-2021, KDE decided to postpone formal standard setting until after the spring 2022 administration, at which time it can be expected that the full student population (with few exclusions) will be tested. This will ensure that the standards of student performance going forward are based on representative student data from a more typical school year.

To allow for the reporting of comparable proficiency level classifications in spring 2021, HumRRO proposed conducting an equipercentile linking process (Kolen and Brennan, 2004) to identify cut scores for classifying students into NAPD levels. This report describes the methods used and the linking results.

Method

Evaluating the Equating Sample

HumRRO proposed linking the 2021 Alternate K-PREP to the 2019 administration, since data from 2020 were not available. Given concerns that 2021 participation rates might yield a sample that is not comparable to prior years, we first compared the performance of 2019 students overall with the performance of 2019 students who also tested in 2021. This step informed whether the equipercentile linking method would need to include some sort of adjustment to account for differences in the two years' tested student populations.

We first merged student records from 2019 with their records, if available, in 2021. Because the test administrations were two years apart and tests are not administered in grade 9, we included 2019 students from grades 3-6 and 8 in this analysis. Across the grade levels, approximately 81%-88% of student records merged, indicating that a large percentage of students participated in testing both years. Next, we calculated the percentage of students at each performance level in 2019 for all students tested in 2019 and for the subset of 2019 students who also tested in 2021. Table 1 presents this comparison for grade 3 math.

Table 1. 2019 Performance Distributions in Grade 3 Math for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =482)	Merged Group (n = 410)
Novice	29.3	28.8
Apprentice	40.5	41.7
Proficient	26.4	25.4
Distinguished	3.9	4.2

Table 1 demonstrates that the performance distribution of students who tested in 2021 was similar enough to the performance distribution of students who tested in 2019 to warrant the application of equipercentile linking. Across the grades and subjects, NAPD distributions were similarly close, with percentage differences no greater than 3% for any performance level. This indicated that we could conduct the equipercentile linking without applying an adjustment. Tables presenting the performance distribution comparisons for all grades and subjects are presented in Appendix A.

Reviewing Item Quality

Following administration of the Alternate K-PREP, KDE provided HumRRO with student response data and an answer key. We applied the answer key to score items and then used these item scores to generate Classical Test Theory (CTT) item statistics. We then flagged potentially problematic items by applying a series of criteria. Table 2 presents the CTT statistics calculated, their interpretation, and the flagging criteria applied.

Table 2. CTT Statistics and Flagging Criteria

CTT Statistic	Interpretation	Flagging Criteria
P-value	Percentage of students answering item correctly	<ul style="list-style-type: none"> ▪ If greater than 90% ▪ If less than 25%
Item-total correlation	Correlation between answering the item correctly and total test score	<ul style="list-style-type: none"> ▪ If negative ▪ If less than .20
Distractor frequency	Percentage of students selecting an incorrect response option	<ul style="list-style-type: none"> ▪ If less than 7% selected a distractor ▪ If more students selected distractor than correct response
Distractor discrimination	Correlation between selecting an incorrect response and total test score	<ul style="list-style-type: none"> ▪ If correlation is positive ▪ If correlation is greater than that of correct response

The purpose of flagging items is to provide data about item quality. Items that were not flagged functioned as anticipated and are ready for operational use. Items that were flagged are not necessarily to be discarded but warrant scrutiny by content experts. Items may be kept as is, revised and re-field tested, or dropped completely from future use. Because spring 2021 employed an operational field test design in which student scores would be based solely on field test items, it was also important to evaluate whether any items should be excluded from overall score calculation.

KDE's Alternate K-PREP testing vendor convened panels of content experts to review flagged items for each grade/subject test. HumRRO provided an Item Flagging Guide (see Appendix B) to support content experts' understanding of why the items had been flagged. HumRRO staff was also on hand to answer questions during the item review sessions. Items were most frequently flagged for having a distractor that was selected more frequently than the correct response and/or for having a low, positive item-total correlation.

Equipercentile Linking

Following the item review sessions, HumRRO received a list of items that content experts thought should be removed from inclusion in the calculation of spring 2021 test scores. A separate list of items to be considered for revision prior to future use was shared with KDE. Table 3 presents the number of items that were removed from scoring for each grade/subject test. The largest number of items removed from scoring for any test form was five (writing grades 8 and 11).

HumRRO recalculated student test scores based on these final sets of items. We then calculated the distribution of total test scores. Students who had not provided responses to any items (i.e., all item response fields were blank) were removed from this calculation, based on the assumption that these students did not actually participate in the assessment.

The next step was to identify the cut scores that would divide students into an NAPD classification distribution that was as similar as possible to the NAPD distribution that was reported in 2019 (the most recent year that Alternate K-PREP scores were reported). This process created a "link" between the two testing years, as the identified cut scores for 2021 resulted in similar percentages of students being classified into each performance level.

Table 3. Number of Items Removed from Scoring

Subject/Grade	# of Items Flagged	# of Items Removed	Final # of Items	Subject/Grade	# of Items Flagged	# of Items Removed	Final # of Items
Math 3	20	1	29	Reading 3	18	1	29
Math 4	22	0	30	Reading 4	16	3	27
Math 5	20	1	29	Reading 5	14	2	28
Math 6	26	3	27	Reading 6	9	1	29
Math 7	25	2	28	Reading 7	19	2	28
Math 8	29	1	29	Reading 8	13	3	27
Math 10	25	1	29	Reading 10	18	4	26
Science 4	15	0	30	Social Studies 5	18	2	28
Science 7	22	1	29	Social Studies 8	21	4	26
Science 11	21	0	30	Social Studies 11	16	1	29
Writing 5	23	2	28				
Writing 8	10	5	25				
Writing 11	20	5	25				

Results

Table 4 presents the equipercentile linking results for grade 3 math. The second column from the right (2019 Percentage) presents the NAPD distribution reported in 2019 that we attempted to match. The second column from the left (Raw Score Range) presents the range of raw scores that yielded the percentages presented in the third column from the left (2021 Percentage). Ideally, the difference between the two percentages will be small. This would indicate that the cut scores applied in 2021 yielded an NAPD distribution that was very similar to that from the last test administration. For grade 3 math, the percentage differences ranged from 1% (Novice) to 3% (Apprentice). Similar tables for the remaining grades and subjects are presented in Appendix C. Across the grades and subjects, percentage differences ranged from 0% (grade 11 science Distinguished) to 6% (grade 5 writing Novice; grade 11 science Apprentice).

Table 4. Grade 3 Math Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	27.6	28.9	-1.3
Apprentice	9 to 13	43.7	40.6	3.1
Proficient	14 to 19	23.8	26.6	-2.8
Distinguished	20 to 29	4.9	4.0	0.9

The number of raw score points associated with each performance level is also important for equipercentile linking. The total points possible across grade/subject tests ranged from 25 to 30 (after items were removed based on the flagged item review). Ideally, multiple score points will

be associated with each performance level, to ensure that there are sufficient opportunities to be classified at each level. In grade 3 math, 9 raw score points were associated with the Novice level, 5 points with the Apprentice level, 6 points with the Proficient level, and 10 points with the Distinguished level. All NAPD levels across the grades and subjects were associated with at least three raw score points. The grade 8 math Apprentice level had the smallest raw score range.

Discussion

The purpose of this task was to implement a sound methodology for identifying performance level cuts scores on an operational field test. An equipercentile linking approach enabled us to use past statewide performance to determine cut scores that would result in a reasonable distribution of students across the four levels of student performance.

We took several precautions prior to implementing the linking process. We verified that the performance distribution of students who tested in 2021 was similar enough to the performance distribution of students who tested in 2019 to allow us to implement a straightforward linking process with no adjustments. We also used item-level statistics and content experts' review of items to ensure that students' spring 2021 Alternate K-PREP scores were based on items deemed by content experts to be high quality field test items measuring the KAS Alternate Assessment Targets.

It is a priority of KDE to provide assessment data that are as useful as possible to stakeholders. Using equipercentile linking was one way to ensure that 2021 Alternate K-PREP scores were reported using the NAPD levels that stakeholders are accustomed to and that they find meaningful. The process described here ensured that the meaning of those performance category scores was as consistent as possible between 2019 and 2021.

However, stakeholders should also use caution in interpreting spring 2021 test scores. The 2020-2021 school year was certainly not comparable to a typical school year. Federal accountability waivers were granted, in part, because of the unprecedented challenges that districts, schools, families, and students experienced during long-term NTI. While it is important to not let the gap in annual student performance data widen, stakeholders should keep in mind the limits to score comparisons.

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Appendix A: Comparisons of Performance Level Distributions

Table A-1. 2019 Performance Distributions in Grade 3 Math for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n = 482)	Merged Group (n = 410)
Novice	29.3	28.8
Apprentice	40.5	41.7
Proficient	26.4	25.4
Distinguished	3.9	4.2

Table A-2. 2019 Performance Distributions in Grade 3 Reading for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n = 482)	Merged Group (n = 410)
Novice	17.2	15.1
Apprentice	42.7	46.1
Proficient	33.6	32.2
Distinguished	6.4	6.6

Table A-3. 2019 Performance Distributions in Grade 4 Math for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n = 575)	Merged Group (n = 489)
Novice	20.9	20.7
Apprentice	51.5	53.0
Proficient	24.2	23.5
Distinguished	3.5	2.9

Table A-4. 2019 Performance Distributions in Grade 4 Reading for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n = 575)	Merged Group (n = 489)
Novice	13.6	12.9
Apprentice	43.7	45.8
Proficient	33.9	34.0
Distinguished	8.9	7.4

Table A-5. 2019 Performance Distributions in Grade 4 Science for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =575)	Merged Group (n = 489)
Novice	19.3	19.0
Apprentice	49.7	51.7
Proficient	25.4	24.7
Distinguished	5.6	4.5

Table A-6. 2019 Performance Distributions in Grade 5 Math for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =571)	Merged Group (n = 474)
Novice	26.8	26.6
Apprentice	44.5	44.9
Proficient	24.2	24.1
Distinguished	4.6	4.4

Table A-7. 2019 Performance Distributions in Grade 5 Reading for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =571)	Merged Group (n = 474)
Novice	19.1	17.3
Apprentice	41.2	43.5
Proficient	34.7	34.4
Distinguished	5.1	4.9

Table A-8. 2019 Performance Distributions in Grade 5 Social Studies for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =571)	Merged Group (n = 474)
Novice	15.4	14.6
Apprentice	48.9	50.4
Proficient	28.4	28.1
Distinguished	7.4	7.0

Table A-9. 2019 Performance Distributions in Grade 5 Writing for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =571)	Merged Group (n = 474)
Novice	19.6	18.8
Apprentice	43.4	45.4
Proficient	30.8	30.2
Distinguished	6.1	5.7

Table A-10. 2019 Performance Distributions in Grade 6 Math for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =642)	Merged Group (n = 564)
Novice	24.3	22.2
Apprentice	46.9	48.8
Proficient	24.8	24.8
Distinguished	4.1	4.3

Table A-11. 2019 Performance Distributions in Grade 6 Reading for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =642)	Merged Group (n = 564)
Novice	25.6	23.2
Apprentice	35.2	37.8
Proficient	32.6	32.5
Distinguished	6.7	6.6

Table A-12. 2019 Performance Distributions in Grade 8 Math for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =595)	Merged Group (n = 483)
Novice	23.5	23.0
Apprentice	44.9	46.0
Proficient	29.4	29.4
Distinguished	2.2	1.7

Table A-13. 2019 Performance Distributions in Grade 8 Reading for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =595)	Merged Group (n = 483)
Novice	23.4	22.4
Apprentice	52.3	54.0
Proficient	19.5	19.1
Distinguished	4.9	4.6

Table A-14. 2019 Performance Distributions in Grade 8 Social Studies for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =595)	Merged Group (n = 483)
Novice	25.0	23.2
Apprentice	47.9	50.3
Proficient	22.0	22.2
Distinguished	5.0	4.4

Table A-15. 2019 Performance Distributions in Grade 8 Writing for All Students Tested in 2019 Compared to the Subset of Students who Tested in both 2019 and 2021

Performance Level	% All 2019 Students (n =595)	Merged Group (n = 483)
Novice	22.4	20.3
Apprentice	46.7	48.9
Proficient	24.9	25.5
Distinguished	6.1	5.4

Appendix B: Item Flagging Guidelines

Alternate K-PREP Item Flag Interpretation Guide

HumRRO calculated classical test theory (CTT) statistics and flagged items that failed to meet a series of criteria. An individual Item could be flagged more than once. Flagged items should not necessarily be dropped from the test but should be scrutinized by content experts to determine if an item should be dropped, kept intact, or possibly revised for subsequent field testing. The purpose of this document is to describe the flagging criteria applied.

CTT Item Flagging Criteria

Flag 1 (Easy). More than 90% of tested students answered the item correctly. This indicates that the item is relatively easy.

Flag 2 (Hard). Fewer than 25% of tested students answered the item correctly. This indicates that the item is relatively difficult.

Flag 3 (Low Discrimination). The correlation between answering the item correctly and total test score is less than .20. This indicates that the item does not relate well to the scale overall. This might occur if the item is measuring a different construct than the other items on the test.

Flag 4 (Negative Discrimination). The correlation between answering the item correctly and total test score (i.e., item total correlation) is less than 0. This indicates that students who did well on the assessment overall tended to answer the item incorrectly. This might occur if the item was written in an ambiguous or confusing way, have multiple correct answers, or no correct answer. This is the most serious of the flags; an item with negative discrimination may contribute only "noise" to the student ability estimate. We recommend removal of these items.

Flag 5 (More discriminating distractor). The correlation between selecting a distractor and total test score is greater than the correlation between answering the item correctly and total test score (i.e., item total correlation). This indicates that a distractor was more appealing to students who tended to do well on the test overall.

Flag 6 (More frequent distractor). More students selected a distractor than the correct response. This indicates that a distractor tended to be more appealing across all tested students.

Flag 7 (Low frequency distractor). Fewer than 7% of tested students selected a response option. This indicates that a response option may be obviously incorrect.

Flag 8 (Positively discriminating distractor). The correlation between selecting a distractor and total test score is positive and greater than .05. This is another indication that a distractor was more appealing to students who tended to do well on the test overall.

Appendix C: Equipercentile Linking Results

Table C-1. Grade 3 Math Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	27.6	28.9	-1.3
Apprentice	9 to 13	43.7	40.6	3.1
Proficient	14 to 19	23.8	26.6	-2.8
Distinguished	20 to 29	4.9	4.0	0.9

Table C-2. Grade 4 Math Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 9	21.9	18.9	3.0
Apprentice	10 to 13	47.3	52.8	-5.5
Proficient	14 to 20	25.5	24.8	0.7
Distinguished	21 to 30	5.4	3.6	1.8

Table C-3. Grade 5 Math Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	20.6	25.0	-4.4
Apprentice	9 to 13	49.1	45.5	3.6
Proficient	14 to 20	25.8	24.8	1.0
Distinguished	21 to 29	4.5	4.7	-0.2

Table C-4. Grade 6 Math Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	23.1	21.1	2.0
Apprentice	9 to 12	49.2	48.8	0.4
Proficient	13 to 19	24.0	25.9	-1.9
Distinguished	20 to 27	3.7	4.2	-0.5

Table C-5. Grade 7 Math Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	24.3	21.4	2.9
Apprentice	9 to 12	49.0	50.7	-1.7
Proficient	13 to 17	22.3	23.8	-1.5
Distinguished	18 to 28	4.4	4.1	0.3

Table C-6. Grade 8 Math Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	23.1	21.4	1.7
Apprentice	9 to 11	41.5	46.1	-4.6
Proficient	12 to 18	32.9	30.2	2.7
Distinguished	19 to 29	2.5	2.2	0.3

Table C-7. Grade 10 Math Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 9	23.5	21.1	2.4
Apprentice	10 to 14	54.8	57.7	-2.9
Proficient	15 to 19	19.8	18.3	1.5
Distinguished	20 to 29	2.0	2.9	-0.9

Table C-8. Grade 3 Reading Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	15.1	16.7	-1.6
Apprentice	9 to 13	44.1	42.9	1.2
Proficient	14 to 20	32.1	33.9	-1.8
Distinguished	21 to 29	8.7	6.5	2.2

Table C-9. Grade 4 Reading Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 5	14.2	11.6	2.6
Apprentice	6 to 11	45.6	44.6	1.0
Proficient	12 to 17	31.2	34.8	-3.6
Distinguished	18 to 27	9.0	9.1	-0.1

Table C-10. Grade 5 Reading Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 7	18.1	17.1	1.0
Apprentice	8 to 13	42.8	42.1	0.7
Proficient	14 to 21	33.0	35.6	-2.6
Distinguished	22 to 28	6.1	5.2	0.9

Table C-11. Grade 6 Reading Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 10	18.4	22.4	-4.0
Apprentice	11 to 15	38.7	36.6	2.1
Proficient	16 to 23	35.4	34.0	1.4
Distinguished	24 to 29	7.5	7.0	0.5

Table C-12. Grade 7 Reading Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	16.4	20.9	-4.5
Apprentice	9 to 13	51.2	46.4	4.8
Proficient	14 to 19	25.0	25.4	-0.4
Distinguished	20 to 28	7.4	7.3	0.1

Table C-13. Grade 8 Reading Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	17.8	21.2	-3.4
Apprentice	9 to 16	57.7	53.7	4.0
Proficient	17 to 21	18.4	20.0	-1.6
Distinguished	22 to 27	6.1	5.0	1.1

Table C-14. Grade 10 Reading Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	22.9	19.1	3.8
Apprentice	9 to 14	51.4	57.0	-5.6
Proficient	15 to 19	19.7	19.9	-0.2
Distinguished	20 to 26	6.0	4.0	2.0

Table C-15. Grade 4 Science Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 9	16.1	17.3	-1.2
Apprentice	10 to 15	50.2	51.0	-0.8
Proficient	16 to 22	28.7	26.0	2.7
Distinguished	23 to 30	5.0	5.7	-0.7

Table C-16. Grade 7 Science Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	14.0	15.7	-1.7
Apprentice	9 to 14	57.5	56.4	1.1
Proficient	15 to 21	25.1	24.7	0.4
Distinguished	22 to 29	3.4	3.2	0.2

Table C-17. Grade 11 Science Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	21.6	23.6	-2.0
Apprentice	9 to 14	55.1	49.0	6.1
Proficient	15 to 21	20.9	25.0	-4.1
Distinguished	22 to 30	2.4	2.4	0.0

Table C-18. Grade 5 Social Studies Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	11.4	13.3	-1.9
Apprentice	9 to 13	49.1	50.0	-0.9
Proficient	14 to 20	33.4	29.1	4.3
Distinguished	21 to 28	6.1	7.6	-1.5

Table C-19. Grade 8 Social Studies Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	24.1	23.0	1.1
Apprentice	9 to 12	46.0	49.2	-3.2
Proficient	13 to 19	23.9	22.6	1.3
Distinguished	20 to 26	6.0	5.2	0.8

Table C-20. Grade 11 Social Studies Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	20.2	23.0	-2.8
Apprentice	9 to 15	53.2	49.2	4.0
Proficient	16 to 21	20.9	22.6	-1.7
Distinguished	22 to 29	5.8	5.2	0.6

Table C-21. Grade 5 Writing Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 7	11.3	17.6	-6.3
Apprentice	8 to 11	48.0	44.4	3.6
Proficient	12 to 17	33.2	31.7	1.5
Distinguished	18 to 28	7.5	6.3	1.2

Table C-22. Grade 8 Writing Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 8	18.9	20.2	-1.3
Apprentice	9 to 14	51.9	48.0	3.9
Proficient	15 to 19	23.6	25.6	-2.0
Distinguished	20 to 25	5.6	6.2	-0.6

Table C-23. Grade 11 Writing Equipercentile Linking Results

Performance Level	Raw Score Range	2021 Percentage	2019 Percentage	Difference in Percentages
Novice	0 to 6	17.0	15.7	1.3
Apprentice	7 to 12	49.8	51.2	-1.4
Proficient	13 to 18	26.7	27.8	-1.1
Distinguished	19 to 25	6.6	5.3	1.3

Appendix F: Final Evaluation for Bias Review

AKSA

Content area(s) of your review (check all that apply)

- Mathematics
 Reading/Writing
 Social Studies

Grade level of your review (check all that apply)

- Elementary
 Middle
 High

Stakeholder group(s) (check all that apply)

- Educator
 Educational Administrator
 Parent
 Community
 Other _____

Area(s) of expertise (check all that apply)

- English Language Learner
 General Education
 Special Education
 Higher Education

Gender

- Male
 Female
 Other _____

Race/ethnicity

- African American
 Asian
 Caucasian
 Hispanic
 Other _____

Type of area in which you teach or work

- Urban
 Suburban
 Rural

Using your professional judgement, please check the box that that most closely reflects your opinion.

	Strongly agree	Agree somewhat	Disagree somewhat	Strongly disagree
1. I understand the purpose of this workshop.				
2. The training was clear and laid out the expectations for this workshop.				
3. The support materials were clear and provided necessary information				
4. The rating form was easy to use.				
5. The process used was appropriate to the work.				
6. The technology platform(s) were appropriate to the task.				
7. I was able to ask questions and openly discuss my thoughts/opinions in my group.				
8. My opinions were welcomed and valued by my group/facilitator.				
9. The facilitator effectively managed discussions with differing points of view.				
10. I was able to contribute in a meaningful way to the bias review.				
11. I am confident that I was able to effectively describe my concerns of bias.				



2022 No. 106

Kentucky Summative Assessment (KSA) and Alternate Kentucky Summative Assessment Alignment Study

Prepared for: Kentucky Department of Education
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Kentucky Summative Assessment (KSA) and Alternate Kentucky Summative Assessment Alignment Study

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Kentucky Summative Assessment (KSA) and Alternate Kentucky Summative Assessment Alignment Study

Executive Summary

This report summarizes a study of the alignment between the Kentucky Summative Assessments (KSA) and the Kentucky Academic Standards, and between the Alternate KSA and the Kentucky Academic Standards Alternate Assessment Targets. Alignment studies are required as part of the federal assessment peer review process, provide validity evidence that the assessment is measuring the intended content, and inform future assessment item development.

Context and Overview of the Study

Kentucky legislation requires that all academic standards and aligned assessments be routinely reviewed, typically 1-2 content areas each year and on a rotating basis every six years thereafter. This schedule began in the summer of 2017, and current mathematics, reading, social studies, and writing standards were adopted in 2019. Science standards have also gone through a review process, but those standards have not yet been formally adopted. For each content area, the Kentucky Academic Standards go through an additional review process to identify Alternate Assessment Targets “for assessing the instruction provided to students with moderate and significant disabilities (i.e., for the less than 1% of the total student population for whom traditional assessments would be an inappropriate measure of progress).”¹

In spring 2022, Kentucky also transitioned to the Kentucky Summative Assessment (KSA) and the Alternate KSA for annual summative assessment. Given the new academic standards and associated assessments, the Kentucky Department of Education (KDE) contracted with the Human Resources Research Organization (HumRRO) to conduct a study of the alignment between the Alternate KSA and the Kentucky Academic Standards Alternate Assessment Targets. Results from the alignment study are intended to provide evidence of high-quality annual statewide assessment as required under the Every Student Succeeds Act (ESSA).

To evaluate the alignment between the Alternate KSA and the Kentucky Academic Standards Alternate Assessment Targets, we first investigated the standards development process, test design details, and item development processes and procedures. Secondly, we modified traditional alignment methods to account for the test structure and design, a process in keeping with best practices in test validation that facilitates using alignment study results in an overall validity argument.

Research Questions

Evidence of the alignment between assessments and standards is a requirement under the U.S. Department of Education’s assessment peer review process (primarily addresses Peer Review Critical Element 3.1—Overall Validity, Including Validity Based on Content, but touches on other elements as well). Alignment evidence supports that students’ test scores can be used to make valid inferences about student performance on the content being tested. We identified several

¹ <https://education.ky.gov/AA/Assessments/summassmt/Pages/default.aspx>

research questions to guide the alignment evidence collected. Activities conducted for the KSA and Alternate KSA Alignment Study were designed to provide information to answer the following research questions:

1. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect the breadth of Kentucky Academic Standards/Alternate Assessment Targets?
2. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect a range and distribution of cognitive complexity?
3. To what extent do the Spring 2022 Alternate KSA test items allow students to demonstrate performance on grade-level academic content?

Methods

This section describes the methods used to answer the research questions. First, we describe the a priori alignment criteria to be evaluated. Next, we describe our approaches to reviewing test design documentation and conducting an alignment workshop.

Alignment Criteria

The alignment evaluative benchmarks and the process for collecting the data to evaluate these criteria are described in subsequent sections. We use an alignment method based on Webb's original alignment criteria (Webb 1997, 1999, 2005). Using this as our base, we tailor the methods to address Kentucky's specific assessment design as well as current alignment practice. We also apply an aspect of the Achieve model (2018), which incorporates the test blueprints into the evaluation of alignment. Finally, we incorporate elements of the Links for Academic Learning model (Flowers, et al., 2009), that address concerns that are unique to alternate assessments.

Because the KSA is designed to report scores at both the student and school levels, our criteria evaluate at both the test form and operational item pool levels. Table 2 in the body of the report summarizes all alignment criteria for student-level KSA, school-level KSA, and student-level Alternate KSA.²

Review of Test Design Documentation

The first step in our alignment evaluation was to review test design and development documentation. This review was informed by the *Joint Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014). We considered the standards and best practices around test design that are directly relevant to alignment, which we used to inform our evaluation of the alignment criteria. We reviewed materials including a) test blueprints, b) item writer training materials, c) item reviewer training materials, d) item metadata, and e) cognitive complexity frameworks.

² The Alternate KSA is not currently designed to report school-level subscores, so alignment was only evaluated at the student level.

Alignment Workshop

HumRRO conducted four multi-day virtual alignment workshops for reading/writing, mathematics, science, and social studies KSA and Alternate KSA assessments between July 2022 and September 2022. HumRRO worked collaboratively with KDE to recruit 124 participants across the four workshops, 92 of whom followed through with their participation.

In May 2022, KDE provided HumRRO with an online database of educators interested in participating in activities supporting the development of the KSA or Alternate KSA. HumRRO then used the contact information of educators in this database to email background information about the alignment study and provide links to web-based recruitment surveys to potential participants. HumRRO received 183 responses to the initial recruitment survey and 143 responses to the follow-up survey.

Educators were selected for participation in the workshop based on information they provided in the recruitment surveys about their experience and qualifications. In particular, HumRRO selected panelists for participation based on the following criteria: total years of experience as a teacher (> 1); recency of their Kentucky classroom teaching experience (currently teaching or taught within the last five years); experience teaching students from diverse backgrounds; strong familiarity with and use of the Kentucky Academic Standards or Alternate Assessment Targets; and history of participation in KSA, Alternate KSA, K-PREP, or Alternate K-PREP item writing activities. Educators who had written items for a particular grade and content area were excluded from consideration to serve on a panel that would review those items. In addition, educators who were under consideration for serving on alternate assessment panels were selected and assigned to panels based on their experience teaching students with moderate to severe cognitive disabilities.

Of the educators who participated in the study, most were general education classroom teachers (57%), followed by special education classroom teachers (21%), and instructional coaches (9%). The years of classroom teaching experience among participants ranged from 2 to 27 years across all panels, with the average years of classroom teaching experience across all panels being 14 years.

Workshop participants were predominantly female (83%) and White (94%). Most panelists fell into the following three age ranges: 26-35 (29%), 36-45 (37%), and 46-55 years old (31%). A large majority of panelists identified a master's degree as their highest degree earned (78%) and nearly all panelists reported experience with teaching students from diverse backgrounds (97%). More detailed demographic information on the workshop panelists is presented in Appendix F.

Across all 24 panels, 43 school districts across the central, northern, southern, and western regions of Kentucky were represented, including 36 county school districts and 7 independent school districts. Three participants were not affiliated with any school district at the time of their participation in the workshop but had classroom teaching experience within the last five years.

In addition to recruiting educators to serve as subject matter experts on panels, HumRRO recruited four participants with advanced knowledge of the Kentucky Academic Standards and teaching expertise in one of the four content areas (reading/writing, mathematics, social studies, or science) to serve as content experts during the workshop. The role of the content expert was to provide clarification to panelists in interpreting item content. While content experts may have

answered panelists' questions about item content, they did not provide input on panelists' independent or final consensus ratings.

Content experts supported this alignment study primarily during the workshop, but also provided post-workshop support for two content areas. Two panels, High School Alternate Reading/Writing and Grade 11 Alternate Social Studies, had particularly high rates of last-minute panelist cancellation, leaving only two educators per panel. Although HumRRO proceeded with these small panels, we enlisted the help of content experts to validate these panels' ratings. For High School Alternate Reading/Writing we were able to use the same content expert from the workshop. However, due to lack of availability of a Kentucky social studies educator to do this validation work, we recruited a HumRRO researcher with an educational background in history and Social Studies education.

Prior to entering the workshop, panelists were required to sign nondisclosure agreements as a condition of participation. During the workshop, panels of educators evaluated how well each KSA or Alternate KSA item assessed the Kentucky Academic Standards/Alternate Assessment Targets.

Alignment panelists received two rounds of training at the outset of each alignment workshop. First, the full group of panelists received general training from HumRRO's technical advisor on the alignment study. The technical advisor provided background on alignment and a high-level description of the alignment process. Following the general training session, panelists moved into grade and content-specific panel groups and received more detailed training on the data collection processes and procedures from their HumRRO facilitator. Those processes and procedures are described in more detail in the following section.

After the panel-specific training presentation by the HumRRO facilitator, each panel engaged in a calibration activity using the first item. Panelists reviewed the first item and made their independent ratings of content alignment, cognitive complexity, and grade level fidelity (Alternate KSA only). Panelists discussed their independent ratings to come to agreement on the final item ratings of record. This process was then repeated for the next two items. Only when panelists had a clear understanding of the rating process, and a common understanding of the rating categories did they begin to independently rate the remaining items. Throughout the process, each facilitator monitored panelists' individual rating workbooks to ensure that (a) panelists were recording their ratings appropriately and correctly, and (b) no aberrant patterns or outliers emerged.

Once all panelists completed their independent ratings, the HumRRO facilitator viewed panelists' ratings and led a discussion focused on instances where there was disagreement among panelists regarding a specific rating. When independent ratings differed among panelists, the facilitator polled the group about the rating and asked panelists to provide a rationale for their selections. Panelists were instructed to retain their independent ratings unless they realized that they had made a coding error, or if group discussion revealed to them an error in their thinking about an item and/or the standards. If the group could not reach true consensus, the facilitator recorded the majority rating.

Once all consensus statements were recorded, panelists completed an evaluation survey (see Appendix G). The purpose of the evaluation survey was to give panelists the opportunity to provide their perspective on the overall degree of alignment between items and standards, as well as the quality of the workshop. The survey consisted of a series of Likert-type items assessing overall alignment of items to standards as well as satisfaction with a variety of

workshop-related topics, including the group-wide training session, panel-specific training session, panel-specific discussion, usefulness of materials, technology, and staff (Likert-scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, and 5 = Strongly Agree).

There were a total of 101 responses to the evaluation survey. Most panelists indicated the KSA items were **strongly aligned** with the Kentucky Academic Standards (86.1%). Additionally, all alternate panelists indicated that the Alternate KSA items were **strongly aligned** with the Kentucky Academic Standards Alternate Assessment Targets (100%).

The evaluation survey yielded positive rates of satisfaction across the various aspects of the workshop. Mean scores ranged from 4.38 to 4.51 for the group-wide training session, 4.63 to 4.71 for the panel-specific training session, 4.69 to 4.76 for the panel-specific discussion, 4.61 to 4.67 for the usefulness of materials, 4.66 to 4.77 for the usefulness of technology, and 4.50 to 4.71 for HumRRO staff. More detailed results from the evaluation survey are presented in

Results

We evaluated the KSA and Alternate KSA on three major alignment criteria, plus a fourth alignment criteria for the Alternate KSA only. The first criterion, *Content Representation*, focuses on the percentage of items that are aligned to a standard and the percentage of standards that are aligned to at least one item. The second criterion, *Category Representation*, focuses on the extent to which the percentage of items measuring each content domain meets expectations outlined in test blueprints. The third criterion, *DOK Representation*, focuses on the extent to which items measure a range of cognitive complexity levels. The fourth criterion for Alternate KSA only, *Grade Level Fidelity*, focuses on the extent to which Alternate KSA items and associated Alternate Assessment Targets allow students to demonstrate performance on grade level content.

For the KSA, we evaluated alignment criteria at the school level (i.e., the operational item pool), and at the student level (i.e., test forms). For the alternate KSA, we evaluated alignment criteria at the student level only. Detailed descriptions of each alignment criterion are presented in Table 2 in the main body of the report.

Kentucky Summative Assessment (KSA)

Mathematics

Figure ES-1 summarizes the three alignment criteria at the school level for mathematics. Across the grade levels, the content and category representation of the operational item pool are strong. Of concern is the DOK representation of the mathematics operational item pool. Future item development efforts should focus on developing more complex items.

Grade Level	Content Representation	Category Representation	DOK Representation
3	Met	Met	Not Met
4	Met	Met	Not Met
5	Met	Met	Not Met
6	Met	Met	Not Met
7	Met	Met	Not Met
8	Met	Met	Not Met
10	Partially Met	Met	Not Met

Figure ES-1. Summary of school-level criteria for mathematics.

Figure ES-2 summarizes the three alignment criteria at the student level for mathematics. Across the grade levels, the content and category representation of test forms are strong. DOK representation is not strong among test forms, a reflection of the DOK representation of the operational item pool.

Grade Level	Content Representation	Category Representation	DOK Representation
3	Met	Not Met	Not Met
4	Met	Met	Not Met
5	Met	Met	Not Met
6	Met	Met	Not Met
7	Met	Met	Not Met
8	Met	Met	Not Met
10	Met	Met	Not Met

Figure ES-2. Summary of student-level criteria for mathematics.

Reading

Figure ES-3 summarizes the three alignment criteria at the school level for reading. Across the grade levels, the content and DOK representation of the operational item pool are strong. Of concern is the category representation of the reading operational item pool. Future item development should ensure adequate numbers of items measure the Integration of Ideas domain.

Grade Level	Content Representation	Category Representation	DOK Representation
3	Met	Not Met	Met
4	Met	Not Met	Met
5	Met	Not Met	Met
6	Met	Not Met	Met
7	Met	Not Met	Met
8	Met	Not Met	Met
10	Met	Not Met	Met

Figure ES-3. Summary of school-level criteria for reading.

Figure ES-4 summarizes the three alignment criteria at the student level for reading. Across the grade levels, the content and DOK representation of test forms are strong. Category representation is not strong among test forms, in part a reflection of the lack of Integration of Ideas items in the operational item pool.

Grade Level	Content Representation	Category Representation	DOK Representation
3	Met	Not Met	Met
4	Met	Not Met	Met
5	Met	Not Met	Met
6	Met	Not Met	Met
7	Met	Not Met	Met
8	Met	Not Met	Met
10	Met	Not Met	Met

Figure ES-4. Summary of student-level criteria for reading.

Science

Figure ES-5 summarizes the three alignment criteria at the school level for science. Across the grade levels, the content representation of the operational item pool is strong for items being aligned to the Kentucky Academic Standards but weak for coverage of the standards. This is in large part due to the large number of standards available for inclusion in a grade banded test. KDE should consider prioritizing standards from each grade level for assessment, or outline in the test specifications how the breadth of the science standards across the grade levels will be assessed.

Category representation is strong for the Grade 4 operational item pool, but not for Grades 7 and 11. Specifically, blueprint target domains were not met for the Earth and Space Science and Life Science domains. The main concern regarding the category representation of the operational item pool is its impact on the ability to develop multiple test forms that meet blueprint targets. Future item development should focus on ensuring that any one domain is not overrepresented or underrepresented in the operational item pool. Based on panelists' ratings, the DOK representation of the science operational item pool is strong at all the grade levels.

Grade Level	Content Representation	Category Representation	DOK Representation
4	Met	Met	Met
7	Partially Met	Not met	Met
11	Partially Met	Not met	Met

Figure ES-5. Summary of school-level criteria for science.

Figure ES-6 summarizes the three alignment criteria at the student level for science. Across the grade levels, the content and DOK representation of test forms are strong. Category representation is strong at Grade 11, but not at Grade 4 and 7. Earth and Space Science was underrepresented on two Grade 4 test forms, while Engineering Design was overrepresented on one form. Earth and Space Science was overrepresented on one Grade 7 test form, while Physical Science was underrepresented.

Grade Level	Content Representation	Category Representation	DOK Representation
4	Met	Not met	Met
7	Met	Not met	Met
11	Met	Met	Met

Figure ES-6. Summary of student-level criteria for science.

Social Studies

Figure ES7 summarizes the three alignment criteria at the school level for social studies. Across the grade levels, the content representation of the operational item pool is strong in terms of items being aligned to the Kentucky Academic Standards but weak in terms of coverage of the standards. This is in large part due to the large number of standards available for inclusion in a grade banded test. KDE should consider prioritizing standards from each grade level for assessment, or outline in the test specifications how the breadth of the social studies standards across the grade levels will be assessed. Based on panelist ratings, category and DOK representation of the social studies operational item pool is strong at all the grade levels.

Grade Level	Content Representation	Category Representation	DOK Representation
5	Partially met	Met	Met
8	Partially met	Met	Met
11	Met	Met	Met

Figure ES-7. Summary of school-level criteria for social studies.

Figure ES-8 summarizes the three alignment criteria at the student level for social studies. Across the grade levels, the content representation of test forms is strong. Category representation for student test forms is strong for Grades 5 and 11. History was overrepresented, and Civics and Economics were overrepresented on one grade 8 form. The DOK representation of Grade 5 and Grade 8 test forms is strong. However, in Grade 11, one test form had just under 70% (67%) of items rated at DOK Level 2 or higher.

Grade Level	Content Representation	Category Representation	DOK Representation
5	Met	Met	Met
8	Met	Not met	Met
11	Met	Met	Not Met

Figure ES-8. Summary of student-level criteria for social studies.

Writing

Figure ES-9 summarizes the three alignment criteria at the school level for writing. Across the grade levels, the content representation of the operational item pool is strong in terms of items being aligned to the Kentucky Academic Standards but weak in terms of coverage of the standards. This is due to panelists across grade levels rating all on-demand items as measuring the same Composition standard. Future item writing efforts should focus on ensuring that the breadth of the Composition domain is being measured.

Across the grade levels, category representation is weak. At Grades 5 and 8, this is due to more than 20% of items measuring the Knowledge of Language and Vocabulary Acquisition and Use domains and fewer than 80% of items measuring the Conventions of Standard English domain. At Grade 11 the opposite was true, with well under 80% of items measuring Conventions of Standard English and well over 20% of items measuring Knowledge of Language and Vocabulary Acquisition and Use. Future item writing efforts should ensure that the operational item pool contains adequate numbers of items from each domain to ensure coverage on test forms and to support the validity of interpretations of school-level sub-scores.

DOK representation is strong at Grades 8 and 11, but less so at Grade 5. This is due to a smaller number of Grade 5 editing and mechanics items rated at Level 2 or higher (21%). This falls just under the 25% criterion established by this study.

Grade Level	Content Representation	Category Representation	DOK Representation
5	Met	Not met	Partially met
8	Met	Not met	Met
11	Partially met	Not met	Met

Figure ES-9. Summary of school-level criteria for writing.

Figure ES-10 summarizes the three alignment criteria at the student level across writing grade levels. Across the grade levels, content representation of the test forms is strong. Category representation of the test forms is weak, however, due to fewer than the target number of items measuring the Conventions of Standard English domain. This was particularly notable at the

Grade 11 level. Future item writing efforts should ensure that an adequate number of Conventions of Standard English are available for inclusion on test forms. Similar to the school-level results, DOK representation is strong at Grades 8 and 11, but less so at Grade 5. This is because some test forms had fewer than 25% of editing and mechanics items at Level 2 or higher.

Grade Level	Content Representation	Category Representation	DOK Representation
5	Met	Not met	Partially met
8	Met	Not met	Met
11	Met	Not met	Met

Figure ES-10. Summary of student-level criteria for writing.

Alternate KSA

Mathematics

Figure ES-11 summarizes the four alternate assessment alignment criteria across mathematics grade levels. The content representation, category representation, and grade-level fidelity are strong for all grades. DOK representation is also strong, with the exception of Grade 3, where only 16.7% of items were rated as Level 2 or above, which is below the 25% target.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
3	Met	Met	Not met	Met
4	Met	Met	Met	Met
5	Met	Met	Met	Met
6	Met	Met	Met	Met
7	Met	Met	Met	Met
8	Met	Met	Met	Met
10	Met	Met	Met	Met

Figure ES-11. Summary of student-level criteria for alternate mathematics.

Reading

Figure ES-12 summarizes the four alternate assessment alignment criteria across reading grade levels. The content representation, DOK representation, and grade-level fidelity are strong for all grades. Category representation is also strong, except for Grade 10, which did not meet domain targets for the Key Ideas and Details and Integration of Ideas domains.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
3	Met	Met	Met	Met
4	Met	Met	Met	Met
5	Met	Met	Met	Met
6	Met	Met	Met	Met
7	Met	Met	Met	Met
8	Met	Met	Met	Met
10	Met	Not met	Met	Met

Figure ES-12. Summary of student-level criteria for alternate reading.

Science

Figure ES-13 summarizes the four alternate assessment alignment criteria across science grade levels. The content representation, category representation, DOK representation, and grade-level fidelity are strong for all grades.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
4	Met	Met	Met	Met
7	Met	Met	Met	Met
11	Met	Met	Met	Met

Figure ES-13. Summary of student-level criteria for alternate science.

Social Studies

Figure ES-14 summarizes the four alternate assessment alignment criteria across social studies grade levels. The content representation, category representation, DOK representation, and grade-level fidelity are strong for all grades.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
5	Met	Met	Met	Met
8	Met	Met	Met	Met
11	Met	Met	Met	Met

Figure ES-14. Summary of student-level criteria for alternate social studies.

Writing

Figure ES-15 summarizes the four alternate assessment alignment criteria across writing grade levels. The content representation, DOK representation, and grade-level fidelity are strong for all grades. Category representation is weak at Grades 5 and 8, due to a large number of items rated as measuring the Conventions of Standard English domain.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
5	Met	Not met	Met	Met
8	Met	Not met	Met	Met
11	Met	Met	Met	Met

Figure ES-15. Summary of student-level criteria for alternate writing.

Conclusions

1. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect the Kentucky Academic Standards/Alternate Assessment Targets?

Results from this alignment study provide strong evidence that items on the KSA measure content outlined in the Kentucky Academic Standards. However, less strong is the evidence that the operational item pool currently covers the breadth of the Kentucky Academic Standards. This is particularly an issue for the grade banded tests (science, social studies, and writing), which draw standards from multiple grades. Also of concern is the representation of the content domains in both the operational item pool and in student test forms. Because Kentucky is moving to a design that reports domain scores at the school level, it is essential that the operational items administered across forms represent the content domains as intended. Similarly, multiple test forms should be as parallel as possible in terms of content coverage. The KSA is a new assessment; item development is ongoing, and the operational item pool will continue to expand. Results from this study can inform content areas and domains where future item development should be focused.

Results from this alignment study also provide strong evidence that items on the Alternate KSA measure the content outlined in the Kentucky Academic Standards and cover the prioritized Kentucky Academic Standards Alternate Assessment Targets. There are a small number of areas where domain coverage did not meet the criterion established for this study. KDE and its alternate assessment vendor should consider evaluating the available items for these content domains and target future item development to address any gaps in covering the breadth or depth of the Alternate Assessment Targets.

Recommendations

- Future reading item development should ensure adequate numbers of items measure the Integration of Ideas domain.
- Future writing item development should focus on ensuring that the breadth of the Composition domain is being measured.

- Future writing item development should ensure that an adequate number of Conventions of Standard English are available for inclusion on test forms.
- Review the structure of the science assessment. The current cluster-based design with relatively large item clusters may be contributing to the limited coverage of the breadth of the standards. Consider updating test specifications to include smaller item clusters.
- Consider prioritizing standards for grade banded assessments (e.g., science, social studies), or outline in the test specifications how the breadth of the standards across the grade levels will be assessed.

2. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect a range and distribution of cognitive complexity?

KSA test items across the content areas, with the exception of mathematics, tended to minimize the number of recall items (Webb's DOK Level 1), and include items that require application of skills and integration of concepts. Future mathematics item development should focus on developing items at higher complexity levels. In addition, KDE should consider establishing cognitive complexity targets in its test specifications that would guide form construction.

Alternate KSA test forms reflect a reasonable distribution of cognitive complexity, based on panelists' ratings of Webb's DOK. This is consistent across content areas.

Recommendations

- Future mathematics item development efforts should focus on developing more complex items.
- Consider adding to test specifications guidelines for the distribution of cognitive complexity levels.

3. To what extent do the Spring 2022 Alternate KSA test items allow students to demonstrate performance on grade-level academic content?

Kentucky educators with content and special education expertise consistently found that the Alternate KSA items and aligned Kentucky Academic Standards Alternate Assessment Targets allow students to demonstrate performance on grade level content.

Introduction

HumRRO approaches alignment studies as one means to gather evidence to demonstrate the validity of intended interpretations and uses of the assessment scores. Alignment studies can tell us how well a set of test items fully samples the construct represented by the associated content standards—that is, alignment studies indicate whether a test effectively measures what it is intended to measure.

The alignment study for the Kentucky Summative Assessment (KSA) and Alternate KSA aims to provide validity evidence for these assessments as measures of achievement in mathematics, reading, science, social studies, and writing for their intended student populations. The Alternate KSA was designed to assess “the instruction provided to students with moderate and significant disabilities (i.e., the less than 1% of the total student population for whom traditional assessments would be an inappropriate measure of progress),”³ while the KSA was designed to assess the instruction for the remainder of the population, using accessibility features and/or accommodations as appropriate.

This study focuses on the links between the KSA and the Kentucky Academic Standards, and between the Alternate KSA and the Kentucky Academic Standards Alternate Assessment Targets. The Alternate Assessment Targets reflect a reduction in depth and breadth of an associated standard from the Kentucky Academic Standards. The Kentucky Academic Standards and the Alternate Assessment Targets define the construct(s) to be measured for each content area.

The KSA and Alternate KSA are administered in mathematics, reading, science, social studies and writing (including on-demand writing and editing and mechanics). Subjects are assessed in the following grades:

- Reading and mathematics: Grades 3–8 and Grade 10
- Science: Grades 4, 7, and 11
- Social studies and writing: Grades 5, 8, and 11

Organization of the Standards

In this section we describe the organization of the Kentucky Academic Standards for each content area. We also provide examples of Kentucky Academic Standards Alternate Assessment Targets. The process for developing and modifying the Kentucky Academic Standards and the Kentucky Academic Standards Alternate Assessment Targets is explained in the Summary and Discussion section of this report.”

Mathematics

The Kentucky Academic Standards for mathematics are organized by grade and domain (Grades K–8) or conceptual category (high school). For example, a standard code of KY.4.G.1 would be read as the Grade 4 geometry standard 1. Mathematical content standards are also associated with one or more standards for mathematical practice (listed at the top of Figure 1). While the mathematical content standards define what students should know and be able to do, the

³ <https://www.kydose.org/kas-aa-resources>

standards for mathematical practice define how students apply the content standards (see the bottom portion of Figure 1). This study focused on the alignment between items and mathematical content standards. Figure 1 presents the organization of the Kentucky Academic Standards for mathematics, using an example from the Grade 4 geometry domain.

Geometry	
Standards for Mathematical Practice	
MP.1. Make sense of problems and persevere in solving them.	MP.5. Use appropriate tools strategically.
MP.2. Reason abstractly and quantitatively.	MP.6. Attend to precision.
MP.3. Construct viable arguments and critique the reasoning of others.	MP.7. Look for and make use of structure.
MP.4. Model with mathematics.	MP.8. Look for and express regularity in repeated reasoning.
Cluster: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	
Standards	Clarifications
KY.4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse) and perpendicular and parallel lines. Identify these in two-dimensional figures. MP.5, MP.6	Coherence KY.3.G.1 →KY.4.G.1
KY.4.G.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence of absence of angles of a specified size. Recognize right triangles as a category and identify right triangles. MP.7	Coherence KY.3.G.1 →KY.4.G.2→ KY.5.G.3
KY.4.G.3 Identify lines of symmetry. a. Recognize a line of symmetry for a two-dimensional figure. b. Identify line-symmetric figures and draw lines of symmetry. MP.5, MP.7	
Attending to the Standards for Mathematical Practice	
Using technology, using straightedges and/or protractors, students draw points, lines, line segments, rays, angles and perpendicular and parallel lines (MP.5). Students reason about the possible relationship of two lines or line segments. For example, students might use technology, uncooked spaghetti, or lines drawn on two transparency strips, to arrange two lines in different ways to determine possible events (the two lines might intersect, might intersect and be perpendicular, or may be parallel) (MP.7). Students analyze, compare and sort polygons based on their sides, angles and symmetry, explaining whether an attribute is a defining characteristic of that shape (MP.7).	

Figure 1. Organization of the Kentucky Academic Standards for Mathematics.⁴

The Kentucky Academic Standards Alternate Assessment Targets for mathematics correspond to the Kentucky Academic Standards for mathematics, but in some cases the original standard is reduced in scope to specify what could be included in an assessment item. Figure 2 provides an example of a mathematics Alternate Assessment Target that indicates a reduction of the corresponding Kentucky Academic Standard, using Grade 4 operations and algebraic thinking as an example.

⁴ See

https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Kentucky_Academic_Standards_Mathematics.pdf for full explanation of the organization of the Kentucky Academic Standards for Mathematics

Operations & Algebraic Thinking	
KY.4.OA.2 Test Window 1	Kentucky Academic Standard : Multiply or divide to solve word problems involving multiplicative comparisons by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. MP.1, MP.2, MP.3 <i>Alternate Assessment Target: Limit to multiplicative comparisons within 100.</i>

Figure 2. Example Alternate Assessment Target for Mathematics. Reading and Writing

The Kentucky Academic Standards for reading and writing are organized by grade and strand. A standard code of RL.7.2 would be read as the Grade 7 reading literature standard 2. All reading and writing standards are written to integrate the three dimensions of comprehension, analysis, and content. Figure 3 presents the organization of the Kentucky Academic Standards for reading and writing, using RL.7.2 as an example. ⁵

Strand	Abbreviation	Example	Meaning
Reading Literature	RL	RL.7.2	Reading Literature, Grade 7, Standard 2

Key Ideas and Details	
RL.7.2	Determine themes of a text and analyze their development through citing textual evidence, paraphrasing or summarizing.



GUIDING PRINCIPLE FOR READING LITERATURE			
	2. Students will determine central ideas or themes of a text and analyze their development; cite specific textual evidence, including summary, paraphrase and direct quotations to support conclusions drawn from the text.		
PROGRESSIONS			
	RL.6.2	RL.7.2	RL.8.2
	Analyze how the theme is reflected in the text by citing particular details and/or providing an objective summary.	Determine themes of a text and analyze their development through citing textual evidence, paraphrasing or summarizing.	Determine themes of a text and analyze how they are developed through relationships of characters, setting and plot, citing textual evidence, paraphrasing or summarizing.
MULTIDIMENSIONALITY - RL.7.2			
	<small>Green (italic) = Comprehension Purple (bold) = Analysis MAROON (CAPS) = CONTENT</small> Determine THEMES of a text and analyze their development through citing textual evidence, paraphrasing or summarizing.		

Figure 3. Organization of the Kentucky Academic Standards for Reading and Writing.

⁵ See

https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Kentucky_Academic_Standards_Reading_and_Writing.pdf for full explanation of the organization of the Kentucky Academic Standards for Reading and Writing

Figure 4 provides an example of a reading assessment target that indicates a reduction of the corresponding Kentucky Academic Standard, using Grade 7 reading information as an example.

Key Ideas & Details	
RI.7.1 Test Window 2	Kentucky Academic Standard : Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <i>Alternate Assessment Targets: Limit full standard to what text says explicitly (excludes inferences).</i>

Figure 4. Example Alternate Assessment Target for Reading.

Science

The Kentucky Academic Standards for science are written as performance expectations and are organized by grade and domain (physical, life, earth and space science, engineering design). A standard code of 4-ESS2-1 would be read as the Grade 4 earth and space science performance expectation 2-1. All science performance expectations are written to integrate science and engineering practices, disciplinary core ideas, and crosscutting concepts. Figure 4 presents the organization of the Kentucky Academic Standards, using Grade 4 earth’s systems standards as an example.

4. Earth's Systems: Processes that Shape the Earth		
Students who demonstrate understanding can:		
4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. [Clarification Statement: Examples of evidence from patterns could include rock layers with shell fossils above rock layers with plant fossils and no shells, indicating a change from water to land over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.] [Assessment Boundary: Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.]		
4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. [Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.] [Assessment Boundary: Assessment is limited to a single form of weathering or erosion.]		
4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features. [Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.]		
4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.* [Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.] [Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, and volcanic eruptions.]		
The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i> :		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. <ul style="list-style-type: none"> Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (4-ESS2-1) Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. <ul style="list-style-type: none"> Analyze and interpret data to make sense of phenomena using logical reasoning. (4-ESS2-2) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. <ul style="list-style-type: none"> Identify the evidence that supports particular points in an explanation. (4-ESS1-1) Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. (4-ESS3-2) 	ESS1.C: The History of Planet Earth <ul style="list-style-type: none"> Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1) ESS2.A: Earth Materials and Systems <ul style="list-style-type: none"> Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2-1) ESS2.B: Plate Tectonics and Large-Scale System Interactions <ul style="list-style-type: none"> The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4-ESS2-2) ESS2.E: Biogeology <ul style="list-style-type: none"> Living things affect the physical characteristics of their regions. (4-ESS2-1) ESS3.B: Natural Hazards <ul style="list-style-type: none"> A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts. (4-ESS3-2) (Note: <i>This Disciplinary Core Idea can also be found in 3.WC.</i>) ETS1.B: Designing Solutions to Engineering Problems <ul style="list-style-type: none"> Testing a solution involves investigating how well it performs under a range of likely conditions. (secondary to 4-ESS3-2) 	Patterns <ul style="list-style-type: none"> Patterns can be used as evidence to support an explanation. (4-ESS1-1),(4-ESS2-2) Cause and Effect <ul style="list-style-type: none"> Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS2-1),(4-ESS3-2) Connections to Engineering, Technology, and Applications of Science <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands. (4-ESS3-2) Connections to Nature of Science <p>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</p> <ul style="list-style-type: none"> Science assumes consistent patterns in natural systems. (4-ESS1-1)

Figure 5. Organization of the Kentucky Academic Standards for Science.⁶

Figure 6 provides an example of a science assessment target that indicates a reduction of the corresponding Kentucky Academic Standard, using Grade 4 science as an example.

Grade Level/Content Area	Alternate K-PREP Aligned to KAS for Science	KAS Standard
Grade 4 Science	(Sci. 4.2) Use models to identify patterns of change and describe how organisms (plants and animals) have different life cycles but all have in common: birth, growth, reproduction (needed for continued existence of every kind of organism) and death. LINK TO LIFE SCIENCE 1 PROGRESSION	3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles but all have in common; birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] Life Science 1

Figure 6. Example Alternate Assessment Target for Science.

⁶ See

https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Kentucky_Academic_Standards_Science.pdf for full explanation of the organization of the Kentucky Academic Standards for Science

Social Studies

The Kentucky Academic Standards for social studies are organized by grade, disciplinary strands, and disciplinary concepts and practices. A standard code of 8.C.CP.2 would be read as the Grade 8 civics, civic and political institutions standard 2. Figure 7 presents the organization of the Kentucky Academic Standards for social studies, using Grade 8 civic and political institutions standards as an example.

Concepts and Practices	Standards	
C: Civic and Political Institutions	8.C.CP.1	Analyze the origin and purposes of rule of law, popular sovereignty, federalism, separation of powers and checks and balances.
	8.C.CP.2	Explain the origins, functions and structure of government, with reference to the Declaration of Independence, Articles of Confederation, U.S. Constitution, Bill of Rights and other founding documents, and their impacts on citizens.
	8.C.CP.3	Explain how a system of checks and balances is intended to prevent a concentration of power in one branch.

Figure 7. Organization of the Kentucky Academic Standards for Social Studies.⁷

Figure 8 provides an example of a social studies assessment target that indicates a reduction of the corresponding Kentucky Academic Standard, using Grade 8 social studies as an example.

Social Studies – Grade 8			
DOMAIN		Disciplinary Clarifications	
Civics		Disciplinary Clarifications	
Civic & Political Institutions	8.C.CP.2	Explain the origins, functions and structure of government, with reference to the Declaration of Independence, the Articles of Confederation, U.S. Constitution, Bill of Rights and other founding documents, and their impacts on citizens.	Our founding documents derived from experiences with British rule in the colonies. With heavy influence from a variety of European philosophers, the Constitution and the Bill of Rights lay out the system of democratic rule as well as specified citizen rights.
Test Window 1		<i>Alternate Assessment Target: Limit full standard to the Declaration of Independence, US Constitution, and Bill of Rights.</i>	
Test Window 2			

Figure 8. Example Alternate Assessment Target for Social Studies.

Test Design

Kentucky Summative Assessment

The Kentucky Summative Assessment (KSA) is a fixed-form, computer-administered test that consists of a variety of item types, including multiple choice, multiple select, technology enhanced, short answer, and extended response items. In addition, the on-demand writing test uses an extended response item format. Each grade-level content area assessment consists of multiple test forms. This multi-form design is intended to support sub-score reporting at the school level. Table 1 presents the number of KSA items reviewed for each content area and grade level.

⁷ See

https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Kentucky_Academic_Standards_for_Social_Studies_2019.pdf for full explanation of the organization of the Kentucky Academic Standards for Social Studies

Table 1. Number of KSA Items Reviewed

Grade	Content Area	Number of Items
3	Reading	105
3	Mathematics	94
4	Reading	83
4	Mathematics	102
4	Science	64
5	Reading	86
5	Mathematics	88
5	Social Studies	90
5	Editing and Mechanics/ODW	52/4
6	Reading	86
6	Mathematics	91
7	Reading	85
7	Mathematics	83
7	Science	48
8	Reading	82
8	Mathematics	88
8	Social Studies	94
8	Editing and Mechanics/ODW	52/4
10	Reading	75
10	Mathematics	107
11	Science	56
11	Social Studies	102
11	Editing and Mechanics/ODW	39/4

Note. ODW= On-Demand Writing

Alternate Kentucky Summative Assessment

The Alternate KSA consists of two parts, Attainment Tasks and the Transition Attainment Record (TAR). The TAR is an observation protocol designed to mirror content assessed on a college entrance exam. Because this study is focused on the alignment with Kentucky's academic content standards, the TAR was not included. References in this report to the

Alternative Kentucky Summative Assessment are focused solely on the Attainment Tasks component.

The Alternate KSA is a fixed-form, paper-based test composed of picture-based, multiple-choice items. The test is fully scripted and read to the student by the test administrator. The test is administered over two testing windows, the first between November and December (Testing Window 1), then between April and May (Testing Window 2). For each content area and grade level, there is a single form consisting of 30 operational items total.

Research Questions

Activities conducted for the KSA and Alternate KSA Alignment Study were designed to provide information to answer the following research questions:

1. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect the Kentucky Academic Standards/Alternate Assessment Targets?
2. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect a range and distribution of cognitive complexity?
3. To what extent do the Spring 2022 Alternate KSA test items allow students to demonstrate performance on grade-level academic content?

Methods

This section describes the methods used to answer the research questions. First, we describe the a priori alignment criteria to be evaluated. Next, we describe our approaches to reviewing test design documentation and conducting an alignment workshop.

Alignment Criteria

The alignment evaluative benchmarks and the process for collecting the data to evaluate these criteria are described in subsequent sections. We use an alignment method based on Webb's original alignment criteria (Webb 1997, 1999, 2005). Using this as our base, we tailor the methods to address Kentucky's specific assessment design as well as current alignment practice. We also apply an aspect of the Achieve model (2018), which incorporates the test blueprints into the evaluation of alignment. Finally, we incorporate elements of the Links for Academic Learning model (Flowers, Wakeman, Browder, & Karvonen, 2009), that address concerns that are unique to alternate assessments.

The KSA is designed to report scores at both the student and school levels. The operational item pool consists of items that are administered across multiple student forms. Though a single student score will not reflect the full operational item pool, school-level scores will. Because of this design feature, we developed criteria to evaluate the alignment of test forms (i.e., student level) as well as the alignment of the operational item pool (i.e., school level). Table 2 presents the alignment criteria evaluated. The percentages in each criterion are based on considerations of Webb's original alignment criteria (e.g., 50% of standards measured for Range Adequacy), cognitive complexity priorities communicated by Achieve (i.e., minimization of recall items), and design features of the standards and assessments (e.g., number strands within each content area).

Table 2. Assessment-to-Standards Alignment Criteria

Subject	Student Level KSA ^a	School Level KSA	Alternate KSA
	Criterion #1. Content Representation ^b		
All	<ul style="list-style-type: none"> 100% of test forms have 90% or more items rated as aligned to a Kentucky Academic Standard. 	<ul style="list-style-type: none"> 90% or more of items in the operational item pool are rated as aligned to a Kentucky Academic Standard. 50% or more of the Kentucky Academic Standards are assessed by the operational item pool 	<ul style="list-style-type: none"> 90% or more of items are rated as aligned to an alternate assessment target 50% or more of the Alternate Assessment Targets are assessed
Criterion #2. Category Representation ^c			
Mathematics	<ul style="list-style-type: none"> 100% of forms have 80% or more of the strands/domains that are +/- 5% from the minimum and maximum target values outlined in the blueprint 	<ul style="list-style-type: none"> 80% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint 	<ul style="list-style-type: none"> 80% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint
Reading	<ul style="list-style-type: none"> 100% of forms have 67% or more of the strands/domains that are +/- 5% from the minimum and maximum target values outlined in the blueprint 	<ul style="list-style-type: none"> 67% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint 	<ul style="list-style-type: none"> 67% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint
Science and Social Studies	<ul style="list-style-type: none"> 100% of forms have 75% or more of the strands/domains that are +/- 5% from the minimum and maximum target 	<ul style="list-style-type: none"> 75% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint 	<ul style="list-style-type: none"> 75% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint
Writing	<ul style="list-style-type: none"> 100% of forms have 50% or more of the strands/domains that are +/- 5% from the minimum and maximum target values outlined in the blueprint 	<ul style="list-style-type: none"> 50% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint 	<ul style="list-style-type: none"> 50% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint

Table 2. Assessment-to-Standards Alignment Criteria

Subject	Student Level KSA	School Level KSA	Alternate KSA
Criterion #3. DOK Representation^d			
Mathematics, Reading, Science, and Social Studies	<ul style="list-style-type: none"> 100% of test forms have at least 70% of items rated at DOK Level 2 or above. 	<ul style="list-style-type: none"> At least 70% of items rated at Webb's DOK Level 2 or above. 	<ul style="list-style-type: none"> At least 25% of items rated at Webb's DOK Level 2 or above.
Writing	<ul style="list-style-type: none"> 100% of test forms have at least 50% of editing and mechanics items rated at DOK Levels 1-2. 100% of test forms have 100% of on-demand writing items rated at DOK Levels 3-4 	<ul style="list-style-type: none"> At least 25% of editing and mechanics items rated at Webb's DOK Level 2 or above. 100% of on-demand writing items rated at DOK Levels 3-4 	<ul style="list-style-type: none"> At least 25% of items rated at Webb's DOK Level 2 or above.
Criterion #4. Grade Level Fidelity			
All	Not Applicable to the KSA	Not Applicable to the KSA	<ul style="list-style-type: none"> 75% or more items are rated as allowing students to demonstrate performance on grade-level content

^aAll student-level criterion require 100% of forms to meet based on assumption that all test forms should be comparable. ^b90% based on assumption that all test items should measure a standard, while allowing for rater error. 50% based on Webb's original Range Adequacy criterion. ^cPercentages for Category Representation are based on the number of domains within each content area, allowing for one domain to not meet targets. ^dPercentages for DOK Representation are intended to reflect Achieve's priority of reducing recall items.

Review of Test Design Documentation

The first step in our alignment evaluation was to review test design and development documentation. This review was informed by the *Joint Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014). We considered the standards and best practices around test design that are directly relevant to alignment, which we used to inform our evaluation of the alignment criteria.

We reviewed the following materials during this component of the study:

- Test blueprints
- Item writer training materials
- Item review training materials
- Item metadata
- Cognitive complexity frameworks

We address findings from the documentation review in the Discussion section of this report.

Alignment Workshop

This section describes the alignment workshop. It includes details about workshop participants (henceforth referred to as “alignment panelists” or “panelists”), workshop logistics, materials, training, and workshop processes and procedures.

Alignment Panelists

HumRRO conducted four multi-day virtual alignment workshops for reading/writing, mathematics, science, and social studies KSA and Alternate KSA assessments between July 2022 and September 2022. HumRRO worked collaboratively with KDE to recruit 124 participants across the four workshops, 92 of whom followed through with their participation.

In May 2022, KDE provided HumRRO with an online database of educators interested in participating in activities supporting the development of the KSA or Alternate KSA. HumRRO then used the contact information of educators in this database to email background information about the alignment study and provide links to web-based recruitment surveys to potential participants. HumRRO received 183 responses to the initial recruitment survey and 143 responses to the follow-up survey.

Educators were selected for participation in the workshop based on information they provided in the recruitment surveys about their experience and qualifications. In particular, HumRRO selected panelists for participation based on the following criteria: total years of experience as a teacher (> 1); recency of their Kentucky classroom teaching experience (currently teaching or taught within the last five years); experience teaching students from diverse backgrounds; strong familiarity with and use of the Kentucky Academic Standards or Alternate Assessment Targets; and history of participation in summative assessment or alternate summative assessment item writing activities. Educators who had written items for a particular grade and content area were excluded from consideration to serve on a panel that would review those items. In addition, educators who were under consideration for serving on alternate assessment panels were selected and assigned to panels based on their experience teaching students with moderate to severe cognitive disabilities.

Of the educators who participated in the study, most were general education classroom teachers (57%), followed by special education classroom teachers (21%), and instructional coaches (9%). The years of classroom teaching experience among participants ranged from 2 to 27 years across all panels, with the average years of classroom teaching experience being 14 years. Tables 3-4 present the roles of educators who participated across all panels in the alignment study.

Workshop participants were predominantly female (83%) and White (94%). Most panelists fell into the following three age ranges: 26-35 (29%), 36-45 (37%), and 46-55 years old (31%). A large majority of panelists identified a master’s degree as their highest degree earned (78%) and nearly all panelists reported experience with teaching students from diverse backgrounds (97%). More detailed demographic information is presented in Appendix F.

Table 3. Roles of Alignment Workshop Participants: Reading/Writing and Mathematics

Content Area	General or Alternate Assessment	Role	# of Participants
Reading/Writing	General	General Education Teacher	17
Reading/Writing	General	General Education Teacher and Special Education Teacher	1
Reading/Writing	General	Curriculum Specialist	1
Reading/Writing	General	Instructional Coach	1
Reading/Writing	Alternate	General Education Teacher	4
Reading/Writing	Alternate	Special Education Teacher	5
Mathematics	General	General Education Teacher	8
Mathematics	General	Instructional Coach	4
Mathematics	General	Curriculum Specialist	1
Mathematics	General	District Digital Learning Coach	1
Mathematics	General	Interventionist	1
Mathematics	Alternate	General Education Teacher	2
Mathematics	Alternate	Special Education Teacher	6
Mathematics	Alternate	Special Education Teacher Consultant	1
Mathematics	Alternate	Instructional Coach	1
Mathematics	Alternate	School Administrator	1

Table 4. Roles of Alignment Workshop Participants: Social Studies and Science

Content Area	General or Alternate Assessment	Role	# of Participants
Social Studies	General	General Education Teacher	12
Social Studies	General	Academic Designer	1
Social Studies	Alternate	Special Education Teacher	4
Social Studies	Alternate	Instructional Coach	2
Social Studies	Alternate	Cooperative Consultant	1
Social Studies	Alternate	School Administrator	1
Science	General	General Education Teacher	5
Science	General	Instructional Coach	1
Science	General	Interventionist	1
Science	General	University Faculty Member	1
Science	Alternate	Special Education Teacher	10
Science	Alternate	General Education Teacher	3

Across all 24 panels, 43 school districts across the central, northern, southern, and western regions of Kentucky were represented, including 36 county school districts and 7 independent school districts. Three participants were not affiliated with any school district at the time of their participation in the workshop but had classroom teaching experience within the last five years. Tables 5-6 show the number of different districts and which regions were represented on each panel.

Table 5. District Representation of Panelists: Reading/Writing and Mathematics

Content Area	General or Alt	Grade	# of Unique Districts Represented on Panel	Kentucky Regions Represented
Reading/Writing	General	3–4	3	Central, Northern, Southern, Western
Reading/Writing	General	5	2	Central, Northern
Reading/Writing	General	6–7	3	Northern, Southern
Reading/Writing	General	8	5	Central, Northern, Southern
Reading/Writing	General	High School	4	Central, Northern
Reading/Writing	Alternate	3–5	3	Central, Northern, Southern
Reading/Writing	Alternate	6–8	4	Central, Northern, Southern
Reading/Writing	Alternate	High School	2	Southern, Western
Mathematics	General	3–4	3	Central, Northern, Southern
Mathematics	General	5–6	5	Central, Northern, Southern
Mathematics	General	7–8	4	Central, Northern, Western
Mathematics	General	High School	3	Central, Northern, Western
Mathematics	Alternate	3–5	3	Central, Northern
Mathematics	Alternate	6–8	4	Western, Northern, Southern
Mathematics	Alternate	High School	4	Northern, Southern

Note. Regions are defined based on <https://education.ky.gov/federal/progs/tic/Documents/Kentucky%20Migrant%20Regions%20Map.pdf>

Table 6. District Representation of Panelists: Social Studies and Science

Content Area	General or Alt	Grade	# of Unique Districts Represented on Panel	Kentucky Regions Represented
Social Studies	General	5	3	Central, Northern, Southern
Social Studies	General	8	4	Northern, Western
Social Studies	General	11	3	Central, Northern, Western
Social Studies	Alternate	5	3	Northern, Southern, Western
Social Studies	Alternate	8	3	Central, Northern, Southern
Social Studies	Alternate	11	2	Northern, Southern
Science	General	4	3	Northern, Southern, Western
Science	General	7	3	Northern, Western
Science	General	11	4	Northern, Southern, Western
Science	Alternate	4	4	Northern
Science	Alternate	7	3	Central, Northern, Southern, Western
Science	Alternate	11	3	Southern, Western

Note. Regions are defined based on

<https://education.ky.gov/federal/progs/tic/Documents/Kentucky%20Migrant%20Regions%20Map.pdf>

In addition to recruiting educators to serve as subject matter experts on panels, HumRRO recruited four participants with advanced knowledge of the Kentucky Academic Standards and teaching expertise in one of the four content areas (reading/writing, mathematics, social studies, or science) to serve as content experts during the workshop. The role of the content expert was to provide clarification to panelists in to interpreting item content. While content experts may have answered panelists’ questions about item content, they did not provide input on panelists’ independent or final consensus ratings.

Content experts supported this alignment study primarily during the workshop, but also provided post-workshop support for two content areas. Two panels, High School Alternate Reading/Writing and Grade 11 Alternate Social Studies, had particularly high rates of last-minute panelist cancellation, leaving only two educators per panel. Although HumRRO proceeded with these small panels, we enlisted the help of content experts to validate these panels’ ratings. For High School Alternate Reading/Writing we were able to use the same content expert from the workshop. However, due to lack of availability of a Kentucky social studies educator to do this validation work, we recruited a HumRRO researcher with an educational background in history and Social Studies education.

Workshop Logistics

HumRRO conducted four virtual alignment workshops between July 2022 and September 2022. Reading/writing and mathematics panels convened for up to four consecutive days during the weeks of July 12–15, 2022 and July 19–22, 2022, except for the High School Alternate Reading/Writing panel, which was rescheduled for September 7–9, 2022, to recruit a larger panel than what was available in the summer. Social studies panels met for up to four consecutive days during the week of August 30–September 2, 2022, and science panels took place on up to three consecutive days the week of September 6–8, 2022. Tables 7-8 provide information on exactly when and for how many days each panel had been scheduled to meet as part of the alignment study.

Table 7. Summer Alignment Workshop Panels: Reading/Writing and Mathematics

Content Area	General or Alt	Grade(s)	Workshop Dates	# of Days Allotted
Reading/Writing	General	3–4	July 19–22, 2022	4 days
Reading/Writing	General	5	July 19–22, 2022	4 days
Reading/Writing	General	6–7	July 12–15, 2022	4 days
Reading/Writing	General	8	July 12–15, 2022	4 days
Reading/Writing	General	High School	July 12–15, 2022	4 days
Reading/Writing	Alternate	3–5	July 12–15, 2022	4 days
Reading/Writing	Alternate	6–8	July 19–22, 2022	4 days
Reading/Writing	Alternate	High School	September 7–8, 2022 (Makeup Panel)	2 days
Mathematics	General	3–4	July 19–22, 2022	4 days
Mathematics	General	5–6	July 19–22, 2022	4 days
Mathematics	General	7–8	July 19–22, 2022	4 days
Mathematics	General	High School	July 19–22, 2022	4 days
Mathematics	Alternate	3–5	July 12–15, 2022	4 days
Mathematics	Alternate	6–8	July 12–15, 2022	4 days
Mathematics	Alternate	High School	July 19–22, 2022	4 days

Table 8. Fall Alignment Workshop Panels: Social Studies and Science

Content Area	General or Alt	Grade	Workshop Dates	# of Days Allotted
Social Studies	General	5	August 30–September 2, 2022	4 days
Social Studies	General	8	August 30–September 2, 2022	4 days
Social Studies	General	11	August 30–September 2, 2022	4 days
Social Studies	Alternate	5	August 30–31, 2022	2 days
Social Studies	Alternate	8	August 30–31, 2022	2 days
Social Studies	Alternate	11	August 30–31, 2022	2 days
Science	General	4	September 6–8, 2022	3 days
Science	General	7	September 6–8, 2022	3 days
Science	General	11	September 6–8, 2022	3 days
Science	Alternate	4	September 6–7, 2022	2 days
Science	Alternate	7	September 6–7, 2022	2 days
Science	Alternate	11	September 6–7, 2022	2 days

The whole-group and small-group trainings and meetings were conducted over Microsoft Teams, and workshop materials were provided to panelists via Google Drive. For general assessment panels, items were viewed on Pearson’s test delivery platform TestNav, while alternate assessment panels viewed items in a password-protected Adobe PDF file that was available on Google Drive only during the workshop.

Prior to entering the workshop, panelists were required to sign nondisclosure agreements as a condition of participation. During the workshop, panels of educators evaluated how well each KSA or Alternate KSA item assessed the Kentucky Academic Standards/Alternate Assessment Targets.

Materials

KDE and its test vendors provided HumRRO with documents and data to facilitate the development of materials for the alignment workshop. These included test design documentation (e.g., test blueprints) and item metadata.

HumRRO developed several data collection tools and adapted other materials to support the data collection process. Data collection tools included electronic spreadsheets into which panelists and workshop facilitators entered independent and consensus/majority item-level ratings, respectively. Support materials included copies of the Kentucky Academic Standards and Alternate Assessment Targets, detailed rating instructions, and cognitive complexity rating category descriptions. The workshop agenda, panelist instructions, rating sheet column headers, and post-workshop surveys are presented in Appendix D.

Training

Alignment panelists received two rounds of training at the outset of each alignment workshop. First, the full group of panelists received general training from HumRRO's technical advisor on the alignment study. The technical advisor provided background on alignment and a high-level description of the alignment process. Following the general training session, panelists moved into grade and content-specific panel groups and received more detailed training on the data collection processes and procedures from their HumRRO facilitator. Those processes and procedures are described in more detail in the following section.

Workshop Processes and Procedures

After the panel-specific training presentation by the HumRRO facilitator, each panel engaged in a calibration activity using the first item. Panelists reviewed the first item and made their independent ratings. Panelists discussed their independent ratings to come to agreement on the final item ratings of record. This process was then repeated for the next two items. Only when panelists had a clear understanding of the rating process and a common understanding of the rating categories did they begin to independently rate the remaining items.

The facilitator directed panelists to review a set of items (typically around 5 items for alternate KSA panels and KSA mathematics, or a set of test items specific to the passage(s) in reading/writing). Once all panelists completed their independent ratings for the set of items, they discussed item ratings until they reached their final consensus/majority rating for each item. Once HumRRO facilitators recorded consensus/majority ratings in the facilitator workbook for the set of items rated and discussed, the panel moved on to the next set of items and repeated this process. Throughout the process, each facilitator monitored panelists' individual rating workbooks to ensure that (a) panelists were recording their ratings appropriately and correctly, and (b) no aberrant patterns or outliers emerged. Item ratings were generated via the following steps:

- 1) Panelists reviewed test items independently and assigned ratings of:
 - a) Standard/Target measured by item
 - b) Quality of the link between the item and the identified standard/target
 - c) Item DOK level
 - d) Science dimensions (science only)⁸
 - i) Science and engineering practices
 - ii) Disciplinary core ideas
 - iii) Crosscutting concepts

⁸ Because scores and subscores are not linked to the science dimensions, we did not include them in our alignment criteria. We did collect these data to share with KDE for their own analyses and to inform item metadata.

- e) Grade-level fidelity (alternate assessments only)
 - i) Does the Alternate Assessment Target lead the student toward demonstrating performance on the associated Kentucky Academic Standard?
- 2) Panelists discussed their independent ratings
- 3) Panelists came to consensus or majority agreement ratings
- 4) HumRRO facilitator recorded consensus/majority ratings

Once all panelists completed their independent ratings, the HumRRO facilitator viewed panelists' ratings and led a discussion based focused on areas where there was disagreement among panelists regarding a specific rating. When independent ratings differed among panelists, the facilitator polled the group about the rating and asked panelists to provide a rationale for their selections. Panelists were instructed to retain their independent ratings unless they realized that they had made a coding error, or if group discussion revealed to them an error in their thinking about an item and/or the standards. If the group could not reach true consensus, the facilitator recorded the majority rating.

Once all consensus statements were recorded, panelists completed an evaluation survey (see Appendix G). The purpose of the evaluation survey was to give panelists the opportunity to provide their perspective on the overall degree of alignment between items and standards, as well as the quality of the workshop. The survey consisted of a series of Likert-type items assessing the overall alignment of items to standards as well as satisfaction with a variety of workshop-related topics, including the group-wide training session, panel-specific training session, panel-specific discussion, usefulness of materials, technology, and staff (Likert-scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, and 5 = Strongly Agree).

There were a total of 101 responses to the evaluation survey. Most panelists indicated the KSA items were **strongly aligned** with the Kentucky Academic Standards (86.1%). Additionally, all alternate panelists indicated that the Alternate KSA items were **strongly aligned** with the Kentucky Academic Standards Alternate Assessment Targets (100%).

The evaluation survey yielded positive rates of satisfaction across the various aspects of the workshop. Mean scores ranged from 4.38 to 4.51 for the group-wide training session, 4.63 to 4.71 for the panel-specific training session, 4.69 to 4.76 for the panel-specific discussion, 4.61 to 4.67 for the usefulness of materials, 4.66 to 4.77 for the usefulness of technology, and 4.50 to 4.71 for HumRRO staff. Summary results are presented in Tables 9–16. More detailed results from the evaluation survey are presented in Appendix H.

Table 9. Evaluation Survey Results: KSA Overall Alignment

Alignment	%
Strongly Aligned	86.1%
Partially Aligned	13.9%
Not at all aligned	0.0%

Table 10. Evaluation Survey Results: Alt KSA Overall Alignment

Alignment	%
Strongly Aligned	100.0%
Partially Aligned	0.0%
Not at all aligned	0.0%

Table 11. Evaluation Survey Results: Group-Wide Training

Item	Mean
The orientation and group-wide training was an effective use of time	4.51
The group-wide training session effectively outlined the purpose of the workshop	4.50
The group-wide training session clearly described my role and responsibility	4.48
The group-wide training session was well organized	4.48
The orientation and group-wide training was an effective use of time	4.38

Table 12. Evaluation Survey Results: Panel-Specific Training

Item	Mean
The panel-specific hands-on training was well organized	4.71
Practicing making ratings as a group helped me better understand the alignment activities	4.68
The hands-on training in my assigned panel was an effective use of time	4.68
The hands-on training helped me better understand the alignment activities	4.63

Table 13. Evaluation Survey Results: Panel-Specific Discussion

Item	Mean
Everyone had equal opportunity to contribute ideas and opinions	4.76
My panel facilitator clearly and promptly addressed my questions	4.72
My panel facilitator did an effective job of facilitating discussion	4.72
My ideas and opinions were listened to and respected by the group	4.69

Table 14. Evaluation Survey Results: Usefulness of Materials

Item	Mean
The Google Rating Sheet was useful for recording alignment ratings	4.67
The materials hosted on Google Drive were useful (e.g., standards)	4.65
The other materials shared by my facilitator were useful	4.62
The Google Rating Sheet provided a comprehensive platform for capturing alignment	4.61

Table 15. Evaluation Survey Results: Usefulness of Technology

Item	Mean
The item content allowed me to effectively accomplish my tasks during the workshop	4.71
It was easy to access the evaluation and demographics form	4.71
It was easy to access the item content	4.66

Table 16. Evaluation Survey Results: HumRRO Staff

Item	Mean
The panel facilitator was helpful during the workshop	4.71
Other support staff were helpful during the workshop	4.63
The whole-group training facilitator was helpful during the workshop	4.50

Results

This section summarizes the data collected during the alignment workshop. Results are presented for the KSA and Alternate KSA separately and are organized by content area. Within each content area, we evaluate each of these three criteria: (1) Content Representation, (2) Category Representation, and (3) DOK Representation. For the Alternate KSA, we also evaluate grade-level fidelity.

Kentucky Summative Assessment

Mathematics

Criterion 1: Content Representation

This criterion is evaluated at two levels. First, we present the school-level results, which focus on the full operational item pool. Next, we present the student-level results, which focus on the test forms administered to students.

School Level—Operational item pool

The school-level criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards are assessed by at least one item. As indicated in Table 17 at all grade levels, panelists rated all items as measuring a Kentucky Academic Standard.

Table 17. Mathematics School-Level Results for Criterion 1: Percentage of Items Aligned to Kentucky Academic Standard.

Grade	Number of items reviewed	% Items aligned to a KAS	Met?
3	94	100%	Yes
4	102	100%	Yes
5	88	100%	Yes
6	91	100%	Yes
7	83	100%	Yes
8	88	100%	Yes
10	107	100%	Yes

Table 18 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. With the exception of Grade 10, all grade levels were rated as having at least 50% of the Kentucky Academic Standards aligned to at least one item. It is important to note that the number of mathematics standards at the high school level is quite large relative to the other grade levels, and the target percentage of 50% was barely missed.

Table 18. Mathematics School-Level Results for Criterion 1: Percentage of Kentucky Academic Standards Aligned to Items.

Grade	Number of KAS	% KAS aligned to an item	Met?
3	25	100%	Yes
4	28	100%	Yes
5	26	96.2%	Yes
6	30	93.3%	Yes
7	25	88.0%	Yes
8	27	88.9%	Yes
10	80	48.8%	Yes

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have 90% or more items rated as aligned to a Kentucky Academic Standard. As indicated in Table 19 at all grade levels, all forms contained only items aligned to a Kentucky Academic Standard.

Table 19. Mathematics Student-Level Results for Criterion 1: Percentage of Forms with at least 90% of items aligned to Kentucky Academic Standard.

Grade	Number of forms	% Forms with 90%+ alignment	Met?
3	6	100%	Yes
4	6	100%	Yes
5	6	100%	Yes
6	6	100%	Yes
7	6	100%	Yes
8	6	100%	Yes
10	6	100%	Yes

Criterion 2: Category Representation

School Level—Operational item pool

The school-level criterion is considered met for mathematics if 80% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 20 summarizes the percentage of domains being represented within blueprint targets based on panelists' ratings of item-to-standard alignment. At all grade levels, panelists' ratings indicated that the operational item pool represents the intended distribution of mathematics content domains. At four grade levels there was one domain for which the percentage of items rated as measuring that domain fell outside of blueprint targets. These included Number and Operations—Fractions in Grade 5 (8% fewer items than the blueprint minimum), The Number System in Grade 6 (6% fewer items than the blueprint minimum), Expressions and Equations in Grade 7 (6% fewer items than the blueprint minimum), and Geometry in Grade 8 (7% fewer items than the blueprint minimum). Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 20. Mathematics School-Level Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%.

Grade	Number of forms	% domains within +/- 5% of blueprint targets	Met?
3	5	100%	Yes
4	5	100%	Yes
5	5	80%	Yes
6	5	80%	Yes
7	5	80%	Yes
8	5	80%	Yes
10	5	100%	Yes

Student Level—Test Forms

The student-level criterion is considered met for mathematics if 100% of test forms have 80% or more of the strands/domains within +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 21 summarizes the percentage of forms that meet blueprint targets for domain coverage within 5%. At all grade levels but Grade 3, panelists' ratings indicated that the test forms represent the intended distribution of mathematics content domains. One Grade 3 test form did not meet blueprint targets for both the Operations and Algebraic Thinking and Number and Operations in Base Ten domains. Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 21. Mathematics Student-Level Results for Criterion 2: Percentage of Forms Meeting Blueprint Targets for Domain Coverage.

Grade	Number of forms	% forms meeting domain targets	Met?
3	6	83.3%	No
4	6	100%	Yes
5	6	100%	Yes
6	6	100%	Yes
7	6	100%	Yes
8	6	100%	Yes
10	6	100%	Yes

Criterion 3: DOK Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 70% of items are rated at Webb's DOK Level 2 or above. Table 22 summarizes the results for this criterion. Across the grade levels less than 70% of items were rated at level 2 or above. Only one item from each of Grades 5, 6, and

10 were rated at Level 3. Though the target percentage is nearly met in Grades 5 and 10, this criterion is not met at any grade level. Tables summarizing item ratings by DOK level are presented in Appendix K.

Table 22. Mathematics School-Level Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% Items rated at DOK 2 or above	Met?
3	94	23.4%	No
4	102	16.7%	No
5	88	64.7%	No
6	91	38.5%	No
7	83	54.2%	No
8	88	45.5%	No
10	107	65.4%	No

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have at least 70% of items rated at Webb’s DOK Level 2 or above. Table 23 summarizes the results for this criterion. Across the grade levels, 0-1 forms had 70% or more items rated as DOK Level 2 or higher by panelists. At Grade 5, one form had 76% of items rated at Level 2. The Grade 5 operational item pool was rated as having the highest number of items at DOK Level 2 or higher.

Table 23. Mathematics Student-Level Results for Criterion 3: Percentage of Forms with 70% of Items at DOK 2 or Higher

Grade	Number of forms	% Forms with at least 70% of items at DOK 2 or higher	Met?
3	6	0%	No
4	6	0%	No
5	6	16.7%	No
6	6	0%	No
7	6	0%	No
8	6	0%	No
10	6	0%	No

Reading

Criterion 1: Content Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards are assessed by at least one item. As indicated in Table 24 at all grade levels, panelists rated at least 95% of items as measuring a Kentucky Academic Standard.

Table 24. Reading School-Level Results for Criterion 1: Percentage of Items Aligned to Kentucky Academic Standard

Grade	Number of items aligned to a KAS	% Items aligned to a KAS	Met?
3	105	100%	Yes
4	83	100%	Yes
5	86	100%	Yes
6	86	100%	Yes
7	85	100%	Yes
8	78	95.1%	Yes
10	75	100%	Yes

Table 25 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. All grade levels were also rated as having at least 50% of the Kentucky Academic Standards aligned to at least one item.

Table 25. Reading School-Level Results for Criterion 1: Percentage of Kentucky Academic Standards Aligned to Items.

Grade	Number of KAS	% KAS aligned to an item	Met?
3	22	77.3%	Yes
4	22	68.2%	Yes
5	22	77.3%	Yes
6	20	80%	Yes
7	20	80%	Yes
8	20	80%	Yes
10	20	80%	Yes

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have 90% or more items rated as aligned to a Kentucky Academic Standard. As indicated in Table 26 at all grade levels, all forms contained 90% or more of items aligned to a Kentucky Academic Standard.

Table 26. Reading Student-Level Results for Criterion 1: Percentage of Forms with at least 90% of items aligned to Kentucky Academic Standard.

Grade	Number of forms	% Forms with 90%+ alignment	Met?
3	6	100%	Yes
4	4	100%	Yes
5	4	100%	Yes
6	4	100%	Yes
7	4	100%	Yes
8	4	100%	Yes
10	4	100%	Yes

Criterion 2: Category Representation

School Level—Operational item pool

The school-level criterion is considered met for reading if 67% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 27 summarizes the percentage of domains being represented within blueprint targets based on panelists' ratings of item-to-standard alignment. Across the grade levels, panelists' ratings indicated that the operational item pool does not represent the intended distribution of reading domains. Panelists tended to align more items to the Key Ideas and Details domain and fewer items to the Integration of Ideas domain. When a domain target was met, it tended to be for the Craft and Structure domain. However, in Grade 6, the target was met for the Key Ideas and Details domain only. Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 27. Reading School-Level Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%.

Grade	Number of domains	% domains within +/- 5% of blueprint targets	Met?
3	3	33%	No
4	3	33%	No
5	3	33%	No
6	3	33%	No
7	3	0%	No
8	3	0%	No
10	3	33%	No

Student Level—Test Forms

The student-level criterion is considered met for reading if 100% of test forms have 67% or more of the strands/domains within +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 28 summarizes the percentage of forms that meet blueprint targets for domain coverage within 5%. At all grade levels, panelists' ratings indicated that some or all test forms do not represent the intended distribution of reading domains. Across all grade levels, the Integration of Ideas target was not met on any form. Several forms met blueprint targets for one domain only, and this occurred about equally for the Craft and Structure and Key Ideas and Details domains. Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 28. Reading Student-Level Results for Criterion 2: Percentage of Forms Meeting Blueprint Targets for Domain Coverage

Grade	Number of forms	% forms meeting domain targets	Met?
3	6	16.7%	No
4	4	50.0%	No
5	4	0%	No
6	4	0%	No
7	4	0%	No
8	4	0%	No
10	4	0%	No

Criterion 3: DOK Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 70% of items were rated at Webb's DOK Level 2 or above. Table 29 summarizes the results for this criterion. Across the grade levels, more than 70% of items were rated at DOK level 2 or above. Tables summarizing item ratings by DOK level are presented in Appendix K.

Table 29. Reading School-Level Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% Items rated at DOK 2 or above	Met?
3	105	86.7%	Yes
4	83	100%	Yes
5	86	90.7%	Yes
6	86	100%	Yes
7	85	98.8%	Yes
8	82	98.8%	Yes
10	75	98.7%	Yes

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have at least 70% of items rated at Webb’s DOK Level 2 or above. Table 30 summarizes the results for this criterion. Across the grade levels, all forms had 70% or more items rated as DOK Level 2 or higher by panelists.

Table 30. Reading Student-Level Results for Criterion 3: Percentage of Forms with 70% of Items at DOK 2 or Higher

Grade	Number of forms	% Forms with at least 70% of items at DOK 2 or higher	Met?
3	6	100%	Yes
4	4	100%	Yes
5	4	100%	Yes
6	4	100%	Yes
7	4	100%	Yes
8	4	100%	Yes
10	4	100%	Yes

Science

Criterion 1: Content Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards identified in the test blueprint are assessed by at least one item. As indicated in Table 31 at all grade levels, panelists rated all items as measuring a Kentucky Academic Standard.

Table 31. Science School-Level Results for Criterion 1: Percentage of Items Aligned to Kentucky Academic Standard

Grade	Number of items aligned to a KAS	% Items aligned to a KAS	Met?
4	64	100%	Yes
7	48	100%	Yes
11	56	100%	Yes

Table 32 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. Based on panelist ratings, only the operational item pool for Grade 4 had at least 50% of the Kentucky Academic Standards aligned to at least one item. It is important to note that Grades 7 and 11, have a large number of standards.

Table 32. Science School-Level Results for Criterion 1: Percentage of Kentucky Academic Standards Aligned to Items

Grade	Number of KAS aligned to an item	% KAS aligned to an item	Met?
4	17	53.0%	Yes
7	15	27.7%	No
11	16	22.9%	No

Note. Grade 4 includes standards from Grades 3 and 4. Grade 7 includes standards from Grades 5–7. Grade 11 includes all high school science standards.

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have 90% or more items rated as aligned to a KAS. As indicated in Table 33 at all grade levels, all forms contained 90% or more of items aligned to a Kentucky Academic Standard.

Table 33. Science Student-Level Results for Criterion 1: Percentage of Forms with at least 90% of items aligned to Kentucky Academic Standard

Grade	Number of forms	% Forms with 90%+ alignment	Met?
4	4	100%	Yes
7	4	100%	Yes
11	4	100%	Yes

Criterion 2: Category Representation

School Level—Operational item pool

The school-level criterion is considered met if 75% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 34 summarizes the percentage of domains being represented within blueprint targets based on panelists' ratings of item-to-standard alignment. Only at Grade 4 did panelists' ratings indicate that blueprint targets were met for all four science domains. At Grades 7 and 11, domain targets were not met for the Earth and Space Science and Life Science domains. In Grade 7, the percentage of items rated as measuring Earth and Space Science (35%) exceeded the target of 25% and the percentage of items rated as measuring Life Science (8%) fell below the 25% target. This pattern was reversed in Grade 11, with 11% of items rated as measuring Earth and Space Science and 52% of items rated as measuring Life Science. Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 34. Science School-Level Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%

Grade	Number of domains	% domains within +/- 5% of blueprint targets	Met?
4	4	100%	Yes
7	4	50%	No
11	4	50%	No

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have 75% or more of the strands/domains within +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 35 summarizes the percentage of forms that meet blueprint targets for domain coverage within 5%. Only at Grade 11 did panelists' ratings indicate that all domain targets were met on all forms. At Grade 4, one form missed the target percentage of Earth and Space Science items, and a second form missed targets for Earth and Space Science and Engineering Design domains. At Grade 7, one form missed targets for Earth and Space Science and Physical Science domains. Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 35. Science Student-Level Results for Criterion 2: Percentage of Forms Meeting Blueprint Targets for Domain Coverage

Grade	Number of forms	% forms meeting domain targets	Met?
4	4	75%	No
7	4	75%	No
11	4	100%	Yes

Criterion 3: DOK Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 70% of items were rated at Webb’s DOK Level 2 or above. Table 36 summarizes the results for this criterion. Across the grade levels, more than 90% of items were rated at Level 2 or above. Tables summarizing item ratings by DOK level are presented in Appendix K.

Table 36. Science School-Level Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% Items rated at DOK 2 or above	Met?
4	64	100%	Yes
7	48	97.9%	Yes
11	56	92.9%	Yes

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have at least 70% of items rated at Webb’s DOK Level 2 or above. Table 37 summarizes the results for this criterion. Across the grade levels, all forms had 70% or more items rated as DOK Level 2 or higher by panelists.

Table 37. Science Student-Level Results for Criterion 3: Percentage of Forms with 70% of Items at DOK 2 or Higher

Grade	Number of forms	% Forms with at least 70% of items at DOK 2 or higher	Met?
4	4	100%	Yes
7	4	100%	Yes
11	4	100%	Yes

Social Studies

Criterion 1: Content Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards identified in the test blueprint are assessed by at least one item. As shown in Table 38 at all grade levels, panelists rated all or nearly all items as measuring a Kentucky Academic Standard.

Table 38. Social Studies School-Level Results for Criterion 1: Percentage of Items Aligned to Kentucky Academic Standard

Grade	Number of items aligned to a KAS	% Items aligned to a KAS	Met?
5	89	98.9%	Yes
8	93	98.9%	Yes
11	102	100%	Yes

Table 39 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. Only Grade 11 was rated as having at least 50% of the Kentucky Academic Standards aligned to at least one item, though Grade 8 nearly met the 50% target. It is important to note that the number of standards is large due to the inclusion of prior-grade standards.

Table 39. Social Studies School-Level Results for Criterion 1: Percentage of Kentucky Academic Standards Aligned to Items

Grade	Number of KAS aligned to an item	% KAS aligned to an item	Met?
5	62	31.5%	No
8	62	49.2%	No
11	66	51.2%	Yes

Note. Grade 5 includes standards from Grades K–5. Grade 8 includes standards from Grades 6–8. Grade 11 includes all high school social studies standards.

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have 90% or more items rated as aligned to a Kentucky Academic Standard. As indicated in Table 40 at all grade levels, all forms contained at least 90% items aligned to a Kentucky Academic Standard.

Table 40. Social Studies Student-Level Results for Criterion 1: Percentage of Forms with at least 90% of items aligned to Kentucky Academic Standard

Grade	Number of forms	% Forms with 90%+ alignment	Met?
5	5	100%	Yes
8	5	100%	Yes
11	5	100%	Yes

Criterion 2: Category Representation

School Level—Operational item pool

The school-level criterion is considered met if 75% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 41 summarizes the percentage of domains being represented within blueprint targets based on panelists' ratings of item-to-standard alignment. At Grades 5 and 11, panelists' ratings indicated that the operational item pool represents the intended distribution of social studies content domains. At Grade 8, the percentage of items aligned to the Economics domain was 16.7%, below the target of 25%. The percentage of items aligned to the Civics, Geography, and History domains all fell within +/- 5% of the 25% target. Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 41. Social Studies School-Level Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%

Grade	Number of domains	% domains within +/- 5% of blueprint targets	Met?
5	4	100%	Yes
8	4	75%	Yes
11	4	100%	Yes

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have 75% or more of the strands/domains within +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 42 summarizes the percentage of forms that meet blueprint targets for domain coverage within 5%. At the Grade 5 and 11 levels, all forms met 75% or more of the blueprint domain targets. At the Grade 8 level, one form did not meet targets for the Civics, Economics, and History domains. Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 42. Social Studies Student-Level Results for Criterion 2: Percentage of Forms Meeting Blueprint Targets for Domain Coverage

Grade	Number of forms	% forms meeting domain targets	Met?
5	5	100%	Yes
8	5	80%	No
11	5	100%	Yes

Criterion 3: DOK Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 70% of items rated at Webb’s DOK Level 2 or higher. Table 43 summarizes the results for this criterion. Across the grade levels, more than 70% of items were rated at Level 2 or above. Tables summarizing item ratings by DOK level are presented in Appendix K.

Table 43. Social Studies School-Level Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% Items rated at DOK 2 or above	Met?
5	90	91.1%	Yes
8	94	97.9%	Yes
11	102	81.4%	Yes

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have at least 70% of items rated at Webb’s DOK Level 2 or above. Table 44 summarizes the results for this criterion. In Grade 11 only, one form contained fewer than 70% of items rated at DOK Level 2 or higher.

Table 44. Social Studies Student-Level Results for Criterion 3: Percentage of Forms with 70% of Items at DOK 2 or Higher

Grade	Number of forms	% Forms with at least 70% of items at DOK 2 or higher	Met?
5	5	100%	Yes
8	5	100%	Yes
11	5	80%	No

Writing (On-Demand and Editing and Mechanics)

Criterion 1: Content Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards identified in the test blueprint are assessed by at least one item. As indicated in Table 45 at all grade levels, panelists rated all or nearly all items as measuring a Kentucky Academic Standard.

Table 45. Writing School-Level Results for Criterion 1: Percentage of Items Aligned to Kentucky Academic Standard

Grade	Number of items aligned to a KAS	% Items aligned to a KAS	Met?
5	56	100%	Yes
8	53	94.6%	Yes
11	43	100%	Yes

Table 46 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. At Grades 5 and 8, 50% of Kentucky Academic Standards for writing were rated as aligned to at least one item. Grade 11 was just below the target at 41.7%. This is in large part due to panelists aligning all on-demand writing items to the same Composition standard (C.5.1, C.8.1, and C.11-12.1). In Grades 5 and 8, all Language standards were rated as aligned to at least one item. In high school, four of the five Language standards were rated as aligned to at least one item.

Table 46. Writing School-Level Results for Criterion 1: Percentage of Kentucky Academic Standards Aligned to Items

Grade	Number of KAS aligned to an item	% KAS aligned to an item	Met?
5	6	50.0%	Yes
8	6	50.0%	Yes
11	5	41.7%	No

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have 90% or more items rated as aligned to a Kentucky Academic Standard. As indicated in Table 47 at all grade levels, all forms contained at least 90% of items aligned to a Kentucky Academic Standard.

Table 47. Writing Student-Level Results for Criterion 1: Percentage of Forms with at least 90% of items aligned to Kentucky Academic Standard

Grade	Number of forms	% Forms with 90%+ alignment	Met?
5	12	100%	Yes
8	12	100%	Yes
11	12	100%	Yes

Criterion 2: Category Representation

School Level—Operational item pool

The school-level criterion is considered met if 50% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 48 summarizes the percentage of domains being represented within blueprint targets based on panelists' ratings of item-to-standard alignment. At all grade levels, panelists' ratings indicated that the operational item pool did not represent the intended distribution of writing content domains. Across Grades 5, 8, and 11, the percentage of items measuring the Conventions of Standard English fell below the 80% target (71%, 68%, and 33%, respectively). Similarly, the percentage of items measuring the Knowledge of Language and Vocabulary Acquisition and Use domain for Grades 5, 8, and 11 fell significantly above the 20% target (29%, 32%, and 67%, respectively). Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 48. Writing School-Level Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%

Grade	Number of domains	% domains within +/- 5% of blueprint targets	Met?
5	2	0%	No
8	2	0%	No
11	2	0%	No

Student Level—Test Forms

The student-level criterion is considered met if 100% of test forms have 75% or more of the strands/domains within +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 49 summarizes the percentage of forms that meet blueprint targets for domain coverage within 5%. At all grade levels, no test forms had the intended distribution of content domains based on panelist ratings. In Grade 5, test forms had a range of 67%-70% of items rated as measuring a standard from the Conventions of Standard English domain, 10%-13% below the target of 80%. In Grade 8, test forms had a range of 65%-68% of items rated as measuring a standard from the Conventions of Standard English domain, below the 80% target. In Grade 11, test forms had a range of 26%-30% of items rated as measuring a standard from the Conventions of Standard English domain, well below the target of 80%. Excerpts from the test blueprints outlining domain targets are presented in Appendix I. Tables summarizing item ratings by content domain are presented in Appendix J.

Table 49. Writing Student-Level Results for Criterion 2: Percentage of Forms Meeting Blueprint Targets for Domain Coverage

Grade	Number of forms	% forms meeting domain targets	Met?
5	12	0%	No
8	12	0%	No
11	12	0%	No

Criterion 3: DOK Representation

School Level—Operational item pool

The school-level criterion is considered met if at least 25% of editing and mechanics items are rated at Webb’s DOK Level 2 or above and 100% of on-demand writing items are rated at DOK Levels 3–4. Table 50 summarizes the results for this criterion. At all three grade levels, all on-demand writing items were rated at DOK Level 3 or 4. No editing and mechanics items were rated higher than DOK Level 2. At Grades 8 and 11, well over 25% of items were rated at DOK Level 2. At Grade 5, just under 25% of items were rated at DOK Level 2. Tables summarizing item ratings by DOK level are presented in Appendix K.

Table 50. Writing School-Level Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% editing and mechanics Items rated at DOK 2 or above	% on-demand writing Items rated at DOK 3 or above	Met?
5	56	21.2%	100%	Partially
8	56	82.7%	100%	Yes
11	43	48.7%	100%	Yes

Student Level—Test Forms

The student-level criterion is considered Met if 100% of test forms have at least 50% of items were rated at Webb’s DOK Levels 1–2 and 100% of on-demand writing items are rated at DOK Levels 3–4. Table 51 summarizes the results for this criterion. Only Grade 5 had test forms that did not meet the target percentage of editing and mechanics items rated at DOK Level 2 or higher. All forms at all grade levels had an on-demand writing item rated at DOK Level 3 or higher.

Table 51. Writing Student-Level Results for Criterion 3: Percentage of Forms with 70% of Items at DOK 2 or Higher

Grade	Number of forms	% Forms with at least 25% editing and mechanics Items rated at DOK 2 or above	% Forms with 100% of on-demand writing Items rated at DOK 3 or above	Met?
5	12	33.3%	100%	Partially
8	12	100%	100%	Yes
11	12	100%	100%	Yes

Alternate Kentucky Summative Assessment

The Alternate KSA is not currently designed to report sub-scores at the school levels like the KSA. Rather, student scores are based on a single, paper-based test form. We present the alignment results for the Alternate KSA at the student level only.

Mathematics

Criterion 1: Content Representation

This criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards identified in the test blueprint are assessed by at least one item. Table 52 summarizes the percentage of items that were rated as aligned to an Alternate Assessment Target. At all grade levels, panelists rated all items as measuring an Alternate Assessment Target.

Table 52. Mathematics Results for Criterion 1: Percentage of Items Aligned to Kentucky Alternate Assessment Targets

Grade	Number of items aligned to an Alternate Assessment Target	% Items aligned to an Alternate Assessment Target	Met?
3	30	100%	Yes
4	30	100%	Yes
5	30	100%	Yes
6	30	100%	Yes
7	30	100%	Yes
8	30	100%	Yes
10	30	100%	Yes

Table 53 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. All grade levels were rated as having at least 50% of the Kentucky Academic Standards aligned to at least one item.

Table 53. Mathematics Results for Criterion 1: Percentage of Kentucky Alternate Assessment Targets Aligned to Items

Grade	Number of Alternate Assessment Targets aligned to an item	% Alternate Assessment Targets aligned to an item	Met?
3	9	90%	Yes
4	10	100%	Yes
5	8	80%	Yes
6	9	90%	Yes
7	9	90%	Yes
8	10	100%	Yes
10	10	100%	Yes

Criterion 2: Category Representation

This criterion is considered met if 80% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 54 summarizes the percentage of domains being represented within blueprint targets based on panelists' ratings of item-to-standard alignment. At all grade levels, panelists' ratings indicated that the items represent the intended distribution of mathematics content domains. Excerpts from the KSA test blueprints outlining domain targets are presented in Appendix I. The Alternate KSA blueprints used the same domain target percentages. Tables summarizing item ratings by content domain are presented in Appendix L.

Table 54. Mathematics Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%

Grade	Number of domains	% domains with +/- 5% or blueprint targets	Met?
3	5	100%	Yes
4	5	100%	Yes
5	5	100%	Yes
6	5	100%	Yes
7	5	100%	Yes
8	5	100%	Yes
10	5	100%	Yes

Criterion 3: DOK Representation

This criterion is considered met if at least 25% of items rated at Webb's DOK Level 2 or above. Table 55 summarizes the results for this criterion. Across the grade levels, no items were rated higher than DOK Level 2. This criterion was met at all grade levels but Grade 3 and Grade 6. Tables summarizing item ratings by DOK level are presented in Appendix M.

Table 55. Mathematics Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% of items rated at DOK 2 or above	Met?
3	30	16.7%	No
4	30	40.0%	Yes
5	30	30.0%	Yes
6	30	23.3%	No
7	30	30.0%	Yes
8	30	30.0%	Yes
10	30	30.0%	Yes

Criterion 4: Grade-Level Fidelity

This criterion is considered met if at least 75% or more of items are rated as aligned to an Alternate Assessment Target that allows students to demonstrate performance on grade-level content. Table 56 summarizes the results for this criterion. Across the grade levels, all or nearly all items were rated as allowing students to demonstrate performance on grade-level content.

Table 56. Mathematics Results for Criterion 4: Percentage of Items at Rated as Grade Level

Grade	Number of items	% Items rated as grade level	Met?
3	30	96.7%	Yes
4	30	100%	Yes
5	30	100%	Yes
6	30	100%	Yes
7	30	100%	Yes
8	30	100%	Yes
10	30	100%	Yes

Reading

Criterion 1: Content Representation

This criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards identified in the test blueprint are assessed by at least one item. As indicated in Table 57 at all grade levels, panelists rated all items as measuring an Alternate Assessment Target.

Table 57. Reading Results for Criterion 1: Percentage of Items Aligned to Kentucky Alternate Assessment Targets

Grade	Number of items aligned to an Alternate Assessment Target	% Items aligned to an Alternate Assessment Target	Met?
3	30	100%	Yes
4	30	100%	Yes
5	30	100%	Yes
6	30	100%	Yes
7	30	100%	Yes
8	30	100%	Yes
10	30	100%	Yes

Table 58 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. All grade levels were rated as having at least 50% of the Kentucky Academic Standards Alternate Assessment Targets aligned to at least one item.

Table 58. Reading Results for Criterion 1: Percentage of Kentucky Alternate Assessment Targets Aligned to Items

Grade	Number of Alternate Assessment Targets aligned to an item	% Alternate Assessment Targets aligned to an item	Met?
3	10	100%	Yes
4	10	100%	Yes
5	9	90%	Yes
6	10	100%	Yes
7	10	90.9%	Yes
8	9	81.8%	Yes
10	11	100%	Yes

Criterion 2: Category Representation

This criterion is considered met if 67% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 59 summarizes the percentage of domains being represented within blueprint targets based on panelists' ratings of item-to-standard alignment. At all grade levels except Grade 10, panelists' ratings indicated that the items represent the intended distribution of reading content domains. At Grade 10, 17.9% of items were rated as measuring the Integration of Ideas domain and 42.9% of items were rated as measuring the Key Ideas and Details domain. Both these percentages are outside the target ranges of 30%-35% of items per domain. Excerpts from the KSA test blueprints outlining domain targets are presented in Appendix I. The Alternate KSA blueprints used the same domain target percentages. Tables summarizing item ratings by content domain are presented in Appendix L.

Table 59. Reading Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%

Grade	Number of domains	% domains within +/- 5% of blueprint targets	Met?
3	3	100%	Yes
4	3	100%	Yes
5	3	100%	Yes
6	3	100%	Yes
7	3	100%	Yes
8	3	100%	Yes
10	3	33.3%	No

Criterion 3: DOK Representation

This criterion is considered met if at least 25% of items were rated at Webb's DOK Level 2 or above. Table 60 summarizes the results for this criterion. Across the grade levels, well over 25% of items were rated at DOK Level 2 or higher. Tables summarizing item ratings by DOK level are presented in Appendix M.

Table 60. Reading Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% of items rated at DOK 2 or above	Met?
3	30	80%	Yes
4	30	80%	Yes
5	30	90%	Yes
6	30	96.7%	Yes
7	30	96.7%	Yes
8	30	100%	Yes
10	30	93.3%	Yes

Criterion 4: Grade-Level Fidelity

This criterion is considered met if at least 75% or more of items are rated as aligned to an Alternate Assessment Target that allows students to demonstrate performance on grade-level content. Table 61 summarizes the results for this criterion. Across the grade levels, all items were rated as allowing students to demonstrate performance on grade-level content.

Table 61. Reading Results for Criterion 4: Percentage of Items at Rated as Grade Level

Grade	Number of items	% Items rated as grade level	Met?
3	30	100%	Yes
4	30	100%	Yes
5	30	100%	Yes
6	30	100%	Yes
7	30	100%	Yes
8	30	100%	Yes
10	30	100%	Yes

Science

Criterion 1: Content Representation

This criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards are assessed by at least one item. As indicated in Table 62 at all grade levels, panelists rated all items as measuring an Alternate Assessment Target.

Table 62. Science Results for Criterion 1: Percentage of Items Aligned to Kentucky Alternate Assessment Targets

Grade	Number of items aligned to an Alternate Assessment Target	% Items aligned to an Alternate Assessment Target	Met?
4	30	100%	Yes
7	30	100%	Yes
11	30	100%	Yes

Table 63 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. All grade levels were rated as having at least 50% of the Kentucky Academic Standards Alternate Assessment Target aligned to at least one item.

Table 63. Science Results for Criterion 1: Percentage of Kentucky Alternate Assessment Targets Aligned to Items

Grade	Number of Alternate Assessment Targets aligned to an item	% Alternate Assessment Targets aligned to an item	Met?
4	6	100%	Yes
7	6	100%	Yes
11	6	100%	Yes

Criterion 2: Category Representation

This criterion is considered met if 75% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 64 summarizes the percentage of domains being represented within blueprint targets, based on panelists' ratings of item-to-standard alignment. At all grade levels, panelists' ratings indicated that the items represent the intended distribution of science domains. Excerpts from the KSA test blueprints outlining domain targets are presented in Appendix I. The Alternate KSA blueprints used the same domain target percentages. Tables summarizing item ratings by content domain are presented in Appendix L.

Table 64. Science Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%

Grade	Number of domains	% domains within +/- 5% of blueprint targets	Met?
4	4	100%	Yes
7	4	100%	Yes
11	4	100%	Yes

Criterion 3: DOK Representation

This criterion is considered met if at least 25% of items rated at Webb’s DOK Level 2 or above. Table 65 summarizes the results for this criterion. Across the grade levels, well over 25% of items were rated at DOK Level 2 or above. Tables summarizing item ratings by DOK level are presented in Appendix M.

Table 65. Science Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% of items rated at DOK 2 or above	Met?
4	30	73.3%	Yes
7	30	73.3%	Yes
11	30	76.7%	Yes

Criterion 4: Grade-Level Fidelity

This criterion is considered met if at least 75% or more of items are rated as aligned to an Alternate Assessment Target that allows students to demonstrate performance on grade-level content. Table 66 summarizes the results for this criterion. Across the grade levels, all items were rated as allowing students to demonstrate performance on grade-level content.

Table 66. Science Results for Criterion 4: Percentage of Items at Rated as Grade Level

Grade	Number of items	% Items rated as grade level	Met?
4	30	100%	Yes
7	30	100%	Yes
11	30	100%	Yes

Social Studies

Criterion 1: Content Representation

This criterion is considered met if at least 90% of items are matched to a standard and 50% or more of the standards identified in the test blueprint are assessed by at least one item. As indicated in Table 67 at all grade levels, panelists rated all or nearly all items as measuring an Alternate Assessment Target.

Table 67. Social Studies Results for Criterion 1: Percentage of Items Aligned to Kentucky Alternate Assessment Targets

Grade	Number of items aligned to an Alternate Assessment Target	% Items aligned to an Alternate Assessment Target	Met?
5	30	100%	Yes
8	30	100%	Yes
11	30	96.7%	Yes

Table 68 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. All grade levels were rated as having at least 50% of the Kentucky Academic Standards Alternate Assessment Targets aligned to at least one item.

Table 68. Social Studies Results for Criterion 1: Percentage of Kentucky Alternate Assessment Targets Aligned to Items

Grade	Number of Alternate Assessment Targets aligned to an item	% Alternate Assessment Targets aligned to an item	Met?
5	10	100%	Yes
8	10	100%	Yes
11	10	100%	Yes

Criterion 2: Category Representation

This criterion is considered met if 75% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 69 summarizes the percentage of domains being represented within blueprint targets based on panelists' ratings of item-to-standard alignment. At all grade levels, panelists' ratings indicated that the items represent the intended distribution of social studies content domains. Excerpts from the KSA test blueprints outlining domain targets are presented in Appendix I. The Alternate KSA blueprints used the same domain target percentages. Tables summarizing item ratings by content domain are presented in Appendix L.

Table 69. Social Studies Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%

Grade	Number of domains	% domains within +/- 5% of blueprint targets	Met?
5	4	100%	Yes
8	4	100%	Yes
11	4	100%	Yes

Criterion 3: DOK Representation

This criterion is considered met if at least 25% of items were rated at Webb's DOK Level 2 or above. Table 70 summarizes the results for this criterion. Across the grade levels nearly all or all items were rated at DOK Level 2 or higher. Tables summarizing item ratings by DOK level are presented in Appendix M.

Table 70. Social Studies Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% of items rated at DOK 2 or above	Met?
5	30	96.7%	Yes
8	30	100%	Yes
11	30	90%	Yes

Criterion 4: Grade-Level Fidelity

This criterion is considered met if at least 75% or more of items are rated as aligned to an Alternate Assessment Target that allows students to demonstrate performance on grade-level content. Table 71 summarizes the results for this criterion. Across the grade levels, all items were rated as allowing students to demonstrate performance on grade-level content.

Table 71. Social Studies Results for Criterion 4: Percentage of Items at Rated as Grade Level

Grade	Number of items	% Items rated as grade level	Met?
5	30	100%	Yes
8	30	100%	Yes
11	30	100%	Yes

Writing

Criterion 1: Content Representation

This criterion is considered met if at least 90% of items are matched to an alternate assessment target and 50% or more of the alternate assessment targets identified in the test blueprint are assessed by at least one item. As indicated in Table 72 at all grade levels, panelists rated over 90% of items as measuring an Alternate Assessment Target.

Table 72. Writing Results for Criterion 1: Percentage of Items Aligned to Kentucky Alternate Assessment Targets

Grade	Number of items aligned to an Alternate Assessment Target	% Items aligned to an Alternate Assessment Target	Met?
5	28	93.3%	Yes
8	30	100%	Yes
11	30	100%	Yes

Table 73 summarizes the percentage of Kentucky Academic Standards that were rated as aligned to at least one item. All grade levels were rated as having at least 50% of the Kentucky Academic Standards Alternate Assessment Targets aligned to at least one item.

Table 73. Writing Results for Criterion 1: Percentage of Kentucky Alternate Assessment Targets Aligned to Items

Grade	Number of Alternate Assessment Targets aligned to an item	% Alternate Assessment Targets aligned to an item	Met?
5	6	100%	Yes
8	6	100%	Yes
11	6	100%	Yes

Criterion 2: Category Representation

This criterion is considered met if 50% or more of the strands/domains in the operational item pool are +/- 5% from the minimum and maximum target values outlined in the blueprint. Table 74 summarizes the percentage of domains being represented within blueprint targets, based on panelists' ratings of item-to-standard alignment. At Grades 5 and 8, the percentage of items that were rated as measuring Conventions of Standard English was slightly larger than the blueprint target (86% and 87%, respectively, compared to the 80% target). At Grade 11, 76% of items were rated as measuring Conventions of Standard English, within 5% of the 80% target. Similarly, 23% of items were rated as measuring Knowledge of Language & Vocabulary Acquisition and Use, within 5% of the 20% target. Excerpts from the KSA test blueprints outlining domain targets are presented in Appendix I. The Alternate KSA blueprints used the same domain target percentages. Tables summarizing item ratings by content domain are presented in Appendix L.

Table 74. Writing Results for Criterion 2: Percentage of Domains Meeting Blueprint Targets within 5%

Grade	Number of domains	% domains within +/- 5% of blueprint targets	Met?
5	2	0%	No
8	2	0%	No
11	2	100%	Yes

Criterion 3: DOK Representation

This criterion is considered met if at least 25% of items were rated at Webb's DOK Level 2 or above. Table 75 summarizes the results for this criterion. Across the grade levels well over 25% of items were rated as DOK Level 2 or higher. Tables summarizing item ratings by DOK level are presented in Appendix M.

Table 75. Writing Results for Criterion 3: Percentage of Items at DOK 2 or Higher

Grade	Number of items	% of items rated at DOK 2 or above	Met?
5	30	53.3%	Yes
8	30	100%	Yes
11	30	70%	Yes

Criterion 4: Grade-Level Fidelity

This criterion is considered met if at least 75% or more of items are rated as aligned to an Alternate Assessment Target that allows students to demonstrate performance on grade-level content. Table 76 summarizes the results for this criterion. Across the grade levels, all items were rated as allowing students to demonstrate performance on grade-level content.

Table 76. Writing Results for Criterion 4: Percentage of Items at Rated as Grade Level

Grade	Number of items	% Items rated as grade level	Met?
5	30	100%	Yes
8	30	100%	Yes
11	30	100%	Yes

Summary and Discussion

Discussion of Test Design and Development

In this section, we discuss the findings from our review of the test design and development documentation, with a focus on how the system supports the development of test forms that are aligned with challenging grade-level academic content standards. We discuss the development of the standards/targets, the test blueprints, and test item and form development.

We found that the test design and development processes and procedures as described in the KSA and Alternate KSA documentation generally reflect best practices as outlined in the *Joint Standards for Educational and Psychological Testing*. Both assessment designs adhere to testing standards relevant to test-to-standards alignment. In the following sections, we describe the processes for developing their respective content domains, blueprints, and test items.

Kentucky Summative Assessment (KSA)

Kentucky Academic Standards

The current Kentucky Academic Standards are the result of a multistep review process that integrated perspectives from multiple stakeholder groups. Advisory panels and standards review committees consisting of current public-school educators, representatives from Kentucky institutions of higher education, and other community representatives review standards for each content area and make recommendations for changes and additions. This process is overseen by a Standards and Assessments Process Review Committee, consisting of public-school

parents, teachers from each content area, principals, superintendents, school board members, and the Commissioner of Education. This committee is tasked to ensure that stakeholders have adequate opportunity to provide comments on the standards during their development.

Though each content area is organized differently, all contain statements indicating that the standards were developed with postsecondary preparedness in mind. All content areas integrate content and practice and are accompanied by resources intended to support curriculum development. This includes the Model Curriculum Framework, designed to help schools and districts align standards, curriculum, instructional resources and practices, assessment, and professional learning.⁹ Also, across all content areas, standards are specified for each grade level K–12, irrespective of whether there is a statewide assessment for that grade and subject.

KSA Blueprints

Test blueprints for the KSA were developed through an iterative process that began with the drafting of a proposed blueprint by an advisory council composed of Kentucky teachers from all grade spans, representatives of postsecondary institutions, and members of the business community. Draft blueprints were made available for multiple rounds of public review and comment. Public comments were then considered as blueprints were revised.

For all content areas, test blueprints outline domain coverage targets for each grade level/grade band. Test blueprints do not contain targets for cognitive complexity.

KSA Item and Form Development

KSA items are developed by subject matter experts from the field of education with expertise in the content area. Item writers are trained on the standards, cognitive complexity levels, item types, and are provided examples for translating standards into various item types at various levels of complexity. Kentucky educators participate in the item development process through item review meetings during which they discuss the quality of items, their accuracy, and their fairness.

Test form development is guided by the test blueprints. Test forms are built to meet the domain coverage targets specified in the blueprint to the extent possible. If blueprint targets cannot be met due to limitations in the operational item pool, this is documented by the test vendor. Because the KSA test design includes sub-score reporting at the school level, test form development also considers coverage of content standards across forms that are then randomly distributed within and across schools.

Alternate KSA

Kentucky Alternate Assessment Targets

Alternate KSA items are written to the Kentucky Academic Standards Alternate Assessment Targets, which are derived from the Kentucky Academic Standards. Specifically, selected

⁹

https://education.ky.gov/curriculum/standards/kyacadstand/Documents/MCF_Section_1_Curriculum_Development_Process.pdf

Kentucky Academic Standards are reduced in depth or breadth with specific guidance as to what can be included in a test item. Selected Kentucky Academic Standards that are assessed on the Alternate KSA, including those that are reduced and those that are not, compose the Alternate Assessment Targets. Standards are selected for inclusion on the Alternate KSA based on the outcome of a prioritization process by convened groups of stakeholders. During this process, stakeholders consider the usefulness of the standard, its application and context within everyday life, and the progression of learning needs of students as they move through the grade levels. Standards are prioritized by Kentucky educators.

Once the standards were prioritized and the 10 standards to be assessed on the Alternate KSA were identified, a group composed of representatives from KDE's Office of Special Education and Early Learning, Office of Assessment and Accountability, and Office of Teaching and Learning, as well as general and special education teachers from across the state representing all grades and content areas met to identify which of the prioritized Kentucky Academic Standards required reduction in depth or breadth.

Alternate KSA Blueprints

The Alternate KSA blueprints are designed to parallel those of the general KSA. Similar target percentage ranges for each domain within each content area are outlined. There are also no targets for cognitive complexity levels.

Alternate KSA Item and Form Development

Alternate KSA items are developed through an iterative process. During initial item writing, item writers were instructed to develop authentic and meaningful scenarios to which multiple choice items would be written. Each item was to be written to a single Alternate Assessment Target, and the set of newly developed items were to reflect a range of depth of knowledge (DOK), item difficulty, and skill progression.

Following initial item development, items went through separate rounds of content and bias review. During the content review, Kentucky educators considered the link between the item and the target it was intended to measure, whether the item required application of skills and knowledge, whether the item was grade appropriate in terms of content language and processes, and whether the item was free of construct irrelevance. Reviews included the items, as well as any supplemental text and materials. During the bias review, reviewers evaluated the extent to which items were readable, age and grade appropriate, and complete in terms of providing all information needed to access and respond to the item. They further evaluated the extent to which items and supporting materials were free of content that could offend, disadvantage, or be insensitive to students from various backgrounds.

Test form development is guided by the test blueprints. Test forms are built to meet the domain coverage targets specified in the blueprint. Ten standards are tested at every grade level via 30 items administered over two testing windows.

Discussion of Alignment Criteria

In this section, we summarize across the alignment criteria for each content area. We present summaries for KSA first, followed by Alternate KSA.

Kentucky Summative Assessment (KSA)

Mathematics

Figure 9 summarizes the three alignment criteria at the school level for mathematics. Across the grade levels, the content and category representation of the operational item pool are strong. Of concern is the DOK representation of the mathematics operational item pool. Future item development efforts should focus on developing more complex items.

Grade Level	Content Representation	Category Representation	DOK Representation
3	Met	Met	Not Met
4	Met	Met	Not Met
5	Met	Met	Not Met
6	Met	Met	Not Met
7	Met	Met	Not Met
8	Met	Met	Not Met
10	Partially Met	Met	Not Met

Figure 9. Summary of school-level criteria for mathematics.

Figure 10 summarizes the three alignment criteria at the student level for mathematics. Across the grade levels, the content and category representation of test forms are strong. DOK representation is not strong among test forms, a reflection of the DOK representation of the operational item pool.

Grade Level	Content Representation	Category Representation	DOK Representation
3	Met	Not Met	Not Met
4	Met	Met	Not Met
5	Met	Met	Not Met
6	Met	Met	Not Met
7	Met	Met	Not Met
8	Met	Met	Not Met
10	Met	Met	Not Met

Figure 10. Summary of student-level criteria for mathematics.

Reading

Figure 11 summarizes the three alignment criteria at the school level for reading. Across the grade levels, the content and DOK representation of the operational item pool are strong. Of concern is the category representation of the reading operational item pool. Future item development should ensure adequate numbers of items measure the Integration of Ideas domain.

Grade Level	Content Representation	Category Representation	DOK Representation
3	Met	Not Met	Met
4	Met	Not Met	Met
5	Met	Not Met	Met
6	Met	Not Met	Met
7	Met	Not Met	Met
8	Met	Not Met	Met
10	Met	Not Met	Met

Figure 11. Summary of school-level criteria for reading.

Figure 12 summarizes the three alignment criteria at the student level for reading. Across the grade levels, the content and DOK representation of test forms are strong. Category representation is not strong among test forms, in part a reflection of the lack of Integration of Ideas items in the operational item pool.

Grade Level	Content Representation	Category Representation	DOK Representation
3	Met	Not Met	Met
4	Met	Not Met	Met
5	Met	Not Met	Met
6	Met	Not Met	Met
7	Met	Not Met	Met
8	Met	Not Met	Met
10	Met	Not Met	Met

Figure 12. Summary of student-level criteria for reading.

Science

Figure 13 summarizes the three alignment criteria at the school level for science. Across the grade levels, the content representation of the operational item pool is strong for items being aligned to the Kentucky Academic Standards but weak for coverage of the standards. This is in large part due to the large number of standards available for inclusion in a grade banded test. KDE should consider prioritizing standards from each grade level for assessment, or outline in the test specifications how the breadth of the science standards across the grade levels will be assessed.

Category representation is strong for the Grade 4 operational item pool, but not for Grades 7 and 11. Specifically, blueprint target domains were not met for the Earth and Space Science and Life Science domains. The main concern regarding the category representation of the operational item pool is its impact on the ability to develop multiple test forms that meet blueprint targets. Future item development should focus on ensuring that any one domain is not overrepresented or underrepresented in the operational item pool. Based on panelists' ratings, the DOK representation of the science operational item pool is strong at all the grade levels.

Grade Level	Content Representation	Category Representation	DOK Representation
4	Met	Met	Met
7	Partially Met	Not met	Met
11	Partially Met	Not met	Met

Figure 13. Summary of school-level criteria for science.

Figure 14 summarizes the three alignment criteria at the student level for science. Across the grade levels, the content and DOK representation of test forms are strong. Category representation is strong at Grade 11, but not at Grade 4 and 7. Earth and Space Science was underrepresented on two Grade 4 student test forms, and Engineering Design was overrepresented on one of those two. Earth and Space Science was overrepresented and Physical Science was underrepresented on one Grade 7 test form.

Grade Level	Content Representation	Category Representation	DOK Representation
4	Met	Not met	Met
7	Met	Not met	Met
11	Met	Met	Met

Figure 14. Summary of student-level criteria for science.

Social Studies

Figure 15 summarizes the three alignment criteria at the school level for social studies. Across the grade levels, the content representation of the operational item pool is strong in terms of items being aligned to the Kentucky Academic Standards but weak in terms of coverage of the standards. This is in large part due to the large number of standards available for inclusion in a grade banded test. KDE should consider prioritizing standards from each grade level for assessment, or outline in the test specifications how the breadth of the social studies standards across the grade levels will be assessed. Based on panelist ratings, category and DOK representation of the social studies operational item pool is strong at all the grade levels.

Grade Level	Content Representation	Category Representation	DOK Representation
5	Partially met	Met	Met
8	Partially met	Met	Met
11	Met	Met	Met

Figure 15. Summary of school-level criteria for social studies.

Figure 16 summarizes the three alignment criteria at the student level for social studies. Across the grade levels, the content representation of test forms is strong. Category representation for student test forms is strong for Grades 5 and 11. History was overrepresented and Civics and Economics were underrepresented on one Grade 8 form. The DOK representation of Grade 5 and Grade 8 test forms is strong. However, in Grade 11, one test form had just under 70% (67%) of items rated at DOK Level 2 or higher.

Grade Level	Content Representation	Category Representation	DOK Representation
5	Met	Met	Met
8	Met	Not met	Met
11	Met	Met	Not Met

Figure 16. Summary of student-level criteria for social studies.

Writing

Figure 17 summarizes the three alignment criteria at the school level for social studies. Across the grade levels, the content representation of the operational item pool is strong in terms of items being aligned to the Kentucky Academic Standards but weak in terms of coverage of the standards. This is due to panelists across grade levels rating all on-demand items as measuring the same Composition standard. Future item writing efforts should focus on ensuring that the breadth of the Composition domain is being measured.

Across the grade levels, category representation is weak. At Grades 5 and 8, this is due to more than 20% of items measuring the Knowledge of Language and Vocabulary Acquisition and Use domains and fewer than 80% of items measuring the Conventions of Standard English domain. At Grade 11 the opposite was true, with well under 80% of items measuring Conventions of Standard English and well over 20% of items measuring Knowledge of Language and Vocabulary Acquisition and Use. Future item writing efforts should ensure that the operational item pool contains adequate numbers of items from each domain to ensure coverage on test forms and to support the validity of interpretations of school-level sub-scores.

DOK representation is strong at Grades 8 and 11, but less so at Grade 5. This is due to a smaller number of Grade 5 editing and mechanics items rated at Level 2 or higher (21%). This falls just under the 25% criterion established by this study.

Grade Level	Content Representation	Category Representation	DOK Representation
5	Met	Not met	Partially met
8	Met	Not met	Met
11	Partially met	Not met	Met

Figure 17. Summary of school-level criteria for writing.

Figure 18 summarizes the three alignment criteria at the student level across writing grade levels. Across the grade levels, content representation of the test forms is strong. Category representation of the test forms is weak, however, due to fewer than the target number of items measuring the Conventions of Standard English domain. This was particularly notable at the Grade 11 level. Future item writing efforts should ensure that an adequate number of

Conventions of Standard English are available for inclusion on test forms. Similar to the school-level results, DOK representation is strong at Grades 8 and 11, but less so at Grade 5. This is because some test forms had fewer than 25% of editing and mechanics items at Level 2 or higher.

Grade Level	Content Representation	Category Representation	DOK Representation
5	Met	Not met	Partially met
8	Met	Not met	Met
11	Met	Not met	Met

Figure 18. Summary of student-level criteria for writing.

Alternate KSA

Mathematics

Figure 19 summarizes the four alternate assessment alignment criteria across mathematics grade levels. The content representation, category representation, and grade-level fidelity are strong for all grades. DOK representation is also strong, with the exception of Grade 3, where only 16.7% of items were rated as Level 2 or above, which is below the 25% target.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
3	Met	Met	Not met	Met
4	Met	Met	Met	Met
5	Met	Met	Met	Met
6	Met	Met	Met	Met
7	Met	Met	Met	Met
8	Met	Met	Met	Met
10	Met	Met	Met	Met

Figure 19. Summary of student-level criteria for alternate mathematics.

Reading

Figure 20 summarizes the four alternate assessment alignment criteria across reading grade levels. The content representation, DOK representation, and grade-level fidelity are strong for all grades. Category representation is also strong, except for Grade 10, which did not meet domain targets for the Key Ideas and Details and Integration of Ideas domains.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
3	Met	Met	Met	Met
4	Met	Met	Met	Met
5	Met	Met	Met	Met
6	Met	Met	Met	Met
7	Met	Met	Met	Met
8	Met	Met	Met	Met
10	Met	Not met	Met	Met

Figure 20. Summary of student-level criteria for alternate reading. Science

Figure 21 summarizes the four alternate assessment alignment criteria across science grade levels. The content representation, category representation, DOK representation, and grade-level fidelity are strong for all grades.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
4	Met	Met	Met	Met
7	Met	Met	Met	Met
11	Met	Met	Met	Met

Figure 21. Summary of student-level criteria for alternate science.

Social Studies

Figure 22 summarizes the four alternate assessment alignment criteria across social studies grade levels. The content representation, category representation, DOK representation, and grade-level fidelity are strong for all grades.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
5	Met	Met	Met	Met
8	Met	Met	Met	Met
11	Met	Met	Met	Met

Figure 22. Summary of student-level criteria for alternate social studies.

Writing

Figure 23 summarizes the four alternate assessment alignment criteria across writing grade levels. The content representation, DOK representation, and grade-level fidelity are strong for all grades. Category representation is weak at Grades 5 and 8, due to a large number of items rated as measuring the Conventions of Standard English domain.

Grade Level	Content Representation	Category Representation	DOK Representation	Grade-Level Fidelity
5	Met	Not met	Met	Met
8	Met	Not met	Met	Met
11	Met	Met	Met	Met

Figure 23. Summary of student-level criteria for alternate writing.

Conclusions

1. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect the Kentucky Academic Standards/Alternate Assessment Targets?

Results from this alignment study provide strong evidence that items on the KSA measure content outlined in the Kentucky Academic Standards. However, less strong is the evidence that the operational item pool currently covers the breadth of the Kentucky Academic Standards. This is particularly an issue for the grade banded tests (science, social studies, and writing), which draw standards from multiple grades. Also of concern is the representation of the content domains in both the operational item pool and in student test forms. Because Kentucky is moving to a design that reports domain scores at the school level, it is essential that the operational items administered across forms represent the content domains as intended. Similarly, multiple test forms should be as parallel as possible in terms of content coverage. The KSA is a new assessment; item development is ongoing, and the operational item pool will continue to expand. Results from this study can inform content areas and domains where future item development should be focused.

Results from this alignment study also provide strong evidence that items on the Alternate KSA measure the content outlined in the Kentucky Academic Standards and cover the prioritized Kentucky Academic Standards Alternate Assessment Targets. There are a small number of areas where domain coverage did not meet the criterion established for this study. KDE and its alternate assessment vendor should consider evaluating the available items for these content domains and target future item development to address any gaps in covering the breadth or depth of the Alternate Assessment Targets.

Recommendations

- Future reading item development should ensure adequate numbers of items measure the Integration of Ideas domain.
- Future writing item development should focus on ensuring that the breadth of the Composition domain is being measured.

- Future writing item development should ensure that an adequate number of Conventions of Standard English are available for inclusion on test forms.
- Review the structure of the science assessment. The current cluster-based design with relatively large item clusters may be contributing to the limited coverage of the breadth of the standards. Consider updating test specifications to include smaller item clusters.
- Consider prioritizing standards for grade band assessments (e.g., science, social studies), or outline in the test specifications how the breadth of the standards across the grade levels will be assessed.

2. To what extent do the Spring 2022 KSA/Alternate KSA assessments test items reflect a range and distribution of cognitive complexity?

KSA test items across the content areas, with the exception of mathematics, tended to minimize the number of recall items (Webb's DOK Level 1), and include items that require application of skills and integration of concepts. Future mathematics item development should focus on developing items at higher complexity levels. In addition, KDE should consider establishing cognitive complexity targets in its test specifications that would guide form construction.

Alternate KSA test forms reflect a reasonable distribution of cognitive complexity, based on panelists' ratings of Webb's DOK. This is consistent across content areas.

Recommendations

- Future mathematics item development efforts should focus on developing more complex items.
- Consider adding to test specifications guidelines for the distribution of cognitive complexity levels.

3. To what extent do the Spring 2022 Alternate KSA test items allow students to demonstrate performance on grade-level academic content?

Kentucky educators with content and special education expertise consistently found that the Alternate KSA items and aligned Kentucky Academic Standards Alternate Assessment Targets allow students to demonstrate performance on grade level content.

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Appendix A: Virtual Alignment Workshop Agenda

Day 1

8:30 a.m. – 10:30 a.m.	Join Microsoft Teams Meeting with All Panelists and HumRRO Facilitators Welcome, logistics, overview of KSA and Alternate KSA, general alignment training
10:30 a.m. – 10:45 a.m.	Break
10:45 a.m.– 12:00 p.m.	Join Teams Meeting for Assigned Grade Level Panel Panelist introductions Confirm access to online documents and TestNav (for KSA) and PDFs of items (for Alternate KSA) Review Panelist Instructions for rating items and calibrate item ratings Begin iterative alignment rating process: <ul style="list-style-type: none"> ☒ Independent rating ☒ Discussion of item ratings and majority rating decision
12:00 – 12:30 p.m.	Lunch Break
12:30 – 2:00 p.m.	Continue iterative alignment rating process
2:00 p.m.	<i>Adjourn for the day</i>

Day 2

8:30 a.m.– 10:00 a.m.	If needed: Review and rerate items from Day 1 Continue iterative alignment rating process
10:00 a.m. – 10:15 p.m.	Break
10:15 a.m. – 12:00 p.m.	Continue iterative alignment rating process
12:00 p.m. – 12:30 p.m.	Lunch Break
12:30 p.m. – 2:00 p.m.	Continue iterative alignment rating process
2:00 p.m.	<i>Adjourn for the day</i>

Day 3

8:30 a.m.– 10:00 a.m.	If needed: Review and rerate items from Day 2 Continue iterative alignment rating process
10:00 a.m. – 10:15 p.m.	Break
10:15 a.m. – 12:00 p.m.	Continue iterative alignment rating process
12:00 p.m. – 12:30 p.m.	Lunch Break
12:30 p.m. – 2:00 p.m.	Continue iterative alignment rating process
2:00 p.m.	<i>Adjourn for the day</i>

Day 4

8:30 a.m.– 10:00 a.m.	If needed: Review and rerate items from Day 3 Continue iterative alignment rating process
10:00 a.m. – 10:15 p.m.	Break
10:15 a.m. – 12:00 p.m.	Continue iterative alignment rating process
12:00 p.m. – 12:30 p.m.	Lunch Break
12:30 p.m. – 1:45 p.m.	Continue iterative alignment rating process
1:45 p.m. – 2:00 p.m.	Complete two short online surveys: <ul style="list-style-type: none"> • Debrief/Workshop evaluation • Demographic information
2:00 p.m.	<i>Adjourn</i>

Appendix B: Kentucky Summative Assessment - Panelist Instructions

Panelist Materials

1	Panelist Instructions
2	KSA Test Items
3	Panelist Rating Form
4	Kentucky Academic Standards (KAS)
5	Cognitive Complexity Level Descriptors
6	Debriefing/Evaluation Form
7	Demographic Questionnaire

Prior to alignment ratings:

1. Introductions
2. Review of panelist materials
3. Access the item review platform

Orient to Rating Form:

1. You will review several KSA items and will enter the content standard rating, and cognitive complexity level rating for each item.
2. Access Panelist Rating Form:
 - a. Click on the linked that was emailed to you to access the Google Drive.
 - b. Double click file name (Panelist Rating Form_*grade*) to open.
3. Review rating categories on rating form
 - a. Columns A through C contain information about each KSA item. Column A provides the grade level of the items. Column B provides the sequence number that corresponds to the order the item appears in the item review platform. Column C provides the unique item identifier.
 - b. Column D asks for the content standard measured by the item. An example standard code is **KY3.OA.7**. All standard codes are presented in a dropdown menu that is accessible by clicking on the arrow that appears to the right of the cell where the rating is to be made.
 - c. Column E asks for rating of the quality of the link between the item and the identified standard. You will use the following scale for the quality of link rating:
 - i. 2= the content measured by the item is fully addressed in the identified standard. There is no additional content in the item but additional content may be in the standard.
 - ii. 1= the content measured by the item contains more than what is covered in the identified standard.
 - iii. 0= no standard contains any part of the content measured by the item. You will select this if you selected “None” in Column D.
 - iv. If “1” or “0” is selected in Column E, then a comment needs to be provided in Column F describing what content is being measured by the item that is **not** reflected in the content standard(s).
 - d. Column G asks for the cognitive complexity level of the item. The cognitive complexity levels are presented in a dropdown menu that is accessible by

clicking on the arrow that appears to the right of the cell where the rating is to be made. Descriptions of each of the cognitive complexity levels are presented in the Cognitive Complexity Level Descriptors document.

- e. Column H is available for entering comments or notes to clarify or qualify any of your item ratings.

Make item ratings:

1. Rate the first item independently, all columns.
 - a. Locate the unique item identifier in the item review platform and confirm that it matches the item identifier on the rating form.
 - b. Review the content of the item.
 - c. Review the Kentucky Academic Standards (KAS).
 - d. Using the dropdown menu, rate the content standard measured by the item.
 - e. Using the dropdown menu, rate the quality of the link between the item and the standard.
 - f. Review the Cognitive Complexity Level Descriptors
 - g. Using the dropdown menu, rate the cognitive complexity of the item.
 - h. Provide comments, as needed.
2. After all panelists have rated the first item, the group will discuss their independent ratings. This discussion should focus on discrepancies among ratings and how individual panelists interpreted the items and the standards
3. The HumRRO facilitator will monitor independent ratings and discussion and will capture the final rating
 - a. If all panelists come to agreement on a rating, the facilitator will record that rating.
 - b. If a majority of panelists agree on a rating, the facilitator will record that rating. You may be prompted by the facilitator to discuss these differences.
 - c. If a majority of panelists do not agree on a rating, you will engage in discussion until a majority of the group agrees on a final rating, which the facilitator will record.
 - d. You should not change your independent ratings after discussion unless you are **certain** you made an error (e.g., coding error or misunderstanding of the standards/cognitive complexity levels). **While our process captures a final group consensus/majority rating, it is very important that we also retain your independent perspective on the test items. Your independent ratings will not be linked to you in any of our analysis or reporting but will be used collectively to evaluate the quality of our training and processes.**
4. Your group will repeat this process up to 3 times, one item at a time, as instructed by the HumRRO facilitator.
5. Rate all remaining KSA items independently. The HumRRO facilitator stop the group occasionally to have discussions about independent ratings in order to capture final group ratings.
6. While you are working independently, you may occasionally raise a discussion point with the group about any item(s) that are difficult to rate.

Post rating activity:

1. Following the completion of all rating tasks, you will complete the following:
 - a. Debriefing/Evaluation Form
 - b. Demographic Questionnaire

Appendix C: Alternate Kentucky Summative Assessment - Panelist Instructions

Panelist Materials

1	Alternate KSA Panelist Instructions
2	Alternate KSA Test Items
3	Panelist Rating Form
4	KSA Alternate Assessment Targets
5	Cognitive Complexity Level Descriptors
6	Technology Troubleshooting and Support Document
7	Debriefing/Evaluation Form
8	Demographic Questionnaire

Prior to alignment ratings:

1. Introductions
2. Review of panelist materials
3. Security protocol for accessing test items
 - a. The HumRRO facilitator will access your device and open a password-protected pdf file for viewing secure test items.

Rate Alternate KSA Items

Orient to Rating Form:

1. You will review several Alternate KSA items and will enter the alternate assessment target rating, and cognitive complexity level rating for each item. You will also rate whether alternate assessment targets lead students toward accessing the grade level KAS.
2. Access Panelist Rating Form:
 - a. Click on the linked that was emailed to you to access the Google Drive.
 - b. Double click file name (Panelist Rating Form_*grade*) to open.
3. Review rating categories on rating form
 - a. Columns A-C contain information about each Alternate KSA item. Column A provides the grade level of the items. Column B provides the item sequence, which corresponds to the order that the items appear in the PDF document, and Column C contains the unique item identifier, which corresponds to the item code presented for each item in the pdf file.
 - b. Column D asks for the primary KSA alternate assessment target measured by the item. An example target code is **RL3.3**. All target codes are presented in a dropdown menu that is accessible by clicking on the arrow that appears to the right of the cell where the rating is to be made.
 - c. Column E asks for rating of the quality of the link between the item and the identified alternate assessment target. You will use the following scale for the quality of link rating:

- i. 2= the content measured by the item is fully addressed in the identified target. There is no additional content in the item, but additional content may be in the target.
 - ii. 1= the content measured by the item contains more than what is covered in the identified target.
 - iii. 0= no alternate assessment target contains any part of the content measured by the item. You will select this if you did not identify an alternate assessment target in Column C.
 - iv. If “1” or “0” is selected in Column E, then a comment needs to be provided in Column F describing what content is being measured by the item that is **not** reflected in the alternate assessment target(s).
- d. Column G asks for the cognitive complexity level of the item. The cognitive complexity levels are presented in a dropdown menu that is accessible by clicking on the arrow that appears to the right of the cell where the rating is to be made. Descriptions of each of the cognitive complexity levels are presented in the Cognitive Complexity Level Descriptors document.
- e. Column H asks for you to indicate whether or not the item allows the student to demonstrate proficiency on grade-level content.
 - i. You will consider the Kentucky Academic Standard (KAS) associated with the identified alternate assessment target. These appear immediately before the alternate assessment target.
 - ii. You will enter “1” if the alternate assessment target leads the student toward accessing the grade level KAS.
 - iii. You will enter “0” if the alternate assessment target does not lead the student toward accessing the grade level KAS.
 - iv. If “0” is selected in Column G, then a comment needs to be provided in Column H describing why the alternate assessment target does not lead the student toward accessing the grade level KAS.
- f. Column I is also available for entering additional comments or notes to clarify or qualify any of your item ratings.

Make item ratings:

1. Rate the first item independently, all columns.
 - a. Locate the unique item identifier in the item pdf and confirm that it matches the item identifier on the rating form.
 - b. Review the content of the item as well as any related directions for administration associated with the item.
 - c. Review the KSA Alternate Assessment Targets.
 - d. Using the dropdown menu, rate the alternate assessment target measured by the item.
 - e. Using the dropdown menu, rate the quality of the link between the item and the target.
 - f. Review the Cognitive Complexity Level Descriptors
 - g. Using the dropdown menu, rate the cognitive complexity of the item.
 - h. Using the dropdown menu, rate whether alternate assessment target leads the student toward accessing the grade level KAS.
 - i. Provide comments in relevant columns, as needed.

2. After all panelists have rated the first item, the group will discuss their independent ratings. This discussion should focus on discrepancies among ratings and how individual panelists interpreted the items and the targets.
3. The HumRRO facilitator will monitor independent ratings and discussion and will capture the final rating
 - a. If all panelists come to agreement on a rating, the facilitator will record that rating.
 - b. If a majority of panelists agree on a rating, the facilitator will record that rating. You may be prompted by the facilitator to discuss these differences.
 - c. If a majority of panelists do not agree on a rating, you will engage in discussion until a majority of the group agrees on a final rating, which the facilitator will record.
 - d. You should not change your independent ratings after discussion unless you are **certain** you made an error (e.g., coding error or misunderstanding of the targets/cognitive complexity levels). **While our process captures a final group consensus/majority rating, it is very important that we also retain your independent perspective on the test items. Your independent ratings will not be linked to you in any of our analysis or reporting but will be used collectively to evaluate the quality of our training and processes.**
4. Your group will repeat this process up to 3 times, one item at a time, as instructed by the HumRRO facilitator.
5. Rate all remaining Alternate KSA items independently. The HumRRO facilitator stop the group occasionally to have discussions about independent ratings in order to capture final group ratings.
6. While you are working independently, you may occasionally raise a discussion point with the group about any item(s) that are difficult to rate.

Post rating activity:

1. Following the completion of all rating tasks, you will complete the following:
 - a. Debriefing/Evaluation Form
 - b. Demographic Questionnaire

Appendix D: Rating Sheet Excerpts

A	B	C	D	E	F	G	H
Grade	Item Sequence	Unique Item Identifier	Standard Rating	How well does the content and knowledge in the item reflect the content and knowledge in the Standard selected in column D? 0=Not at all 1=Partially 2=Fully	If you indicated 'Partially' or 'Not at all' in column E, briefly describe what is measured in the item that is not reflected in the standard.	Cognitive Complexity	Comments
Grade 4	1	a	▼	▼		▼	
Grade 4	2	b	▼	▼		▼	
Grade 4	3	c	▼	▼		▼	
Grade 4	4	d	▼	▼		▼	
Grade 4	5	e	▼	▼		▼	

Figure D.1. Kentucky Summative Assessment Alignment Rating Sheet – Reading/Writing, Mathematics, and Social Studies

A	B	C	D	E	F	G	H	I	J
Grade	Item Sequence	Unique Item Identifier	Domain	Identify the Performance Expectation (PE)	Identify the Disciplinary Core Idea (DCI) Assessment Target	Identify the Cross Cutting Concept (CCC)	Identify the Science and Engineering Practice (SEP)	Cognitive Complexity	Comments
Grade 4	1	a			▼	▼	▼	▼	
Grade 4	2	b			▼	▼	▼	▼	
Grade 4	3	c			▼	▼	▼	▼	
Grade 4	4	d			▼	▼	▼	▼	
Grade 4	5	e			▼	▼	▼	▼	

Figure D.2. Kentucky Summative Assessment Alignment Rating Sheet - Science

A	B	C	D	E	F	G	H	I
Grade	Item Sequence	Unique Item Identifier	Standard Rating	How well does the content and knowledge in the item reflect the content and knowledge in the Standard selected in column D? 0=Not at all 1=Partially 2=Fully	If you indicated 'Partially' or 'Not at all' in column E, briefly describe what is measured in the item that is not reflected in the standard.	Cognitive Complexity	Grade Level Content Rating, 0 = No and 1 = Yes	Comments
Grade 4	1 a		▼	▼		▼	▼	
Grade 4	2 b		▼	▼		▼	▼	
Grade 4	3 c		▼	▼		▼	▼	
Grade 4	4 d		▼	▼		▼	▼	
Grade 4	5 e		▼	▼		▼	▼	

Figure D.3. Alternate Kentucky Summative Assessment Alignment Rating Sheet – Reading/Writing, Mathematics, Social Studies, and Science

Appendix E: Post-Workshop Demographics Form

1. What is your gender?
 - Non-binary
 - Female
 - Male
 - Prefer to self-describe (please specify in the text box below)
 - Prefer not to disclose

2. Please self-describe your gender below:

3. What is your age?
 - 25 or under
 - 26-35
 - 36-45
 - 46-55
 - 56-65
 - 66 or over
 - Prefer not to disclose
4. What is your race/ethnic origin?
 - American Indian or Alaskan Native
 - Asian
 - African American or Black
 - Hispanic/Latino
 - Pacific Islander or Native Hawaiian
 - White
 - Other (Please specify in the text box below)
 - Prefer not to disclose

5. If you selected "Other," please provide your race/ethnic origin below:

6. What is your highest earned degree (or degrees)?
 - Associate degree
 - Baccalaureate Degree
 - Master's Degree
 - Ph.D. or equivalent (e.g., EdD)
 - Other
7. How many years of teaching experience do you have?

[Drop-down]

8. Do you have experience teaching students from diverse backgrounds?

- Yes
- No

9. You indicated that you have experience working with students from diverse background.

Please select all of the student groups that you have experience working with below:

- English language learners
- Students of color
- Students with disabilities
- Students from low socioeconomic households
- Students receiving free and/or reduced lunch
- Other

10. Other diverse student groups (please describe):

11. Please describe your experience working with the Kentucky Academic Standards prior to this workshop:

12. Please use this space for any additional comments you wish to share:

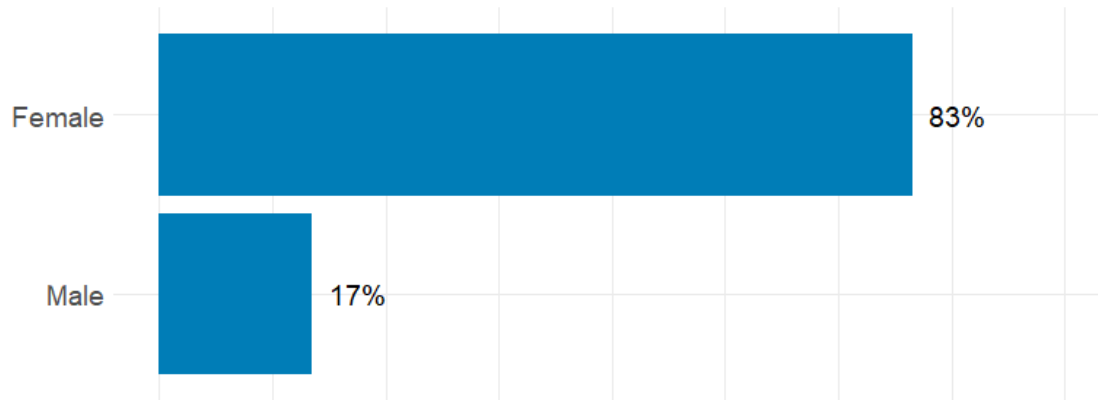
Appendix F: Post-Workshop Demographics Results

Data Collection

Following the virtual Kentucky Alignment Workshop, panelists were asked a series of demographic questions. There were a total of **101 responses** on the demographics survey. Responses are provided below:

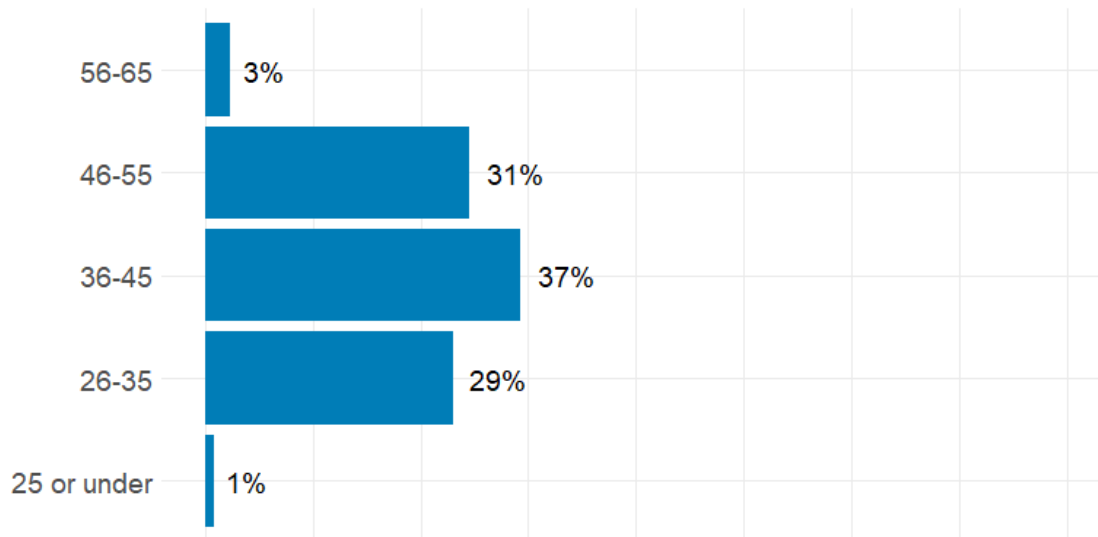
Gender

Item: What is your gender?



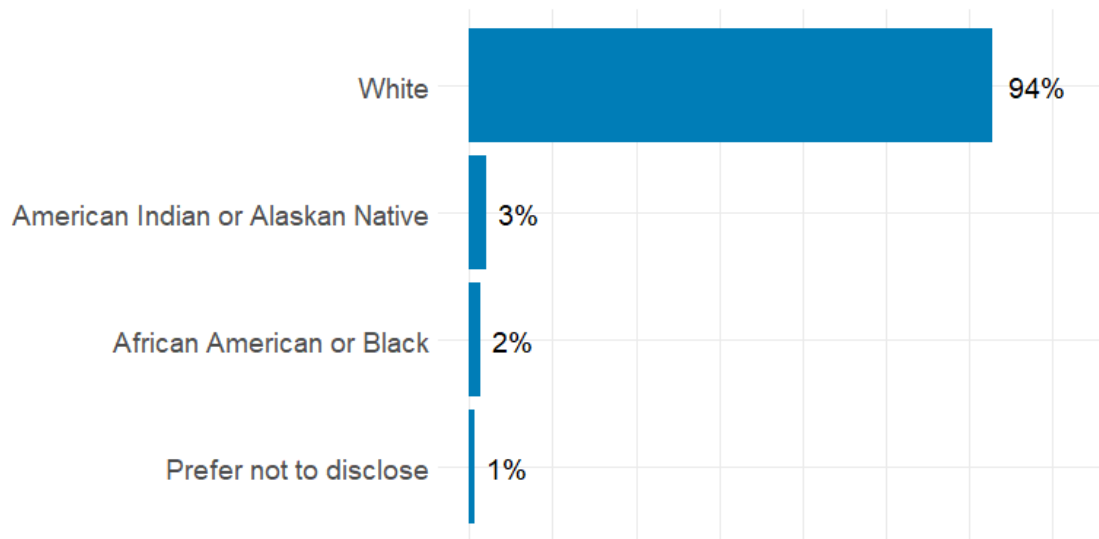
Age

Item: What is your age?



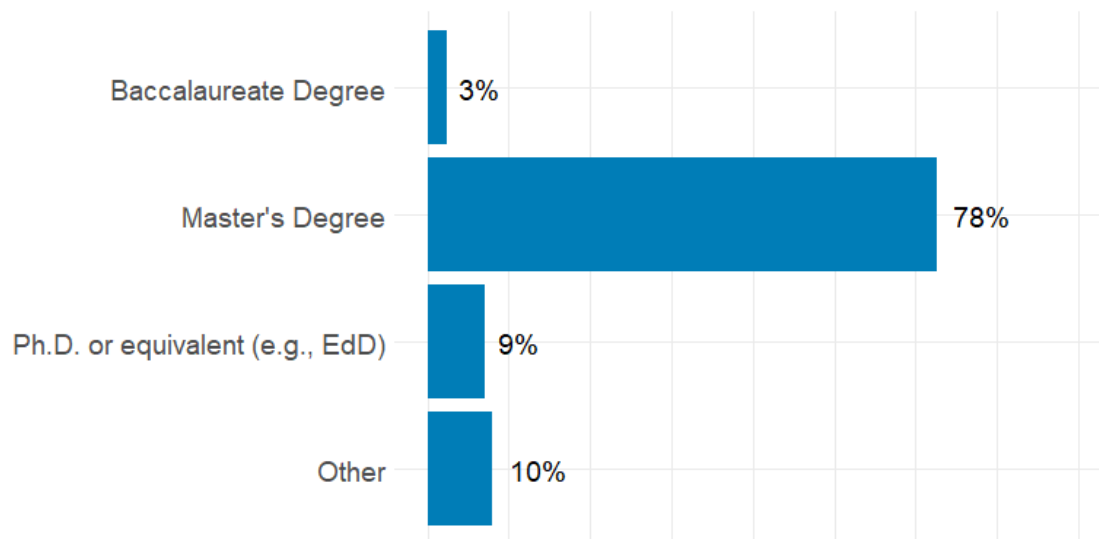
Ethnicity

Item: What is your race/ethnic origin?



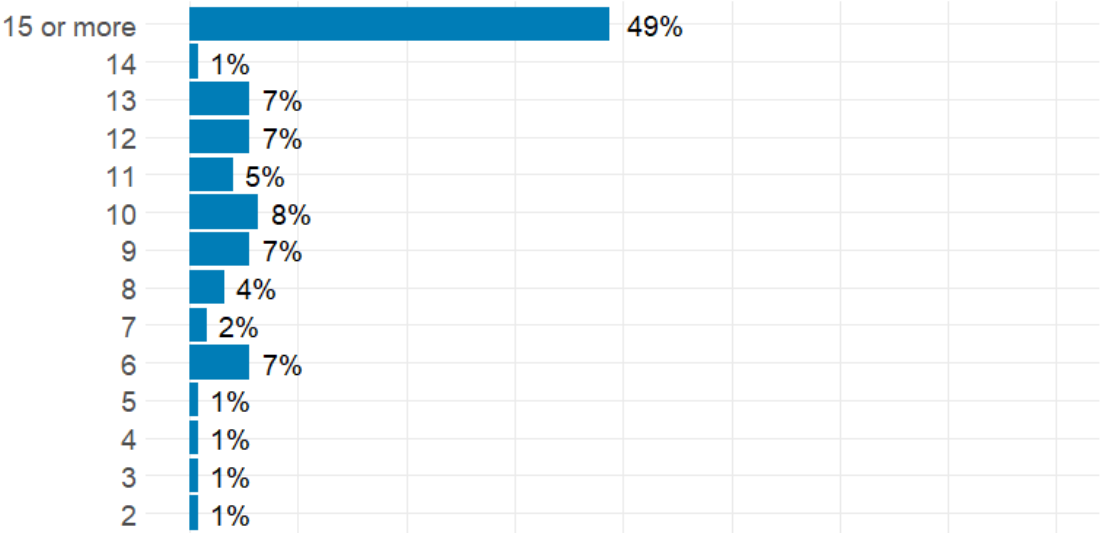
Highest degree earned

Item: What is your highest earned degree (or degrees)?



Teaching experience

Item: How many years of teaching experience do you have?



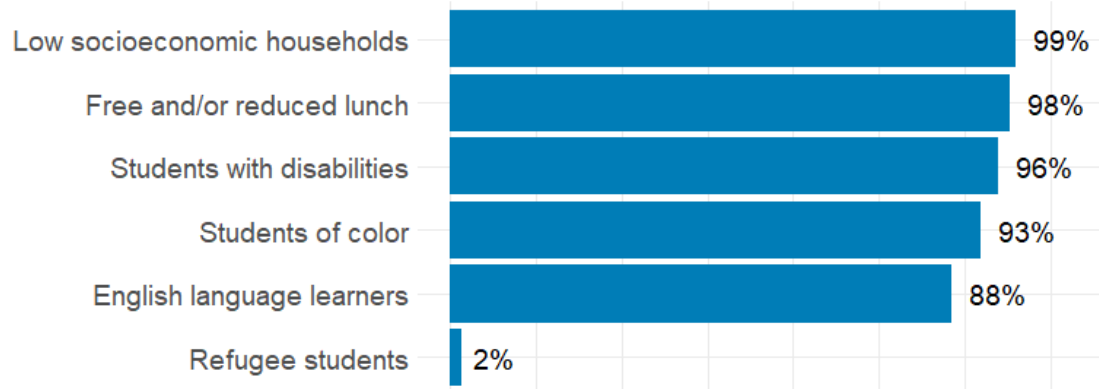
Teaching students of diverse backgrounds

Item: Do you have experience teaching students from diverse backgrounds?



Diverse student groups

Item: You indicated that you have experience working with students from diverse backgrounds. Please select all student groups that you have experience working with below:



Note: The "select all that apply" response option results in percentages adding to greater than 100%.

Appendix G: Post-Workshop Evaluation Form

1. Please enter the content area you were assigned for the alignment study:
 - Reading/Writing - General
 - Reading/Writing - Alternate
 - Mathematics - General
 - Mathematics - Alternate
 - Social Studies - General
 - Social Studies - Alternate
 - Science - General
 - Science - Alternate

2. Please select the grade(s) that you were assigned for the alignment study:
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 10
 - 11

3. Overall, how well were the Kentucky Summative Assessment items aligned with the Kentucky Academic Standards? (General Panels Only)
 - Strongly aligned
 - Partially aligned
 - Not at all aligned

4. Please share any additional information on the alignment between the Kentucky Summative Assessment items and the Kentucky Academic Standards: (General Panels Only)

5. The Alternate Assessment Targets should directly lead to the general education standard for students with disabilities. How well were the Alternate Kentucky Summative Assessment items aligned with the Alternate Assessment Targets? (Alternate Panels Only)
 - Strongly aligned
 - Partially aligned
 - Not at all aligned

6. Please share any additional information on the alignment between the Alternate Kentucky Summative Assessment items and the Alternate Assessment Targets:

7. Indicate the extent to which you agree or disagree with these statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The group-wide training session effectively outlined the purpose of the alignment workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The group-wide training session provided a useful overview of the alignment activities for the week	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The group-wide training session clearly described my role as a panelist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The group-wide training session was well-organized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The group-wide training session was an effective use of time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Indicate the extent to which you agree or disagree with these statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The hands-on training in my assigned panel helped me better understand the alignment activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practicing making ratings as a group in my assigned panel helped me better understand the alignment activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The panel-specific hands-on training was well organized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The hands-on training in my assigned panel was an effective use of time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Indicate the extent to which you agree or disagree with these statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
My panel facilitator clearly and promptly addressed my questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My panel facilitator did an effective job of facilitating discussion and ensuring that all panelists' perspectives were heard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Indicate the extent to which you agree or disagree with these statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Everyone had an equal opportunity to contribute ideas and opinions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My ideas and opinions were listened to and respected by the group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Indicate the extent to which you agree or disagree with these statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The materials hosted on Google Drive were useful (e.g., standards)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Google Rating Sheet was useful for recording alignment ratings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Google Rating Sheet provided a comprehensive platform for capturing alignment of standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The other materials shared by my facilitator were useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Indicate the extent to which you agree or disagree with these statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
It was easy to access the item content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The item content allowed me to effectively accomplish my tasks during the alignment workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was easy to access the evaluation and demographic forms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Indicate the extent to which you agree or disagree with these statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The whole-group training facilitator was helpful during the workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The panel facilitator was helpful during the workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other support staff were helpful during the workshop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Please use this space for any additional comments you wish to share:

Appendix H: Post-Workshop Evaluation Results

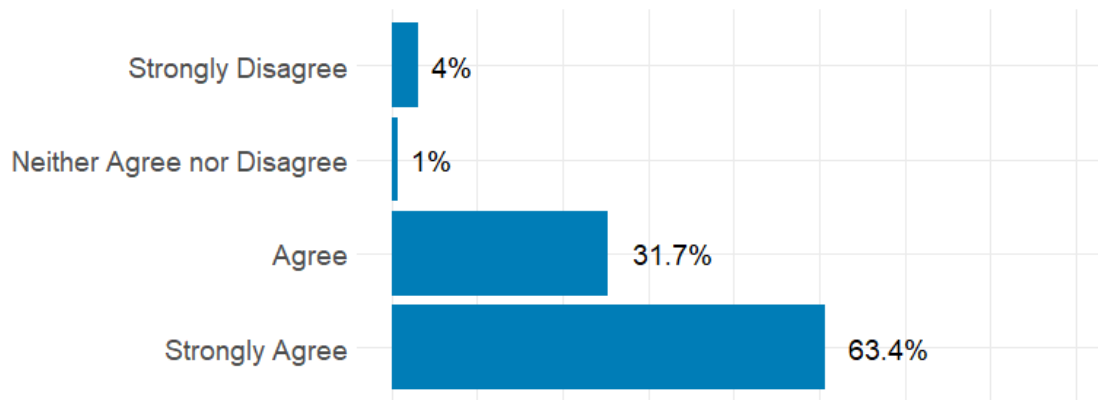
Data Collection

Following virtual Kentucky Alignment Workshop, panelists were asked a series of Likert-type items assessing their satisfaction with a variety of topics, including the group-wide training, panel-specific training, panel-specific group discussion, usefulness of materials, technology, and staff. A total of **101 respondents** participated in the evaluation survey. Responses are provided below.

Quality of Group-Wide Training

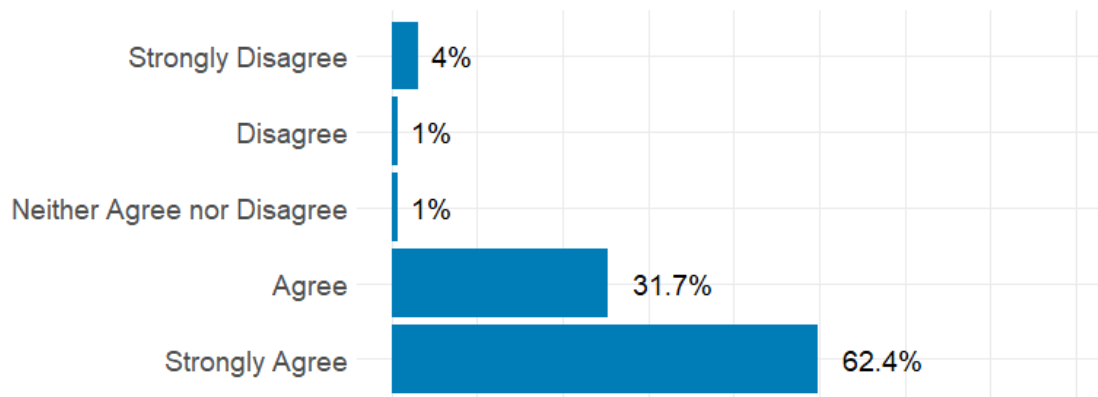
Purpose

Item: The group-wide training session effectively outlined the purpose of the alignment workshop:



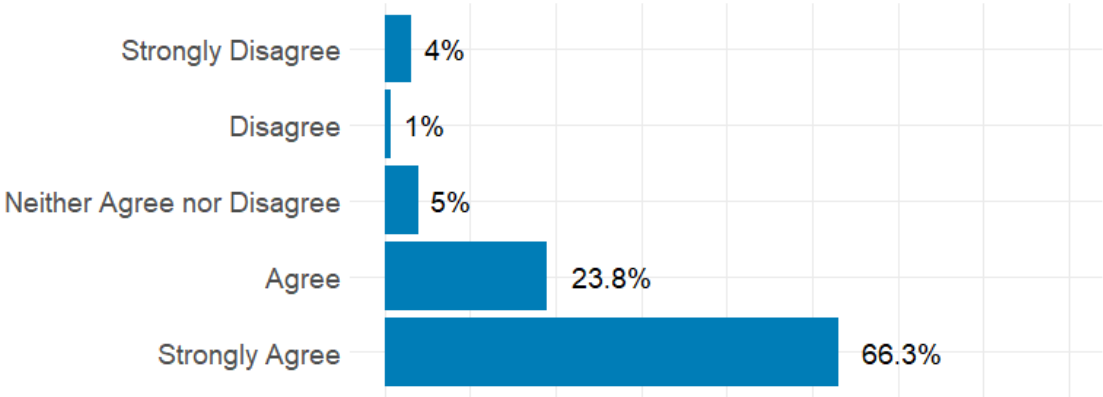
Overview

Item: The group-wide training session provided a useful overview of the alignment activities for the week:



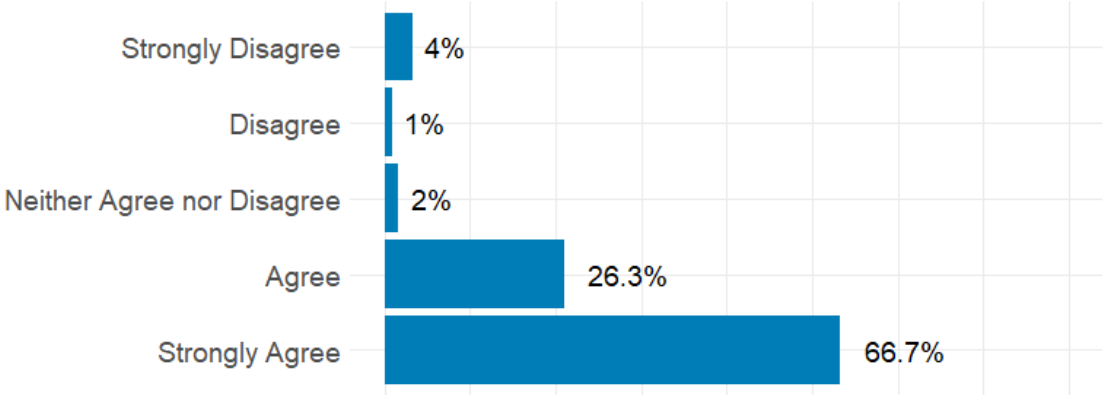
Role

Item: The group-wide training session clearly described my role and responsibility as a panelist:



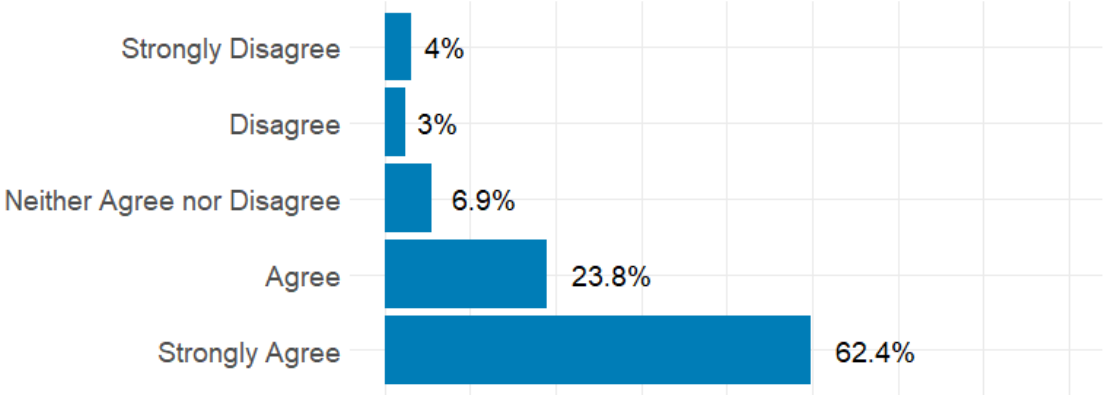
Organization

Item: The group-wide training session was well organized:



Effective use of time

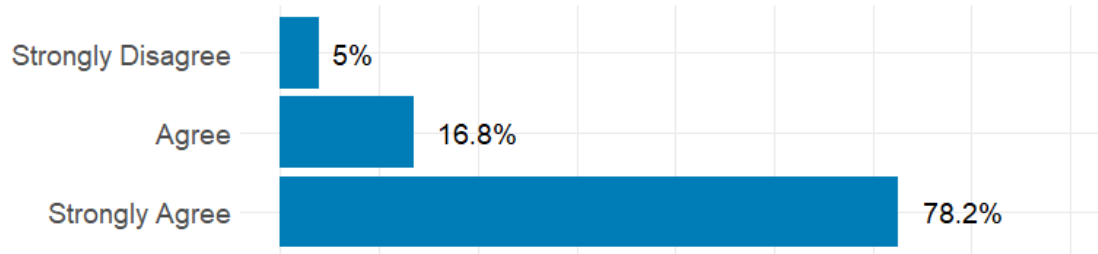
Item: The orientation and group-wide training was an effective use of time:



Quality of Panel Room Training

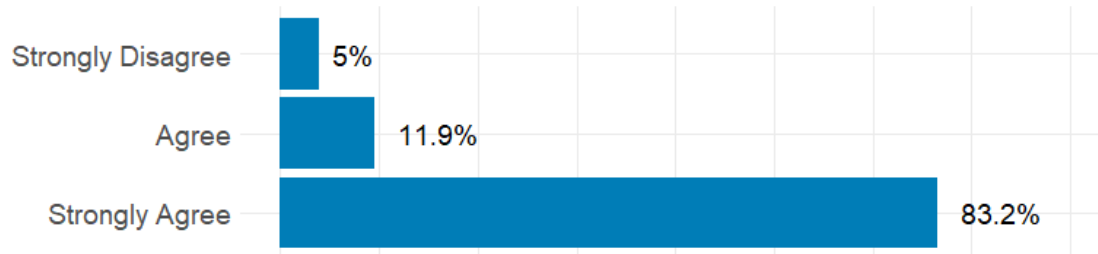
Hands-on

Item: The hands-on training in my assigned Panel Room helped me better understand the alignment activities:



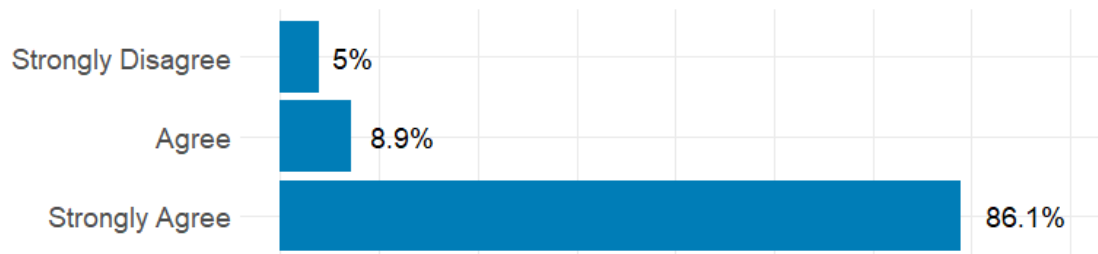
Practicing

Item: Practicing making ratings as a group in my assigned Panel Room helped me better understand the alignment activities:



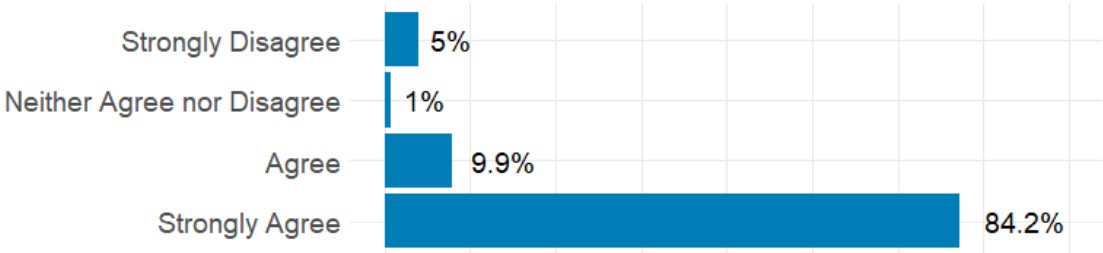
Organization

Item: The panel-specific hands-on training was well organized:



Effective use of time

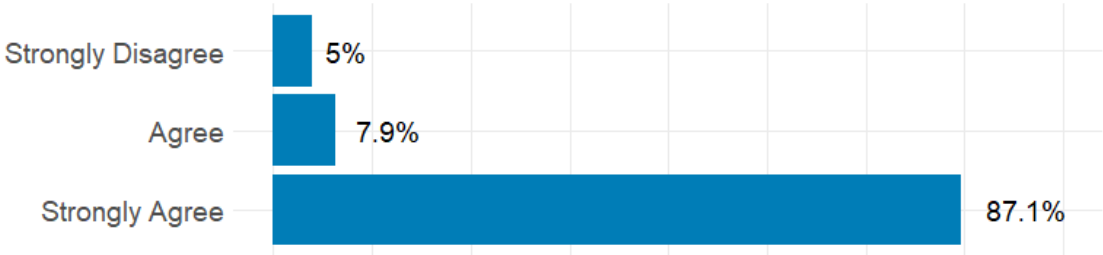
Item: The hands-on training in my assigned panel was an effective use of time:



Quality of Facilitator Training

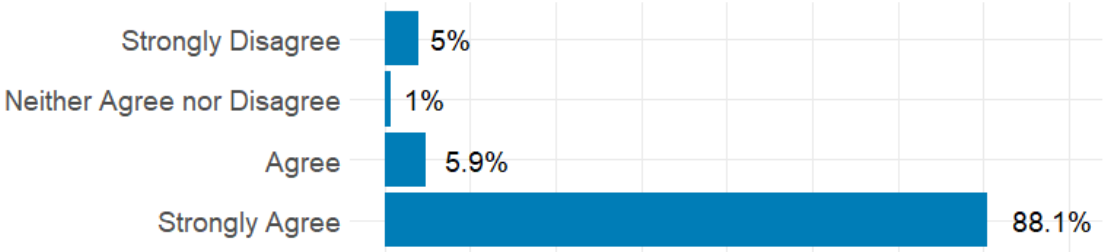
Questions

Item: My panel facilitator clearly and promptly addressed my questions:



Discussion

Item: My panel facilitator did an effective job of facilitating discussion and ensuring that all panelists' perspectives were heard:



Panel Room Group Discussions

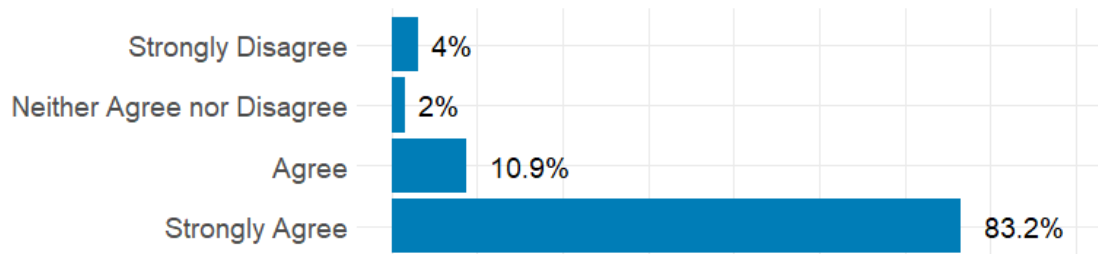
Opportunity

Item: Everyone had equal opportunity to contribute ideas and opinions:



Ideas

Item: My ideas and opinions were listened to and respected by the group:

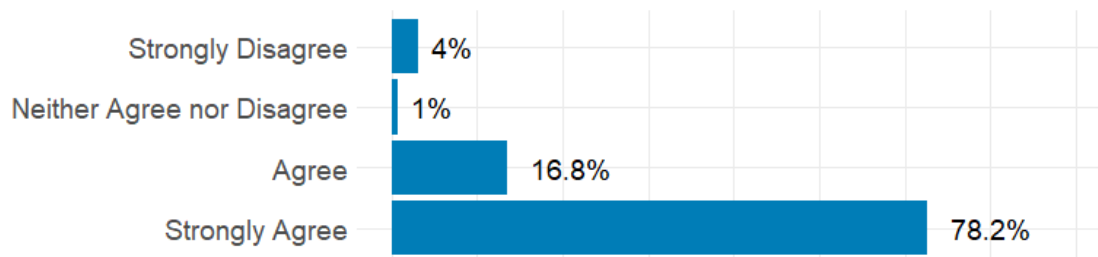


Usefulness of Materials

Indicate the usefulness of each of the following elements:

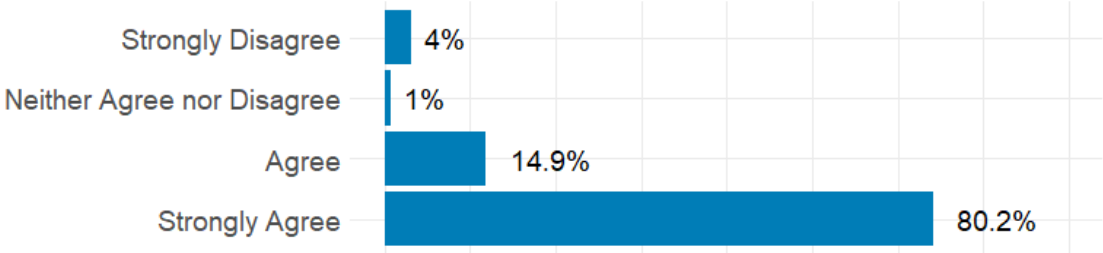
Materials

Item: The materials hosted on Google Drive were useful (e.g., standards):



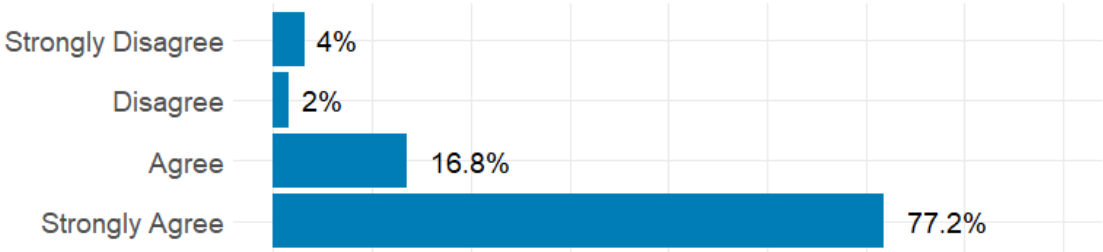
Rating Sheet

Item: The Google Rating Sheet was useful for recording alignment ratings:



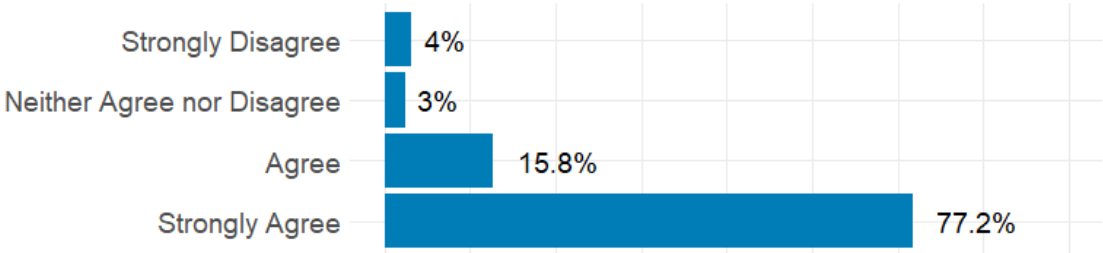
Google Sheet

Item: The Google Rating Sheet provided a comprehensive platform for capturing alignment of standards:



Other Materials

Item: The other materials shared by my facilitator were useful:

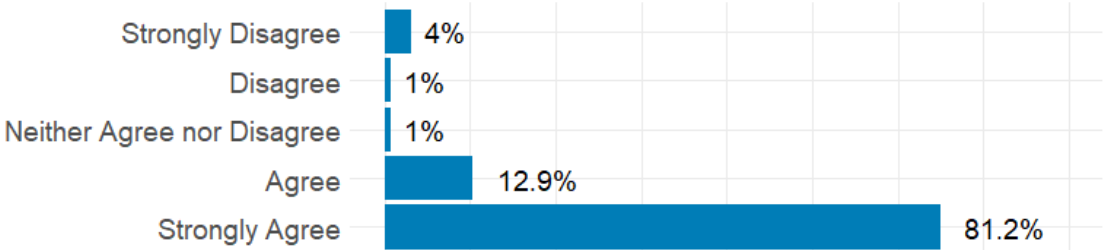


Usefulness of Technology

Indicate the usefulness of each of the following elements:

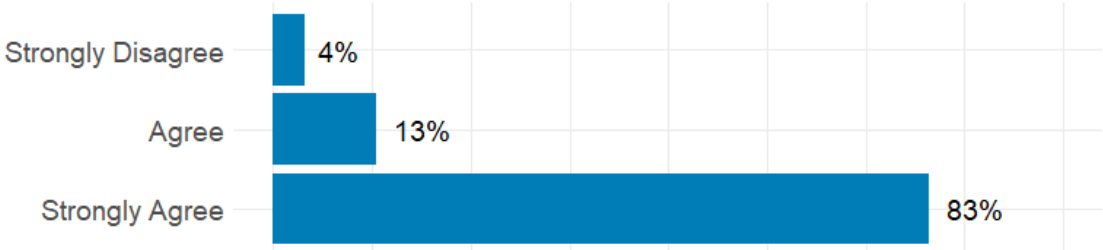
Item Content

Item: It was easy to access the item content:



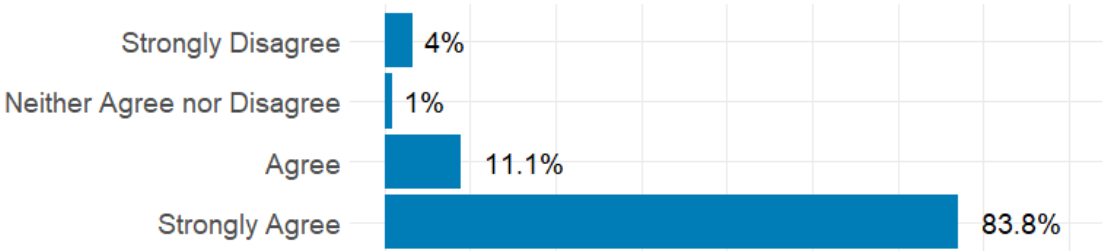
Accomplishing Tasks

Item: The item content allowed me to effectively accomplish my tasks during the alignment workshop:



Evaluation Form

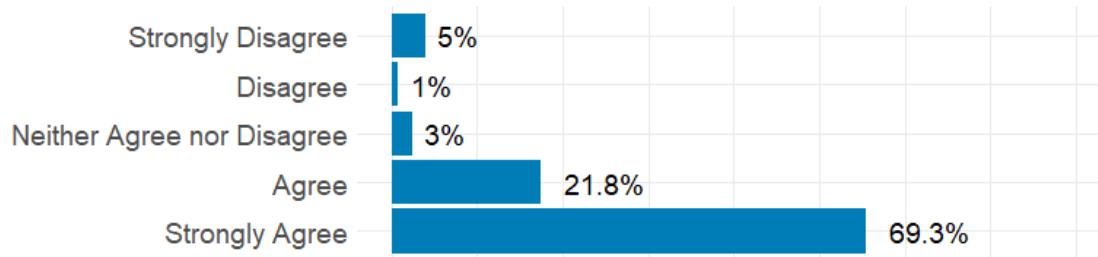
Item: It was easy to access the evaluation and demographics form:



Helpfulness of Staff

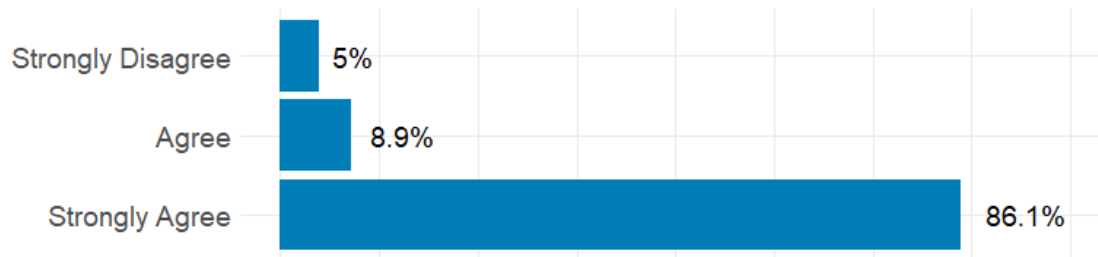
Whole-Group Facilitator

Item: The whole-group training facilitator was helpful during the workshop:



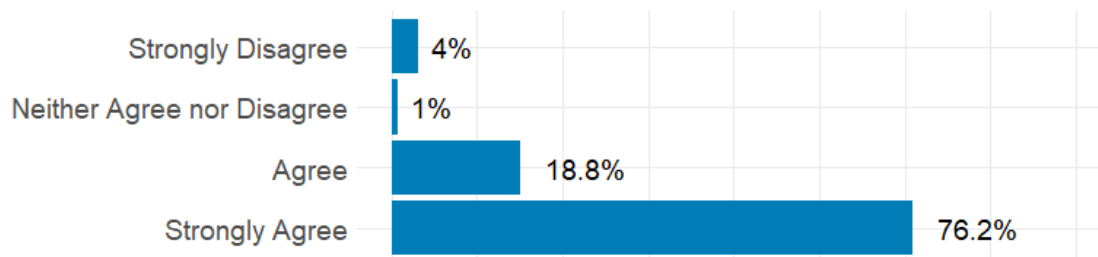
Panel Facilitator

Item: The panel facilitator was helpful during the workshop:



Support Staff

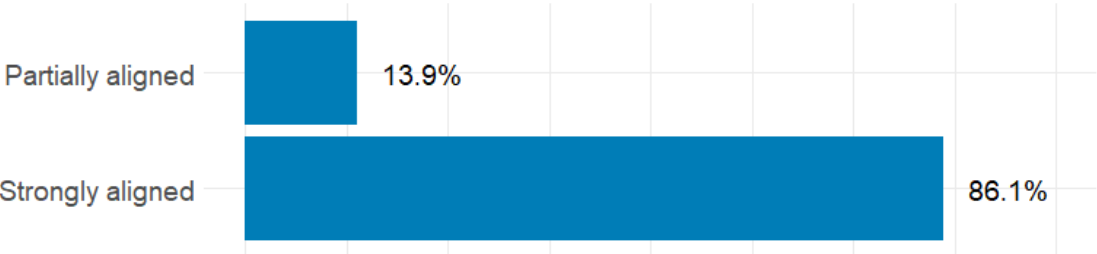
Item: Other support staff were helpful during the workshop:



Overall Alignment

General

Item: Overall, how well were the Kentucky Summative Assessment items aligned with the Kentucky Academic Standards?



Alternate

Item: The Alternate Assessment Targets should directly lead to the general education standard for students with disabilities. How well were the Alternate Kentucky Summative Assessment items aligned with the Alternate Assessment Targets?



Appendix I: KSA Test Blueprint Excerpts

Mathematics

Grades 3, 4, and 5

Domain	Target %		
	Grade 3	Grade 4	Grade 5
Operations and Algebraic Thinking	30-35	15-20	15-20
Number and Operations in Base Ten	15-20	25-30	25-30
Number and Operations -- Fractions	20-25	25-30	25-30
Measurement and Data	15-20	10-15	10-15
Geometry	10-15	10-15	10-15
Assessments at Grades 3, 4 and 5 will consist of 60-70% items that are Non-Calculator.			
All test items will be aligned to the Standards for Mathematical Practice.			

Grades 6 and 7

Domain	Target %	
	Grade 6	Grade 7
Ratios and Proportional Relationships	10-15	20-25
The Number System	30-35	15-20
Expressions and Equations	25-30	20-25
Geometry	15-20	20-25
Statistics and Probability	15-20	20-25
Assessments at Grades 6 and 7 will consist of 30-35% items that are Non-Calculator.		
All test items will be aligned to the Standards for Mathematical Practice.		

Grade 8

Domain	Target %
	Grade 8
Expressions & Equations	25-30
Functions	25-30
The Number System	10-15
Geometry	25-30
Statistics and Probability	10-15
The assessment at Grade 8 will consist of 20-25% items that are Non-Calculator.	
All test items will be aligned to the Standards for Mathematical Practice.	

Grade 10

Conceptual Category	Target %
	Grade 10
Algebra	22-27
Functions	22-27
Number and Quantity	10-15
Geometry	25-30
Statistics and Probability	10-15
The assessment at Grade 10 will consist of 20-25% items that are Non-Calculator.	
All test items will be aligned to the Standards for Mathematical Practice.	

Reading

Reading Blueprint	Percentage of Domain	Distribution of Passage Types (% of items associated with passage)	
	Coverage Target %	Literary Target %	Informative Target %
Grade 3			
Key Ideas and Details	30-35	50	50
Craft and Structure	30-35	50	50
Integration of Knowledge and Ideas	30-35	50	50
Grade 4			
Key Ideas and Details	30-35	50	50
Craft and Structure	30-35	50	50
Integration of Knowledge and Ideas	30-35	50	50
Grade 5			
Key Ideas and Details	30-35	50	50
Craft and Structure	30-35	50	50
Integration of Knowledge and Ideas	30-35	50	50
Grade 6			
Key Ideas and Details	30-35	45	55
Craft and Structure	30-35	45	55
Integration of Knowledge and Ideas	30-35	45	55
Grade 7			
Key Ideas and Details	30-35	45	55
Craft and Structure	30-35	45	55
Integration of Knowledge and Ideas	30-35	45	55
Grade 8			
Key Ideas and Details	30-35	45	55
Craft and Structure	30-35	45	55
Integration of Knowledge and Ideas	30-35	45	55
Grade 10			
Key Ideas and Details	30-35	40	60
Craft and Structure	30-35	40	60
Integration of Knowledge and Ideas	30-35	40	60

Science

Grade 4	
Domain	Target %
Physical Science	30-45
Life Science	20-35
Earth and Space Science	25-40
Engineering Design (ETS1) for grades K-2 and 3-5	5-15

Grade 7	
Domain	Target %
Physical Science	35-50
Life Science	15-30
Earth and Space Science	15-30
Engineering Design (ETS1) for grades 3-5 and MS	5-15

High School	
Domain	Target %
Physical Science	20-35
Life Science	30-45
Earth and Space Science	20-35
Engineering Design (ETS1) for MS and HS	5-15

Social Studies

Domain ¹	Grade 5	Grade 8	Grade 11
Civics	25%	25%	25%
Economics	25%	25%	25%
Geography	25%	25%	25%
History	25%	25%	25% ²

Writing (Editing and Mechanics)

Grade	Prompt Mode	Percentage of Domain Coverage Target %
5	Conventions of Standard English	80
	Knowledge of Language and Vocabulary Acquisition and Use	20
8	Conventions of Standard English	80
	Knowledge of Language and Vocabulary Acquisition and Use	20
11	Conventions of Standard English	80
	Knowledge of Language and Vocabulary Acquisition and Use	20

Appendix J: KSA Item Ratings by Content Domain

Table J.1. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain – Grades 3–5

Grade	% Operations and Algebraic Thinking	% Number and Operations in Base Ten	% Number and Operations – Fractions	% Measurement and Data	% Geometry
3	28.7	17.0	19.1	20.2	14.9
4	21.6	22.5	26.5	17.6	11.8
5	19.3	28.4	17.0	18.2	17.0

Table J.2. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain – Grades 6–7

Grade	% Ratios and Proportional Relationships	% The Number System	% Expressions and Equations	% Geometry	% Statistics and Probability
6	17.6	24.2	20.9	19.8	17.6
7	24.1	21.7	14.5	21.7	18.1

Table J.3. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain – Grade 8

Grade	% Expressions and Equations	% Functions	% The Number System	% Geometry	% Statistics and Probability
8	25.0	26.1	15.9	18.2	14.8

Table J.4. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain – Grade 10

Grade	% Algebra	% Functions	% Number and Quantity	% Geometry	% Statistics and Probability
10	25.2	25.2	10.3	27.1	12.1

Table J.5. Percentage of KSA Reading Items Rated as Measuring Each Content Domain

Grade	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
3	48.6	38.1	13.3
4	44.6	39.8	15.7
5	46.5	34.9	18.6
6	38.4	43.0	18.6
7	42.4	42.4	15.3
8	45.1	40.2	14.6
10	41.3	40.0	18.7

Table J.6. Percentage of KSA Science Items Rated as Measuring Each Content Domain

Grade	% Physical Science	% Life Science	% Earth and Space Science	% Engineering Design
4	28.1	29.7	26.6	15.7
7	47.9	8.3	35.4	8.3
11	28.6	51.8	10.7	8.9

Table J.7. Percentage of KSA Social Studies Items Rated as Measuring Each Content Domain

Grade	% Civics	% Economics	% Geography	% History
5	35.6	19.5	32.2	12.6
8	17.2	32.3	29.0	21.5
11	24.5	25.5	23.5	26.5

Table J.8. Percentage of KSA Writing Items Rated as Measuring Each Content Domain

Grade	% Conventions of Standard English	% Knowledge of Language and Vocabulary Acquisition and Use
5	71.4	28.6
8	67.9	32.1
11	32.6	67.4

Table J.9. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain by Form – Grade 3

Form	% Operations and Algebraic Thinking	% Number and Operations in Base Ten	% Number and Operations – Fractions	% Measurement and Data	% Geometry
1	38.2	8.8	23.5	17.6	11.8
2	38.2	11.8	23.5	17.6	8.8
3	41.2	8.8	23.5	17.6	8.8
4	35.3	11.8	20.6	20.6	11.8
5	35.3	11.8	23.5	14.7	14.7
6	35.3	11.8	20.6	20.6	11.8

Table J.10. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain by Form – Grade 4

Form	% Operations and Algebraic Thinking	% Number and Operations in Base Ten	% Number and Operations – Fractions	% Measurement and Data	% Geometry
1	17.2	27.6	27.6	13.8	13.8
2	17.2	31.0	27.6	13.8	10.3
3	17.2	31.0	27.6	13.8	10.3
4	17.2	27.6	27.6	17.2	10.3
5	17.2	27.6	27.6	17.2	10.3
6	20.7	31.0	20.7	13.8	13.8

Table J.11. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain by Form – Grade 5

Form	% Operations and Algebraic Thinking	% Number and Operations in Base Ten	% Number and Operations – Fractions	% Measurement and Data	% Geometry
1	17.2	34.5	20.7	13.8	13.8
2	27.6	27.6	20.7	17.2	6.9
3	13.8	37.9	20.7	13.8	13.8
4	20.7	31.0	17.2	13.8	17.2
5	20.7	31.0	17.2	13.8	17.2
6	13.8	34.5	24.1	13.8	13.8

Table J.12. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain by Form – Grade 6

Form	% Ratios and Proportional Relationships	% The Number System	% Expressions and Equations	% Geometry	% Statistics and Probability
1	13.8	31.0	20.7	17.2	17.2
2	13.8	27.6	17.2	20.7	20.7
3	13.8	27.6	13.8	24.1	20.7
4	13.8	27.6	20.7	17.2	20.7
5	6.9	31.0	27.6	17.2	17.2
6	10.3	27.6	27.6	13.8	20.7

Table J.13. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain by Form – Grade 7

Form	% Ratios and Proportional Relationships	% The Number System	% Expressions and Equations	% Geometry	% Statistics and Probability
1	24.1	17.2	20.7	20.7	17.2
2	17.2	17.2	20.7	20.7	24.1
3	20.7	17.2	17.2	24.1	20.7
4	20.7	17.2	17.2	24.1	20.7
5	20.7	24.1	13.8	20.7	20.7
6	24.1	17.2	13.8	27.6	17.2

Table J.14. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain by Form – Grade 8

Form	% Expressions and Equations	% Functions	% The Number System	% Geometry	% Statistics and Probability
1	24.1	24.1	10.3	27.6	13.8
2	27.6	24.1	10.3	27.6	10.3
3	27.6	31.0	10.3	24.1	6.9
4	27.6	31.0	10.3	24.1	6.9
5	27.6	20.7	13.8	27.6	10.3
6	27.6	17.2	10.3	31.0	13.8

Table J.15. Percentage of KSA Mathematics Items Rated as Measuring Each Content Domain by Form – Grade 10

Form	% Algebra	% Functions	% Number and Quantity	% Geometry	% Statistics and Probability
1	31.0	24.1	10.3	24.1	10.3
2	24.1	27.6	10.3	27.6	10.3
3	24.1	27.6	10.3	27.6	10.3
4	31.0	24.1	6.9	27.6	10.3
5	27.6	27.6	10.3	27.6	6.9
6	20.7	27.6	10.3	27.6	13.8

Table J.16. Percentage of KSA Reading Items Rated as Measuring Each Content Domain by Form – Grade 3

Form	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
1	56.7	33.3	10.0
2	40.0	40.0	20.0
3	53.3	36.7	10.0
4	33.3	43.3	23.3
5	40.0	46.7	13.3
6	40.0	46.7	13.3

Table J.17. Percentage of KSA Reading Items Rated as Measuring Each Content Domain by Form – Grade 4

Form	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
1	43.3	40.0	16.7
2	43.3	40.0	16.7
3	40.0	36.7	23.3
4	40.0	40.0	20.0

Table J.18. Percentage of KSA Reading Items Rated as Measuring Each Content Domain by Form – Grade 5

Form	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
1	53.3	33.3	13.3
2	50.0	30.0	20.0
3	53.3	26.7	20.0
4	43.3	33.3	23.3

Table J.19. Percentage of KSA Reading Items Rated as Measuring Each Content Domain by Form – Grade 6

Form	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
1	36.7	50.0	13.3
2	40.0	46.7	13.3
3	36.7	43.3	20.0
4	43.3	40.0	16.7

Table J.20. Percentage of KSA Reading Items Rated as Measuring Each Content Domain by Form – Grade 7

Form	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
1	46.7	46.7	6.7
2	50.0	33.3	16.7
3	40.0	50.0	10.0
4	43.3	43.3	13.3

Table J.21. Percentage of KSA Reading Items Rated as Measuring Each Content Domain by Form – Grade 8

Form	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
1	50.0	40.0	10.0
2	43.3	46.7	10.0
3	40.0	46.7	13.3
4	43.3	40.0	16.7

Table J.22. Percentage of KSA Reading Items Rated as Measuring Each Content Domain by Form – Grade 10

Form	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
1	43.3	40.0	16.7
2	40.0	46.7	13.3
3	43.3	43.3	13.3
4	33.3	50.0	16.7

Table J.23. Percentage of KSA Science Items Rated as Measuring Each Content Domain by Form – Grade 4

Form	% Physical Science	% Life Science	% Earth and Space Science	% Engineering Design
1	41.7	25.0	16.7	16.7
2	29.2	25.0	33.3	12.5
3	37.5	29.2	20.8	12.5
4	29.2	25.0	16.7	29.2

Table J.24. Percentage of KSA Science Items Rated as Measuring Each Content Domain by Form – Grade 7

Form	% Physical Science	% Life Science	% Earth and Space Science	% Engineering Design
1	33.3	16.7	33.3	16.7
2	20.8	16.7	45.8	16.7
3	33.3	16.7	33.3	16.7
4	41.7	16.7	25.0	16.7

Table J.25. Percentage of KSA Science Items Rated as Measuring Each Content Domain by Form – Grade 11

Form	% Physical Science	% Life Science	% Earth and Space Science	% Engineering Design
1	33.3	25.0	25.0	16.7
2	33.3	33.3	25.0	8.3
3	33.3	29.2	25.0	12.5
4	33.3	33.3	25.0	8.3

Table J.26. Percentage of KSA Social Studies Items Rated as Measuring Each Content Domain by Form – Grade 5

Form	% Civics	% Economics	% Geography	% History
1	27.6	20.7	20.7	24.1
2	27.6	20.7	24.1	20.7
3	24.1	20.7	20.7	27.6
4	17.2	24.1	24.1	27.6
5	27.6	24.1	17.2	24.1

Table J.27. Percentage of KSA Social Studies Items Rated as Measuring Each Content Domain by Form – Grade 8

Form	% Civics	% Economics	% Geography	% History
1	15.6	25.0	28.1	25.0
2	25.0	18.8	28.1	21.9
3	18.8	21.9	28.1	25.0
4	28.1	25.0	15.6	25.0
5	18.8	18.8	25.0	31.3

Table J.28. Percentage of KSA Social Studies Items Rated as Measuring Each Content Domain by Form – Grade 11

Form	% Civics	% Economics	% Geography	% History
1	25.7	20.0	22.9	25.7
2	25.7	28.6	17.1	22.9
3	25.7	20.0	25.7	22.9
4	25.7	25.7	22.9	20.0
5	22.9	20.0	22.9	28.6

Table J.29. Percentage of KSA Writing Items Rated as Measuring Each Content Domain by Form – Grade 5

Form	% Conventions of Standard English	% Knowledge of Language and Vocabulary Acquisition and Use
1	66.7	33.3
2	66.7	33.3
3	66.7	33.3
4	66.7	33.3
5	66.7	33.3
6	66.7	33.3
7	66.7	33.3
8	66.7	33.3
9	70.4	29.6
10	70.4	29.6
11	70.4	29.6
12	70.4	29.6

Table J.30. Percentage of KSA Writing Items Rated as Measuring Each Content Domain by Form – Grade 8

Form	% Conventions of Standard English	% Knowledge of Language and Vocabulary Acquisition and Use
1	65.4	34.6
2	65.4	34.6
3	65.4	34.6
4	65.4	34.6
5	68.0	32.0
6	68.0	32.0
7	68.0	32.0
8	68.0	32.0
9	68.0	32.0
10	68.0	32.0
11	68.0	32.0
12	68.0	32.0

Table J.31. Percentage of KSA Writing Items Rated as Measuring Each Content Domain by Form – Grade 11

Form	% Conventions of Standard English	% Knowledge of Language and Vocabulary Acquisition and Use
1	29.6	70.4
2	29.6	70.4
3	29.6	70.4
4	29.6	70.4
5	29.6	70.4
6	29.6	70.4
7	29.6	70.4
8	29.6	70.4
9	25.9	74.1
10	25.9	74.1
11	25.9	74.1
12	25.9	74.1

Appendix K: KSA Item Ratings by DOK Level

Table K.1. Percentage of KSA Mathematics Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
3	76.6	23.4	0.0
4	83.3	16.7	0.0
5	35.2	63.6	1.1
6	61.5	37.4	1.1
7	45.8	54.2	0.0
8	54.5	45.5	0.0
10	34.6	64.5	1.0

Table K.2. Percentage of KSA Reading Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
3	13.3	79.0	7.6
4	0.0	94.0	6.0
5	9.3	82.6	8.1
6	0.0	81.4	18.6
7	1.2	64.7	34.1
8	1.2	79.3	19.5
10	1.3	94.7	4.0

Table K.3. Percentage of KSA Science Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
4	0.0	75.0	25.0
7	2.1	63.8	34.0
11	7.1	60.7	32.1

Table K.4. Percentage of KSA Social Studies Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
5	8.9	76.7	14.4
8	2.3	30.7	67.0
11	18.6	74.5	6.9

Table K.5. Percentage of KSA Writing Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking	% Extended Thinking
5	73.2	19.6	0.0	7.1
8	16.1	76.8	7.1	0.0
11	46.5	44.2	9.3	0.0

Table K.6. Percentage of KSA Mathematics Items Rated as Measuring Each DOK Level by Form – Grade 3

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	73.5	26.5	0.0
2	73.5	26.5	0.0
3	76.5	23.5	0.0
4	67.6	32.4	0.0
5	76.5	23.5	0.0
6	79.4	20.6	0.0

Table K.7. Percentage of KSA Mathematic Items Rated as Measuring Each DOK Level by Form – Grade 4

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	82.8	17.2	0.0
2	86.2	13.8	0.0
3	82.8	17.2	0.0
4	79.3	20.7	0.0
5	93.1	6.9	0.0
6	86.2	13.8	0.0

Table K.8. Percentage of KSA Mathematic Items Rated as Measuring Each DOK Level by Form – Grade 5

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	24.1	75.9	0.0
2	34.5	62.1	3.4
3	37.9	58.6	3.4
4	34.5	65.5	0.0
5	37.9	58.6	3.4
6	34.5	65.5	0.0

Table K.9. Percentage of KSA Mathematic Items Rated as Measuring Each DOK Level by Form – Grade 6

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	65.5	31.0	3.4
2	69.0	31.0	0.0
3	72.4	27.6	0.0
4	58.6	37.9	3.4
5	69.0	27.6	3.4
6	55.2	44.8	0.0

Table K.10. Percentage of KSA Mathematic Items Rated as Measuring Each DOK Level by Form – Grade 7

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	41.4	58.6	0.0
2	48.3	51.7	0.0
3	37.9	62.1	0.0
4	37.9	62.1	0.0
5	37.9	62.1	0.0
6	41.4	58.6	0.0

Table K.11. Percentage of KSA Mathematic Items Rated as Measuring Each DOK Level by Form – Grade 8

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	55.2	44.8	0.0
2	51.7	48.3	0.0
3	62.1	37.9	0.0
4	51.7	48.3	0.0
5	55.2	44.8	0.0
6	37.9	62.1	0.0

Table K.12. Percentage of KSA Mathematic Items Rated as Measuring Each DOK Level by Form – Grade 10

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	34.5	65.5	0.0
2	34.5	62.1	3.4
3	37.9	62.1	0.0
4	44.8	51.7	3.4
5	41.4	58.6	0.0
6	48.3	48.3	3.4

Table K.13. Percentage of KSA Reading Items Rated as Measuring Each DOK Level by Form – Grade 3

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	13.3	80.0	6.7
2	16.7	76.7	6.7
3	6.7	90.0	3.3
4	10.0	83.3	6.7
5	20.0	73.3	6.7
6	13.3	83.3	3.3

Table K.14. Percentage of KSA Reading Items Rated as Measuring Each DOK Level by Form – Grade 4

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	0.0	93.3	6.7
2	0.0	93.3	6.7
3	0.0	93.3	6.7
4	0.0	93.3	6.7

Table K.15. Percentage of KSA Reading Items Rated as Measuring Each DOK Level by Form – Grade 5

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	13.3	80.0	6.7
2	6.7	86.7	6.7
3	6.7	86.7	6.7
4	6.7	86.7	6.7

Table K.16. Percentage of KSA Reading Items Rated as Measuring Each DOK Level by Form – Grade 6

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	0.0	86.7	13.3
2	0.0	90.0	10.0
3	0.0	80.0	20.0
4	0.0	83.3	16.7

Table K.17. Percentage of KSA Reading Items Rated as Measuring Each DOK Level by Form – Grade 7

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	3.3	56.7	40.0
2	0.0	56.7	43.3
3	3.3	63.3	33.3
4	0.0	70.0	30.0

Table K.18. Percentage of KSA Reading Items Rated as Measuring Each DOK Level by Form – Grade 8

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	0.0	86.7	13.3
2	3.3	73.3	23.3
3	0.0	83.3	16.7
4	0.0	76.7	23.3

Table K.19. Percentage of KSA Reading Items Rated as Measuring Each DOK Level by Form – Grade 10

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	3.3	93.3	3.3
2	0.0	96.7	3.3
3	0.0	96.7	3.3
4	0.0	96.7	3.3

Table K.20. Percentage of KSA Science Items Rated as Measuring Each DOK Level by Form – Grade 4

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	0.0	75.0	25.0
2	0.0	79.2	20.8
3	0.0	75.0	25.0
4	0.0	70.8	29.2

Table K.21. Percentage of KSA Science Items Rated as Measuring Each DOK Level by Form – Grade 7

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking	% Extended Thinking
1	0.0	62.5	37.5	0.0
2	0.0	62.5	33.3	4.2
3	0.0	75.0	25.0	0.0
4	4.2	66.7	29.2	0.0

Table K.22. Percentage of KSA Science Items Rated as Measuring Each DOK Level by Form – Grade 11

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	16.7	50.0	33.3
2	4.2	66.7	29.2
3	4.2	62.5	33.3
4	16.7	66.7	16.7

Table K.23. Percentage of KSA Social Studies Items Rated as Measuring Each DOK Level by Form – Grade 5

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	14.8	55.6	29.6
2	11.1	74.1	14.8
3	3.7	74.1	22.2
4	7.4	81.5	11.1
5	11.1	74.1	14.8

Table K.24. Percentage of KSA Social Studies Items Rated as Measuring Each DOK Level by Form – Grade 8

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking	% Extended Thinking
1	0.0	23.3	70.0	6.7
2	0.0	26.7	66.7	6.7
3	6.7	16.7	70.0	6.7
4	0.0	30.0	63.3	6.7
5	3.3	26.7	63.3	6.7

Table K.25. Percentage of KSA Social Studies Items Rated as Measuring Each DOK Level by Form – Grade 11

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	33.3	57.6	9.1
2	12.1	81.8	6.1
3	27.2	66.7	6.1
4	18.2	75.8	6.1
5	24.2	66.7	9.1

Table K.26. Percentage of KSA Writing Items Rated as Measuring Each DOK Level by Form – Grade 5

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking	% Extended Thinking
1	70.4	25.9	0.0	3.7
2	70.4	25.9	0.0	3.7
3	70.4	25.9	0.0	3.7
4	70.4	25.9	0.0	3.7
5	74.1	22.2	0.0	3.7
6	74.1	22.2	0.0	3.7
7	74.1	22.2	0.0	3.7
8	74.1	22.2	0.0	3.7
9	74.1	22.2	0.0	3.7
10	74.1	22.2	0.0	3.7
11	74.1	22.2	0.0	3.7
12	74.1	22.2	0.0	3.7

Table K.27. Percentage of KSA Writing Items Rated as Measuring Each DOK Level by Form – Grade 8

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	29.6	66.7	3.7
2	29.6	66.7	3.7
3	29.6	66.7	3.7
4	29.6	66.7	3.7
5	33.3	63.0	3.7
6	33.3	63.0	3.7
7	33.3	63.0	3.7
8	33.3	63.0	3.7
9	29.6	66.7	3.7
10	29.6	66.7	3.7
11	29.6	66.7	3.7
12	29.6	66.7	3.7

Table K.28. Percentage of KSA Writing Items Rated as Measuring Each DOK Level by Form – Grade 11

Form	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
1	51.9	44.4	3.7
2	51.9	44.4	3.7
3	51.9	44.4	3.7
4	51.9	44.4	3.7
5	48.1	48.1	3.7
6	48.1	48.1	3.7
7	48.1	48.1	3.7
8	48.1	48.1	3.7
9	48.1	48.1	3.7
10	48.1	48.1	3.7
11	48.1	48.1	3.7
12	48.1	48.1	3.7

Appendix L: Alternate KSA Item Ratings by Content Domain

Table L.1. Percentage of Alternate KSA Mathematics Items Rated as Measuring Each Content Domain – Grades 3–5

Grade	% Operations and Algebraic Thinking	% Number and Operations in Base Ten	% Number and Operations – Fractions	% Measurement and Data	% Geometry
3	26.7	20.0	26.7	16.7	10.0
4	13.3	26.7	33.3	16.7	10.0
5	16.7	23.3	33.3	16.7	10.0

Table L.2. Percentage of Alternate KSA Mathematics Items Rated as Measuring Each Content Domain – Grades 6–7

Grade	% Ratios and Proportional Relationships	% The Number System	% Expressions and Equations	% Geometry	% Statistics and Probability
6	10.0	33.3	26.7	10.0	20.0
7	20.0	20.0	20.0	20.0	20.0

Table L.3. Percentage of Alternate KSA Mathematics Items Rated as Measuring Each Content Domain – Grade 8

Grade	% Expressions and Equations	% Functions	% The Number System	% Geometry	% Statistics and Probability
8	22.2	22.2	11.1	33.3	11.1

Table L.4. Percentage of Alternate KSA Mathematics Items Rated as Measuring Each Content Domain – Grade 10

Grade	% Algebra	% Functions	% Number and Quantity	% Geometry	% Statistics and Probability
10	23.3	30.0	10.0	23.3	13.3

Table L.5. Percentage of Alternate KSA Reading Items Rated as Measuring Each Content Domain

Grade	% Key Ideas and Details	% Craft and Structure	% Integration of Knowledge and Ideas
3	39.3	35.7	25.0
4	30.0	40.0	30.0
5	26.7	33.3	40.0
6	37.0	29.6	33.3
7	34.6	34.6	30.8
8	40.0	33.3	26.7
10	42.9	39.3	17.9

Table L.6. Percentage of Alternate KSA Science Items Rated as Measuring Each Content Domain

Grade	% Physical Science	% Life Science	% Earth and Space Science	% Engineering Design
4	33.3	33.3	16.7	16.7
7	33.3	33.3	16.7	16.7
11	33.3	33.3	16.7	16.7

Table L.7. Percentage of Alternate KSA Social Studies Items Rated as Measuring Each Content Domain

Grade	% Civics	% Economics	% Geography	% History
5	26.7	23.3	30.0	20.0
8	30.0	16.7	26.7	26.7
11	20.0	30.0	20.0	30.0

Table L.8. Percentage of Alternate KSA Writing Items Rated as Measuring Each Content Domain

Grade	% Conventions of Standard English	% Knowledge of Language and Vocabulary Acquisition and Use
5	62.5	25.0
8	73.3	26.7
11	56.7	43.3

Appendix M: Alternate KSA Item Ratings by DOK Level

Table M.1. Percentage of Alternate KSA Mathematics Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
3	83.3	16.7	0.0
4	60.0	40.0	0.0
5	70.0	30.0	0.0
6	76.7	23.3	0.0
7	70.0	30.0	0.0
8	70.0	30.0	0.0
10	70.0	30.0	0.0

Table M.2. Percentage of Alternate KSA Reading Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
3	20.0	56.7	23.3
4	20.0	53.3	26.7
5	10.0	63.3	26.7
6	3.3	73.3	23.3
7	3.3	56.7	40.0
8	0.0	63.3	36.7
10	6.7	86.7	6.7

Table M.3. Percentage of Alternate KSA Science Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
4	26.7	53.3	20.0
7	30.0	60.0	10.0
11	26.7	70.0	3.3

Table M.4. Percentage of Alternate KSA Social Studies Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
5	3.3	86.7	10.0
8	0.0	53.3	46.7
11	10.0	86.7	3.3

Table M.5. Percentage of Alternate KSA Writing Items Rated as Measuring Each DOK Level

Grade	% Level 1: Recall	% Level 2: Skills and Concepts	% Strategic Thinking
5	46.7	53.3	0.0
8	0.0	60.0	40.0
11	3.3	90.0	6.7

Appendix H: KDE Survey for Test Administration Monitoring

Kentucky Summative Assessments (KSA) and Alternate Kentucky Summative Assessments (AKSA) 2022 Site Visit Survey Questions

Date/Time:		KDE Interviewer(s):	
District/School:			
Principal:		Grade Range:	
BAC(s):		DAC (if present):	



While conducting the survey, please ask the school for copies of the following:


- 1 copy of a Testing Schedule
- 1 copy of a Seating Chart (any 2 grades, group and individual testing)
- 1 copy of a Medical Nonparticipation Form (if applicable)
- 1 copy of a Good Faith Effort Checklist (if used)



If the site visit is virtual, copies may be collected electronically.

BEFORE TESTING	
1. Student Participation a. What process was used to identify in-person and virtual students for state testing?	
b. How were virtual students contacted and scheduled for testing?	
2. Training a. How much time was devoted to Administration Code and Inclusion of Special Populations trainings (703 KAR 5:080 & 703 KAR 5:070)?	
b. Did the district use any of the KDE Administration Code and Inclusion of Special Population training materials that included PowerPoints, modules and checks for understanding?	

BEFORE TESTING	
c. How far in advance were Test Administrator's Manuals/Scripts distributed?	
3. Testing Schedule	
a. How many days are being/were used for testing during the 14-day test window that was permitted by KDE this spring?	
b. How is the test schedule developed?	
c. What determines placement of students for testing? (e.g., alphabetical, homeroom, reading teachers)	
d. How are makeup sessions managed?	
<i>Please ask for a copy of the test schedule.</i>	 <i>If virtual, test schedule is collected electronically.</i>
4. Student Motivation	
Are Good Faith Effort Checklists used? If so, when and how are rewards distributed?	
<i>Please ask for copies of Good Faith Effort Checklists.</i>	 <i>If virtual, a Good Faith Effort Checklist is collected electronically.</i>


DURING TESTING	
1. Test Security	
a. Where are secure test materials stored before testing and between sessions?	
Secure test materials contain confidential test content or student data and could include test tickets, seal codes, paper test booklets, student response booklets, etc.	
<i>Ask to see the storage area.</i>	 <i>If virtual, ask for a description of the storage area.</i>

<p>b. What procedures are used to distribute and collect secure materials from test administrators and proctors?</p>	
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DURING TESTING	
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<p>c. Were documents such as test tickets, graph paper, blank paper, online notepad used during the test administration? If so, how is the destruction of used scratch paper handled?</p>	<ul style="list-style-type: none"> • Test tickets • Graph paper • Online notepad • Blank paper
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<p>d. What procedures are in place to prepare the test environment in alignment with the Administration Code (703 KAR 5:080)?</p>	<p>Posters:</p> <p>Overcrowding:</p> <p>Workstation Surface and Arrangements:</p>
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<p>2. Test Administration with Accommodations</p> <p>a. Who provides accommodations in your school? (volunteers, classified staff, certified staff, etc.)</p> <p><i>Ask to see at least 1 or 2 testing areas where accommodations were provided.</i></p>	<div style="text-align: center;">  </div> <p><i>If virtual, ask for a description of 1 or 2 testing areas where accommodations were provided.</i></p>
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<p>b. In what type of setting were accommodations provided to students with disabilities or English Learners?</p> <p>___ small group (4 and under)</p> <p>___ with regular education students</p> <p>___ one on one</p> <p>___ other (please specify)</p>	
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<p>c. Describe the process for making sure that IEPs, 504s, and PSPs are current and/or information is entered into Infinite Campus.</p>	
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<p>d. Describe the process used for letting proctors know the appropriate accommodations to provide for individual students.</p>	
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<p>e. How many students required a human reader/human scribe/hand-held calculator? How was the use of a hand-held calculator determined? Was the Calculator Policy used as guidance?</p>	<p># of Readers _____ # of Scribes # of Hand-held Calculators _____</p>
<p>f. Describe the experience of students and proctors for the following accommodated materials and the number of students utilizing these materials:</p>	

DURING TESTING	
<ul style="list-style-type: none"> • Braille • Large Print • Text Reader • VI Materials for Alternate KSA • Form Group Read Aloud 	

AFTER TESTING	
<p>Preparation for Return of Materials</p> <p>1. What procedures are in place for checking materials at the school after testing?</p>	
<p>2. What process is used to return school materials to the DAC?</p>	
<p>3. Who is responsible for submitting medical non-participation information in the Student Data Review and Roster (SDRR) application and managing paper nonparticipation forms?</p>	

<p>ALTERNATE KENTUCKY SUMMATIVE ASSESSMENT (AKSA)</p>
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<p><i>If the school does not have an Alternate Assessment Program, move to General Online Testing.</i></p> <p>Training</p> <p>1. What is the process to ensure all relevant training is completed in the OTS? When was this completed?</p>	
<p>2. What are the procedures for ensuring all staff are trained to administer the Alternate KSA?</p>	
<p>3. What is the protocol for activating teachers in the SRD for score entry and distributing testing materials?</p>	
<p>4. For any off-site tests given, how were materials managed? Please describe in detail the check-in and check-out policies.</p>	

2022 Alternate KSA Technical Analyses

Education Measurement Consulting, LLC

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Overview

This document is an analysis done on the 2021-2022 results of the Alternate KSA. The purpose is to provide technical information on the quality of the assessments. The analyses were repeated for each of the 23 tests in Reading, Mathematics, Science, Social Studies and Writing at the grades tested. The report is organized with sections for each of the tests. Each section is primarily tables and figures with the index numbers the same in each sections. For example, Table 1 is always the item statistics for the test.

For each test, cases were selected for completeness. The student must have answered at least 20 of the 30 items. Missing responses were coded as incorrect under the reasonable assumption that the student engaged with all the items. This allows for some analyses that require complete cases.

For the current year, operational scoring and reporting were done under Classical Test Theory (CTT) using raw scores. However in future years, we will use Item Response Theory (IRT/Rasch model) to scale, equate and report results. Therefore both CTT and IRT analyses will be reported here.

The analyses for each test are:

- **Table 1: Item Statistics**
The number of responses, mean or proportion of items answered correctly, the standard deviation and the standard error are reported. Chronbach's Alpha, which is a reliability measure based on the internal consistency of the observed raw score responses, is listed below the table.
- **Table 2: Raw Score Frequencies**
The observed test scores based on the sum of the correct responses are listed along with percent of all scores and the cumulative percent.
- **Table 3: Distractor Analysis** In this table, the item responses are listed by response (key) with the correct response indicated by an asterisk *. For each response the following statistics are displayed:
 - n: the number of students who selected the response
 - resP: the proportion of students who selected the response
 - pBis: the point biserial correlation between the student's response and the total score with this item removed This number should be highest for the correct response.
 - discrim The discrimination is the difference between upper (column 11) and lower (column 8). Like pBis, we want this number to be highest for the correct response.
 - lower, mid50, mid75, upper: the proportion of students in the first (lowest), second, third and fourth (highest) quartiles who selected the response
- **Figure 1: Anderson's L-R-test**
This is an IRT test of dimensionality. The students' item scores are randomly divided into two groups. The Rasch model is used to separately estimate the item difficulty (beta) parameters for each group. The Anderson Likelihood Ratio can be evaluated using the chi-square test to determine if the item parameters are the same for both groups. A chi-square value below .05 indicates that there may be more than one dimension underlying the data. The chart is a scatterplot of the item difficulties for group 1 on the x-axis and group 2 on the y-axis. The dotted red lines are smoothed confidence (95%) bands around the centerline. If the data are unidimensional, most of the items will be plotted between the confidence bands.
- **Table 4: Item Infit and Outfit Statistics**
Fit statistics indicate how well each item accurately or precisely fits the Rasch model. If all items fit the model reasonably well, we can say that the model is unidimensional. The table include columns for the item name (item), the number of students responding to the item (N), Outfit and Infit. The two fit statistics are the mean-squares of the raw fit value. Therefore we expect most items to have values around 1. Mean-square fit below 1 indicates that the item may fit the model to well. Such item do not usually hurt the measurement model, but they also don't add much information. Items with values above 1 do not fit the model well and values above 2 distort or degrade the measurement model. We

look for values between 0.5 and 1.5. The outfit statistic is more sensitive to items with difficulties far away from the students' ability while infit is more sensitive when item difficulties and student ability are close.

- **Table 5: Summary of Fit Statistics**
This table displays the mean and standard deviation of the fit statistics across all items. Again we look for means around 1.
- **Table 6: Raw to Theta Table**
The Rasch model produces a single ability estimate for each raw score. In other words, the raw score is a sufficient statistic. Therefore this table can be used to convert a raw score on the test to a scale score. "theta" is the ability estimate in logit units and it is centered on zero. An indicator of assessment quality is an adequate range of thetas for the observed raw scores. The desired range is usually around 4 logits (-2 to 2) or more. The theta scale will be linearly transformed to a more readable metric (e.g., 100-300) for reporting purposes. The Standard Error (SE) of the estimate is another indicator of assessment quality. We look for low error in the range of scores that covers most student's ability (see Figures 2 and 3).
- **Figure 2: Student Ability - Item Difficulty Wright Map**
The Rasch model estimates student ability and item difficulty on the same scale (logits). Therefore we can easily compare the match between the observed estimate ranges. The Wright Map in this figure displays the item difficulties as a scatterplot in the right pane. The x-axis lists the item names and the y-axis is the logit scale. The students' ability estimates are displayed in the left pane as a histogram using the same logit scale on the y-axis. The desired match is seen when most of the student estimates are within the range of item estimates. A test can estimate scores beyond the range of item difficulties, but the error will be greater at the extreme scores.
- **Figure 3: Conditional Standard Error of Measure** This is a display of the uncertainty or error in student measures across a wide range of abilities (-4 to 4 on the x-axis). Uncertainty (CSEM) is displayed on the y-axis. The range of abilities observed in the 2021-2022 results is shown as a green bar just above the x-axis. We want lower CSEM across the range of observed scores particularly in the middle of the range where most students' scores would occur.
- **Table 7: Reliability**
Reliability is an important indicator of assessment quality. It can be thought of as a measure of how likely an observed ability estimate is to be the student's actual ability or the score that the student would obtain if the same test were to be administered again under the same conditions. For this table, reliability is calculated as $1 - (s/v)$ where s is the standard error squared and v is the variance of the theta. (The values of theta and standard error are the ones displayed in Table 6.) The reliabilities for all students tested and for subgroups with more than 10 students. We look for reliabilities of around .7 or higher, although reliability estimates of small groups are more uncertain and we may find unusually high or low values by chance.
- **Figures 4, 5 & 6: Differential Item (DIF) and Test (DTF) Function**
DIF was used as an indicator of individual item quality during item development and field testing. For the results of operational testing, the accumulated DIF values are an indicator of bias in the ability estimates (DTF). We can again use the Anderson Likelihood Ratio to test for bias. Here the students are separated into two groups based on a demographic category of interest. The item difficulty (beta) parameters are estimated separately for each group. Figures 4, 5 and 6 display results for gender, economic disadvantage and the ethnic category dichotomized to White and non-White due to the low counts on non-White categories. A Chi-square test with a p-value below .05 indicates the possibility of bias. The chart is a scatterplot of the items with the beta estimates of one group on the x-axis and estimates of the other group on the y-axis. Items located outside the red confidence bands indicate possible bias and will be reviewed for editing or removal.
- **Tables 8, 9 & 10: Classification Accuracy and Decision Consistency**
These tables address the assignment of student scores to Performance Level Description (PLD) cat-

egories. Kentucky defines four PLDs: Novice, Apprentice, Proficient and Distinguished. Since the state and federal accountability systems rely on percent proficient as the main indicator of school and district quality, Tables 8 and 9 test proficiency which is defined by a student score above the Apprentice-Proficient cut point. We use the well-established Livingston and Lewis methods for all calculations. They define Accuracy as, “The extent to which the actual classifications of test takers (on the basis of their single-form scores) agree with those that would be made on the basis of their true scores, if their true scores could somehow be known.” Consistency is defined as, “The agreement between the classifications based on two non-overlapping, equally difficult forms of the test.”

- Table 8: Proficiency Classification Accuracy
The Confusion Matrix charts the proportions of True and False scores against Positive (Proficient) and Negative (not Proficient) classifications. True Scores are defined as, “The expected (average) value of the test-score, averaged over those factors classified as measurement error.” The Total of the True row (True Positive plus True Negative) is the test’s Classification Accuracy.
- Table 9: Proficiency Decision Consistency The Contingency Matrix charts the proportions of expected Proficient and not Proficient classifications on a hypothetical retest given the test’s reliability and the observed classifications. The Proportion of Consistent Classifications is given by i,i plus j,j . Cohen’s Kappa is a statistical test of consistency. We look for values around .40 or above.
- Table 10: NAPD Decision Consistency
The Livingston and Lewis methods have been extended to classification to more than two categories. The table has a row for each PLD. The columns are:
 - * TP: True Positive
 - * FP: False Positive
 - * TN: True Negative
 - * FN: False Negative
 - * Sensitivity: Correct classification to the PLD $TP/(TP + FN)$
 - * Specificity: Correct classification of not in the PLD $TN/(TN/FP)$
 - * Accuracy: Correct classification $(TP + TN)/(TP + TN + FN + FP)$
 - * ρ : Proportion of consistent classifications
 - * ρ_c : Proportion of consistent classifications by chance
 - * Kappa: $\kappa = (\rho - \rho_c)/(1 - \rho_c)$

Note that for the Apprentice and Proficient categories, misclassification can include assignment to both higher and lower categories.

- Figures 7, 8, 9 & 10 Learner Characteristic

Evidence that a test is valid is the observation of a direct relationship between the test scores and a separate measure of the student’s ability. KDE requires teachers to fill out the *Learner Characteristic Inventory* (https://education.ky.gov/specialed/excep/instresources/Documents/KY_Alternate_Assessment_Participation_Guidelines_Documentation_Form.pdf - pp 8-10) as part of the process to determine if a student is eligible to participate in the Alternate KSA Assessment. Four of the learner characteristic descriptions that teachers make are expected to be related to the scores in Reading, Math and Science:

- Expressive Communication (Figure 7)
 - * Uses symbolic language to communicate: Student uses verbal or written words, signs, Braille, or language-based augmentative systems to request, initiate, and respond to questions, describe things or events, and express refusal.
 - * Uses intentional communication, but not at a symbolic language level: Student uses understandable communication through such modes as gestures, pictures, objects/textures, points, etc., to clearly express a variety of intentions.
 - * Student communicates primarily through cries, facial expressions, change in muscle tone, etc., but no clear use of objects/textures, regularized gestures, pictures, signs, etc., to communicate.

- Receptive Language (Figure 8)
 - * Independently follows 1-2 step directions presented through words (e.g. words may be spoken, signed, printed, or any combination) and does NOT need additional cues.
 - * Requires additional cues (e.g., gestures, pictures, objects, or demonstrations/models) to follow 1-2 step directions.
 - * Alerts to sensory input from another person (auditory, visual, touch, movement) BUT requires actual physical assistance to follow simple directions.
 - * Uncertain response to sensory stimuli (e.g., sound/voice; sight/gesture; touch; movement; smell).
- Reading (Figure 9)
 - * Reads fluently with critical understanding in print or Braille (e.g., to differentiate fact/opinion, point of view, emotional response, etc.).
 - * Reads fluently with basic (literal) understanding from paragraphs/short passages with narrative/informational texts in print or Braille.
 - * Reads basic sight words, simple sentences, directions, bullets, and/or lists in print or Braille.
 - * Aware of text/Braille, follows directionality, makes letter distinctions, or tells a story from the pictures that is not linked to the text.
 - * No observable awareness of print or Braille.
- Mathematics (Figure 10)
 - * Applies computational procedures to solve real-life or routine word problems from a variety of contexts.
 - * Does computational procedures with or without a calculator.
 - * Counts with 1:1 correspondence to at least 10, and/or makes numbered sets of items. Counts by rote to 5.
 - * No observable awareness or use of numbers.

In the figures, the distribution of scores for each category are represented by a box plot. The 25th percentile, median and 75th percentile are indicated by the bottom, mid-line and top of the box. The width of the box indicates the relative number of cases in the category with wider boxes indicating more students. The characteristics on the the x-axis are ordered by increasing ability. Therefore we expect the distributions of scores to go up from left to right. The horizontal lines at the top of the figure display the p-value of the Wilcoxon Test of whether the distributions of scores for each pair of categories are statistically different.

Reading Grade 10

Table 1: Reading 10 Item Statistics

	Item	n	mean	sd	se
A1	1	523	0.482	0.500	0.022
A2	2	523	0.526	0.500	0.022
A3	3	523	0.403	0.491	0.021
A4	4	523	0.298	0.458	0.020
A5	5	523	0.402	0.491	0.021
B1	6	523	0.499	0.500	0.022
B2	7	523	0.551	0.498	0.022
B3	8	523	0.398	0.490	0.021
B4	9	523	0.377	0.485	0.021
B5	10	523	0.300	0.459	0.020
C1	11	523	0.572	0.495	0.022
C2	12	523	0.577	0.494	0.022
C3	13	523	0.507	0.500	0.022
C4	14	523	0.543	0.499	0.022
C5	15	523	0.526	0.500	0.022
D1	16	523	0.553	0.498	0.022
D2	17	523	0.426	0.495	0.022
D3	18	523	0.453	0.498	0.022
D4	19	523	0.417	0.494	0.022
D5	20	523	0.480	0.500	0.022
E1	21	523	0.453	0.498	0.022
E2	22	523	0.530	0.500	0.022
E3	23	523	0.505	0.500	0.022
E4	24	523	0.421	0.494	0.022
E5	25	523	0.377	0.485	0.021
F1	26	523	0.478	0.500	0.022
F2	27	523	0.514	0.500	0.022
F3	28	523	0.388	0.488	0.021
F4	29	523	0.491	0.500	0.022
F5	30	523	0.484	0.500	0.022

Chronbach's Alpha: 0.7285

Table 2: Reading 10 Raw Score Frequencies

Score	freq	pct	pct_cum
4	1	0.191	0.191
5	4	0.765	0.956
6	7	1.338	2.294
7	11	2.103	4.398
8	23	4.398	8.795
9	59	11.281	20.076
10	49	9.369	29.446
11	49	9.369	38.815
12	45	8.604	47.419
13	38	7.266	54.685
14	38	7.266	61.950
15	28	5.354	67.304
16	32	6.119	73.423
17	11	2.103	75.526
18	17	3.250	78.776
19	25	4.780	83.556
20	21	4.015	87.572
21	18	3.442	91.013
22	10	1.912	92.925
23	10	1.912	94.837
24	10	1.912	96.750
25	6	1.147	97.897
26	5	0.956	98.853
27	5	0.956	99.809
29	1	0.191	100.000

Table 3: Reading 10 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.080	-0.006	0.006	0.008	0.000	0.000
A1		a	183	0.350	-0.139	-0.052	0.396	0.371	0.266	0.344
A1		b	86	0.164	-0.228	-0.132	0.195	0.235	0.156	0.062
A1	*	c	252	0.482	0.067	0.191	0.403	0.386	0.578	0.594
A2			1	0.002	-0.026	0.000	0.000	0.008	0.000	0.000
A2	*	a	275	0.526	0.290	0.455	0.357	0.379	0.606	0.812
A2		b	115	0.220	-0.298	-0.192	0.286	0.311	0.165	0.094
A2		c	132	0.252	-0.306	-0.263	0.357	0.303	0.229	0.094
A3			2	0.004	-0.043	0.000	0.000	0.015	0.000	0.000
A3		a	159	0.304	-0.260	-0.218	0.390	0.295	0.349	0.172
A3		b	151	0.289	-0.210	-0.114	0.325	0.303	0.312	0.211
A3	*	c	211	0.403	0.184	0.331	0.286	0.386	0.339	0.617
A4			1	0.002	-0.052	-0.006	0.006	0.000	0.000	0.000
A4		a	159	0.304	-0.210	-0.129	0.325	0.371	0.321	0.195
A4	*	b	156	0.298	0.175	0.306	0.162	0.311	0.275	0.469
A4		c	207	0.396	-0.223	-0.171	0.506	0.318	0.404	0.336
A5			5	0.010	-0.018	-0.005	0.013	0.000	0.018	0.008
A5	*	a	210	0.402	0.281	0.476	0.188	0.364	0.440	0.664
A5		b	154	0.294	-0.204	-0.110	0.305	0.364	0.312	0.195
A5		c	154	0.294	-0.365	-0.361	0.494	0.273	0.229	0.133
B1			1	0.002	-0.052	-0.006	0.006	0.000	0.000	0.000
B1		a	97	0.185	-0.324	-0.253	0.292	0.258	0.119	0.039
B1	*	b	261	0.499	0.387	0.626	0.234	0.386	0.587	0.859
B1		c	164	0.314	-0.372	-0.366	0.468	0.356	0.294	0.102
B2			1	0.002	-0.087	-0.006	0.006	0.000	0.000	0.000
B2	*	a	288	0.551	0.301	0.475	0.338	0.447	0.670	0.812
B2		b	139	0.266	-0.342	-0.270	0.364	0.386	0.183	0.094
B2		c	95	0.182	-0.267	-0.198	0.292	0.167	0.147	0.094
B3			1	0.002	-0.061	-0.006	0.006	0.000	0.000	0.000
B3		a	143	0.273	-0.208	-0.072	0.299	0.341	0.211	0.227
B3	*	b	208	0.398	0.234	0.387	0.214	0.379	0.440	0.602
B3		c	171	0.327	-0.307	-0.309	0.481	0.280	0.349	0.172
B4			1	0.002	-0.043	-0.006	0.006	0.000	0.000	0.000
B4		a	111	0.212	-0.233	-0.156	0.273	0.273	0.165	0.117
B4		b	214	0.409	-0.124	-0.028	0.403	0.364	0.514	0.375
B4	*	c	197	0.377	0.063	0.190	0.318	0.364	0.321	0.508
B5			4	0.008	-0.069	-0.013	0.013	0.015	0.000	0.000
B5	*	a	157	0.300	0.102	0.235	0.195	0.311	0.284	0.430
B5		b	148	0.283	-0.244	-0.159	0.331	0.341	0.275	0.172
B5		c	214	0.409	-0.125	-0.063	0.461	0.333	0.440	0.398
C1			1	0.002	-0.035	0.000	0.000	0.008	0.000	0.000
C1		a	89	0.170	-0.290	-0.199	0.253	0.242	0.101	0.055
C1	*	b	299	0.572	0.341	0.543	0.325	0.455	0.716	0.867
C1		c	134	0.256	-0.370	-0.344	0.422	0.295	0.183	0.078
C2			1	0.002	-0.008	0.000	0.000	0.000	0.009	0.000
C2		a	110	0.210	-0.362	-0.314	0.338	0.303	0.138	0.023
C2	*	b	302	0.577	0.373	0.585	0.305	0.477	0.716	0.891
C2		c	110	0.210	-0.338	-0.271	0.357	0.220	0.138	0.086
C3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C3	*	a	265	0.507	0.309	0.536	0.292	0.364	0.606	0.828

Table 3: Reading 10 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	127	0.243	-0.297	-0.236	0.299	0.348	0.248	0.062
C3		c	131	0.250	-0.324	-0.300	0.409	0.288	0.147	0.109
C4			2	0.004	-0.074	-0.013	0.013	0.000	0.000	0.000
C4		a	134	0.256	-0.192	-0.076	0.279	0.348	0.174	0.203
C4		b	103	0.197	-0.282	-0.200	0.286	0.258	0.128	0.086
C4	*	c	284	0.543	0.170	0.289	0.422	0.394	0.697	0.711
C5			3	0.006	-0.116	-0.019	0.019	0.000	0.000	0.000
C5		a	95	0.182	-0.261	-0.231	0.286	0.189	0.174	0.055
C5	*	b	275	0.526	0.415	0.689	0.201	0.455	0.642	0.891
C5		c	150	0.287	-0.446	-0.439	0.494	0.356	0.183	0.055
D1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D1		a	120	0.229	-0.319	-0.276	0.331	0.288	0.220	0.055
D1	*	b	289	0.553	0.315	0.505	0.331	0.470	0.633	0.836
D1		c	114	0.218	-0.315	-0.228	0.338	0.242	0.147	0.109
D2			2	0.004	-0.080	-0.006	0.006	0.008	0.000	0.000
D2		a	130	0.249	-0.193	-0.083	0.247	0.311	0.275	0.164
D2		b	168	0.321	-0.285	-0.244	0.416	0.341	0.339	0.172
D2	*	c	223	0.426	0.195	0.333	0.331	0.341	0.385	0.664
D3			4	0.008	-0.003	0.001	0.006	0.008	0.009	0.008
D3		a	112	0.214	-0.205	-0.153	0.286	0.220	0.202	0.133
D3	*	b	237	0.453	0.201	0.411	0.253	0.462	0.477	0.664
D3		c	170	0.325	-0.295	-0.259	0.455	0.311	0.312	0.195
D4			1	0.002	-0.035	0.000	0.000	0.008	0.000	0.000
D4	*	a	218	0.417	0.267	0.433	0.247	0.356	0.422	0.680
D4		b	142	0.272	-0.173	-0.079	0.305	0.273	0.275	0.227
D4		c	162	0.310	-0.378	-0.354	0.448	0.364	0.303	0.094
D5			5	0.010	-0.058	0.003	0.013	0.008	0.000	0.016
D5		a	120	0.229	-0.212	-0.132	0.273	0.273	0.220	0.141
D5		b	147	0.281	-0.211	-0.099	0.318	0.356	0.211	0.219
D5	*	c	251	0.480	0.130	0.229	0.396	0.364	0.569	0.625
E1			3	0.006	-0.034	0.001	0.006	0.008	0.000	0.008
E1		a	114	0.218	-0.345	-0.296	0.351	0.242	0.193	0.055
E1	*	b	237	0.453	0.315	0.533	0.201	0.462	0.468	0.734
E1		c	169	0.323	-0.277	-0.238	0.442	0.288	0.339	0.203
E2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E2	*	a	277	0.530	0.310	0.522	0.299	0.470	0.587	0.820
E2		b	124	0.237	-0.282	-0.224	0.318	0.288	0.229	0.094
E2		c	122	0.233	-0.344	-0.297	0.383	0.242	0.183	0.086
E3			1	0.002	-0.017	0.000	0.000	0.008	0.000	0.000
E3		a	132	0.252	-0.227	-0.144	0.331	0.280	0.183	0.188
E3		b	126	0.241	-0.215	-0.115	0.279	0.280	0.229	0.164
E3	*	c	264	0.505	0.140	0.259	0.390	0.432	0.587	0.648
E4			3	0.006	-0.085	-0.006	0.006	0.015	0.000	0.000
E4	*	a	220	0.421	0.304	0.482	0.221	0.318	0.495	0.703
E4		b	160	0.306	-0.226	-0.144	0.331	0.417	0.275	0.188
E4		c	140	0.268	-0.362	-0.332	0.442	0.250	0.229	0.109
E5			3	0.006	0.011	0.008	0.000	0.008	0.009	0.008
E5		a	139	0.266	-0.255	-0.185	0.357	0.288	0.220	0.172
E5	*	b	197	0.377	0.217	0.382	0.188	0.356	0.440	0.570
E5		c	184	0.352	-0.251	-0.205	0.455	0.348	0.330	0.250

Table 3: Reading 10 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F1	*	a	250	0.478	0.229	0.394	0.325	0.462	0.431	0.719
F1		b	127	0.243	-0.246	-0.140	0.273	0.280	0.284	0.133
F1		c	146	0.279	-0.287	-0.254	0.403	0.258	0.284	0.148
F2			1	0.002	-0.070	-0.006	0.006	0.000	0.000	0.000
F2		a	98	0.187	-0.243	-0.178	0.240	0.235	0.202	0.062
F2		b	155	0.296	-0.237	-0.135	0.338	0.326	0.312	0.203
F2	*	c	269	0.514	0.177	0.319	0.416	0.439	0.486	0.734
F3			1	0.002	-0.008	0.000	0.000	0.000	0.009	0.000
F3		a	119	0.228	-0.202	-0.115	0.240	0.280	0.266	0.125
F3	*	b	203	0.388	0.271	0.419	0.253	0.318	0.330	0.672
F3		c	200	0.382	-0.346	-0.303	0.506	0.402	0.394	0.203
F4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F4	*	a	257	0.491	0.352	0.549	0.279	0.409	0.495	0.828
F4		b	121	0.231	-0.285	-0.201	0.279	0.311	0.248	0.078
F4		c	145	0.277	-0.374	-0.348	0.442	0.280	0.257	0.094
F5			2	0.004	-0.055	-0.006	0.006	0.008	0.000	0.000
F5		a	113	0.216	-0.236	-0.174	0.299	0.242	0.174	0.125
F5		b	155	0.296	-0.259	-0.179	0.312	0.348	0.404	0.133
F5	*	c	253	0.484	0.196	0.359	0.383	0.402	0.422	0.742

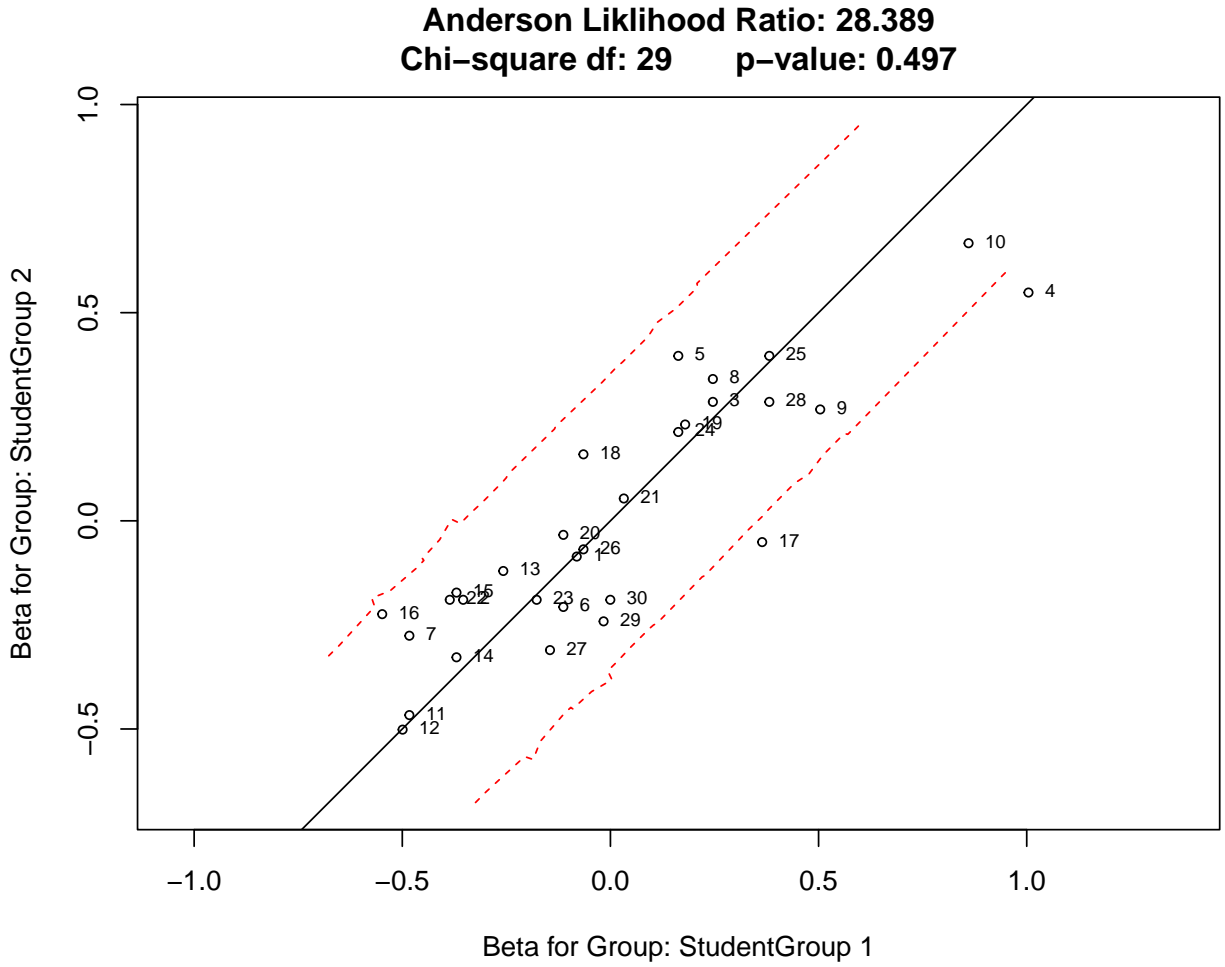


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Reading 10 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	523	1.1728	1.1151
A2	523	0.9471	0.9559
A3	523	1.0423	1.0345
A4	523	1.0365	1.0361
A5	523	0.9611	0.9706
B1	523	0.8687	0.8934
B2	523	0.9234	0.9456
B3	523	1.0076	1.0028
B4	523	1.1451	1.1243
B5	523	1.1124	1.0913
C1	523	0.8985	0.9148
C2	523	0.8628	0.8941
C3	523	0.9462	0.9448
C4	523	1.0452	1.0359
C5	523	0.8577	0.8702
D1	523	0.9154	0.9374
D2	523	1.0293	1.0272
D3	523	1.0220	1.0241
D4	523	0.9701	0.9784
D5	523	1.0766	1.0717
E1	523	0.9258	0.9444
E2	523	0.9345	0.9411
E3	523	1.0729	1.0612
E4	523	0.9498	0.9539
E5	523	1.0076	1.0169
F1	523	0.9954	1.0028
F2	523	1.0363	1.0364
F3	523	0.9689	0.9732
F4	523	0.8914	0.9177
F5	523	1.0263	1.0258

Table 5: Reading 10 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9883	0.0814
Infit	Infit	0.9914	0.0662

Table 6: Reading 10 Raw to Theta Table

Raw Score	theta	SE
4	-1.6603	0.5217
5	-1.4179	0.4815
6	-1.2076	0.4523
7	-1.0196	0.4303
8	-0.8476	0.4134
9	-0.6876	0.4003
10	-0.5365	0.3901
11	-0.3921	0.3824
12	-0.2526	0.3768
13	-0.1166	0.3729
14	0.0173	0.3706
15	0.1501	0.3699
16	0.2830	0.3708
17	0.4170	0.3731
18	0.5532	0.3771
19	0.6931	0.3829
20	0.8379	0.3907
21	0.9896	0.4009
22	1.1502	0.4141
23	1.3229	0.4311
24	1.5118	0.4532
25	1.7231	0.4825
26	1.9665	0.5227
27	2.2592	0.5812
29	3.1857	0.8548

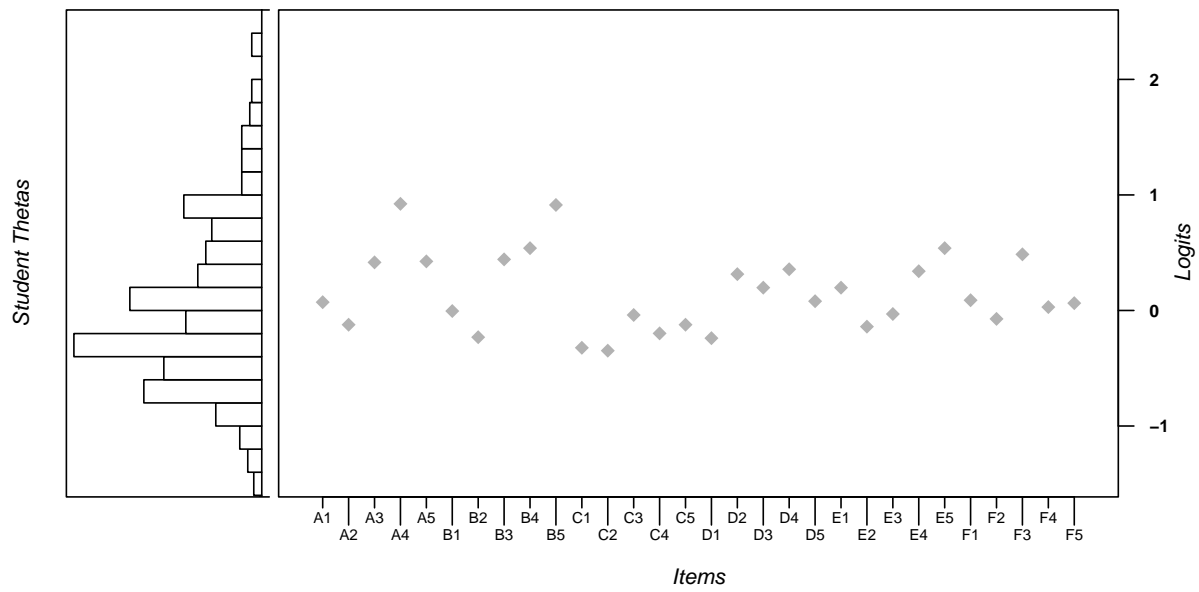


Figure 2: Student Ability - Item Difficulty Wright Map

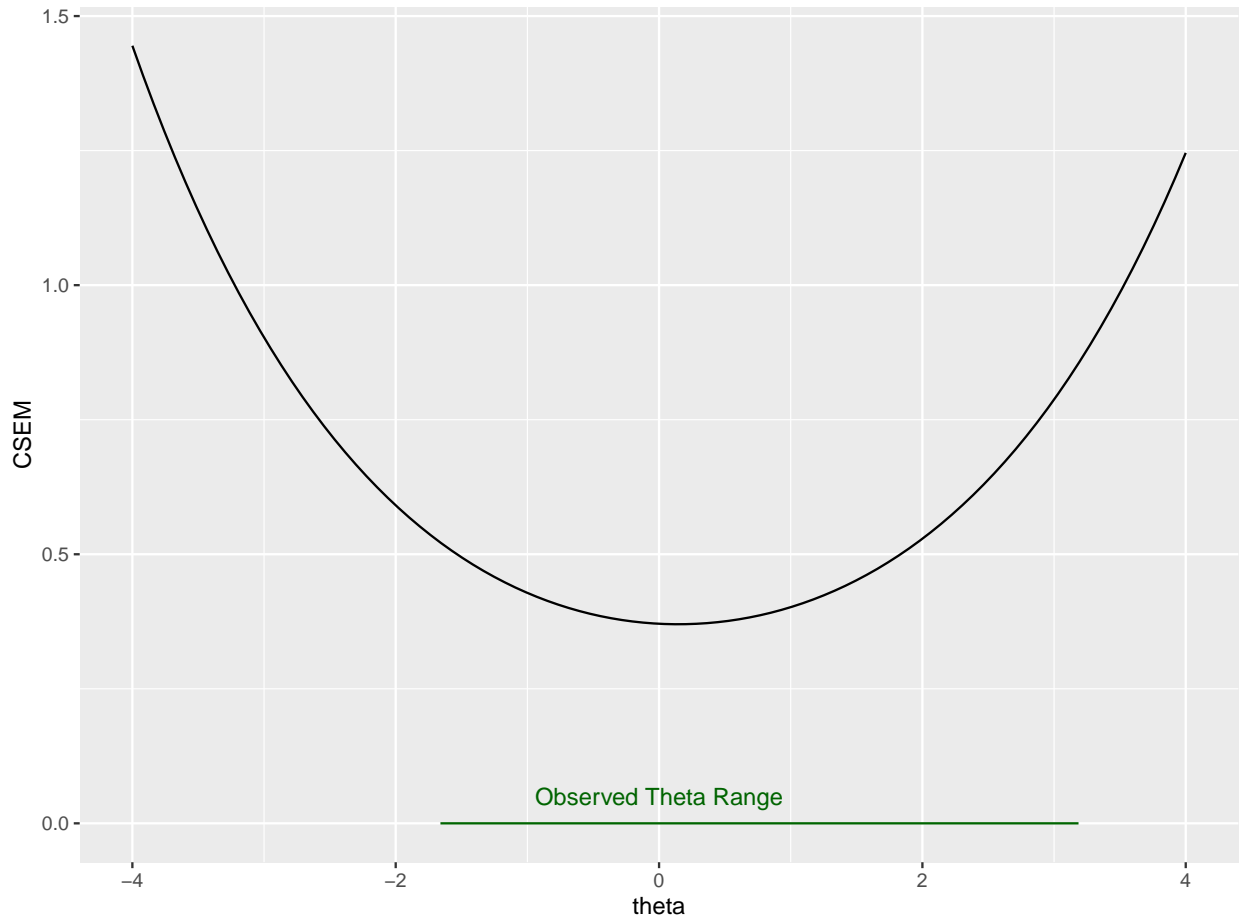


Figure 3: Reading 10 Conditional Standard Error of Measure

Table 7: Reading 10 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		523	0.71
Ethnic		11	0.28
Ethnic	Black	67	0.67
Ethnic	Hispanic	34	0.73
Ethnic	Other	11	0.84
Ethnic	White	395	0.71
Disadvantaged	No	390	0.72
Disadvantaged	Yes	133	0.68
LEP	No	498	0.71
LEP	Yes	25	0.76
Gender	Female	183	0.65
Gender	Male	340	0.73
Homeless	No	509	0.70
Homeless	Yes	14	0.78

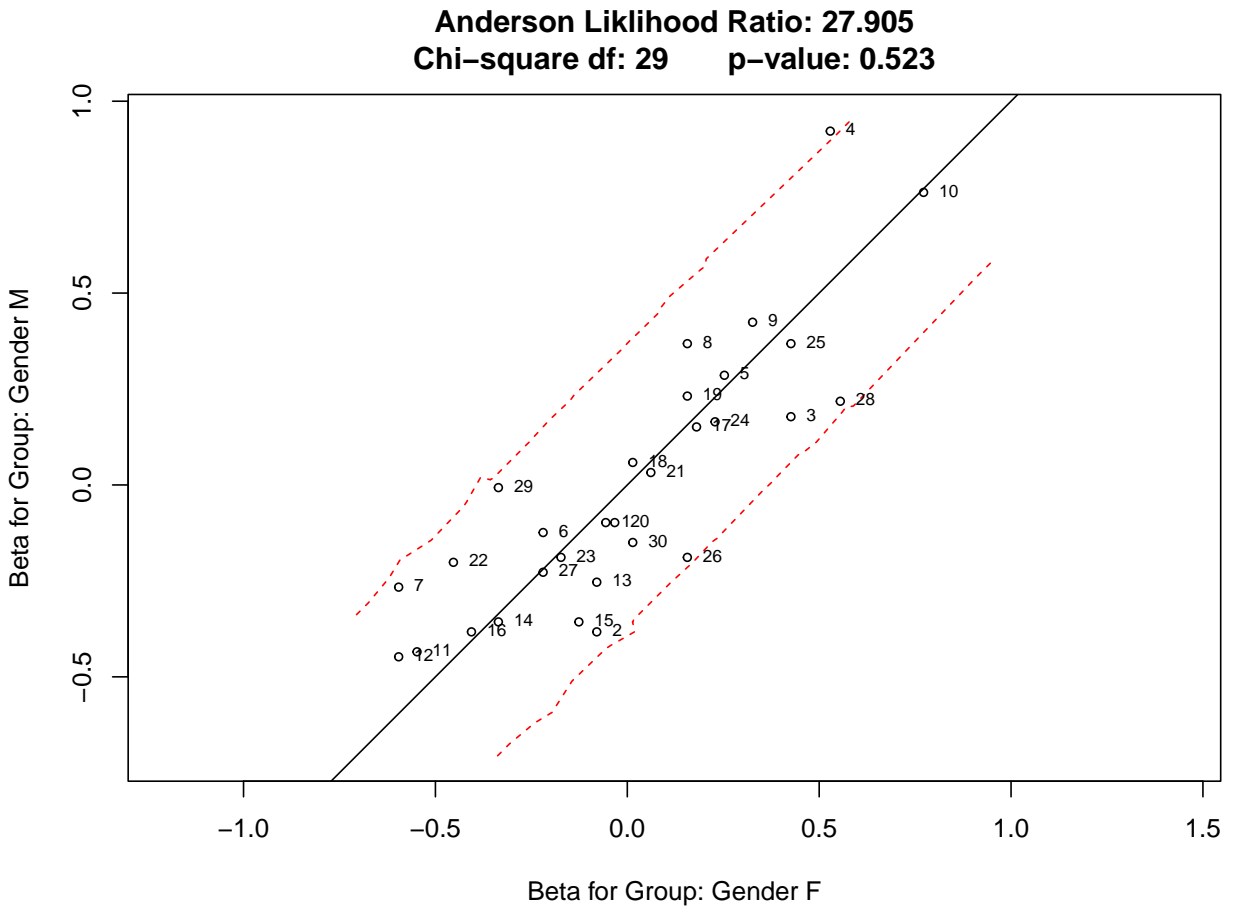


Figure 4: Reading 10 Differential Item (DIF) and Test (DTF) Function for Gender

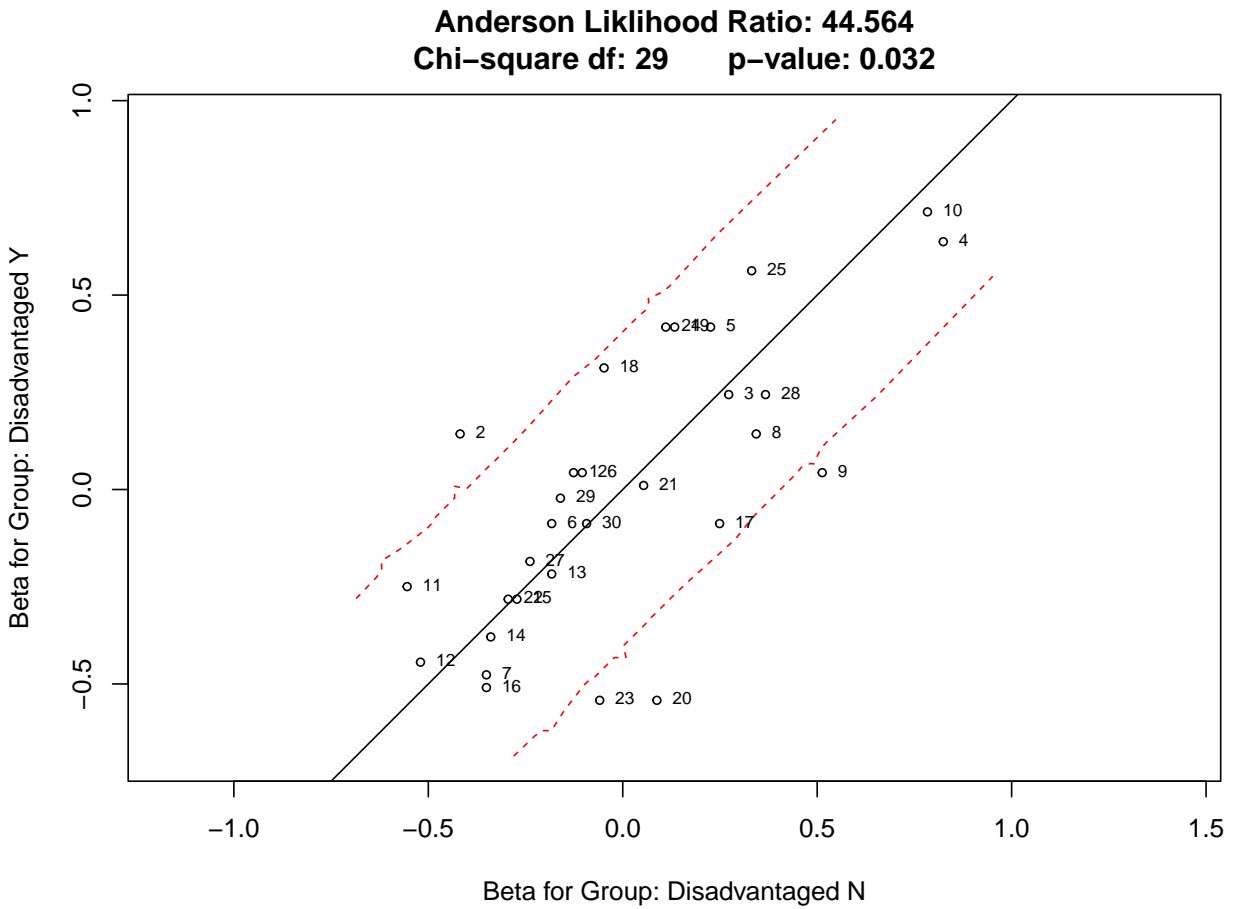


Figure 5: Reading 10 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

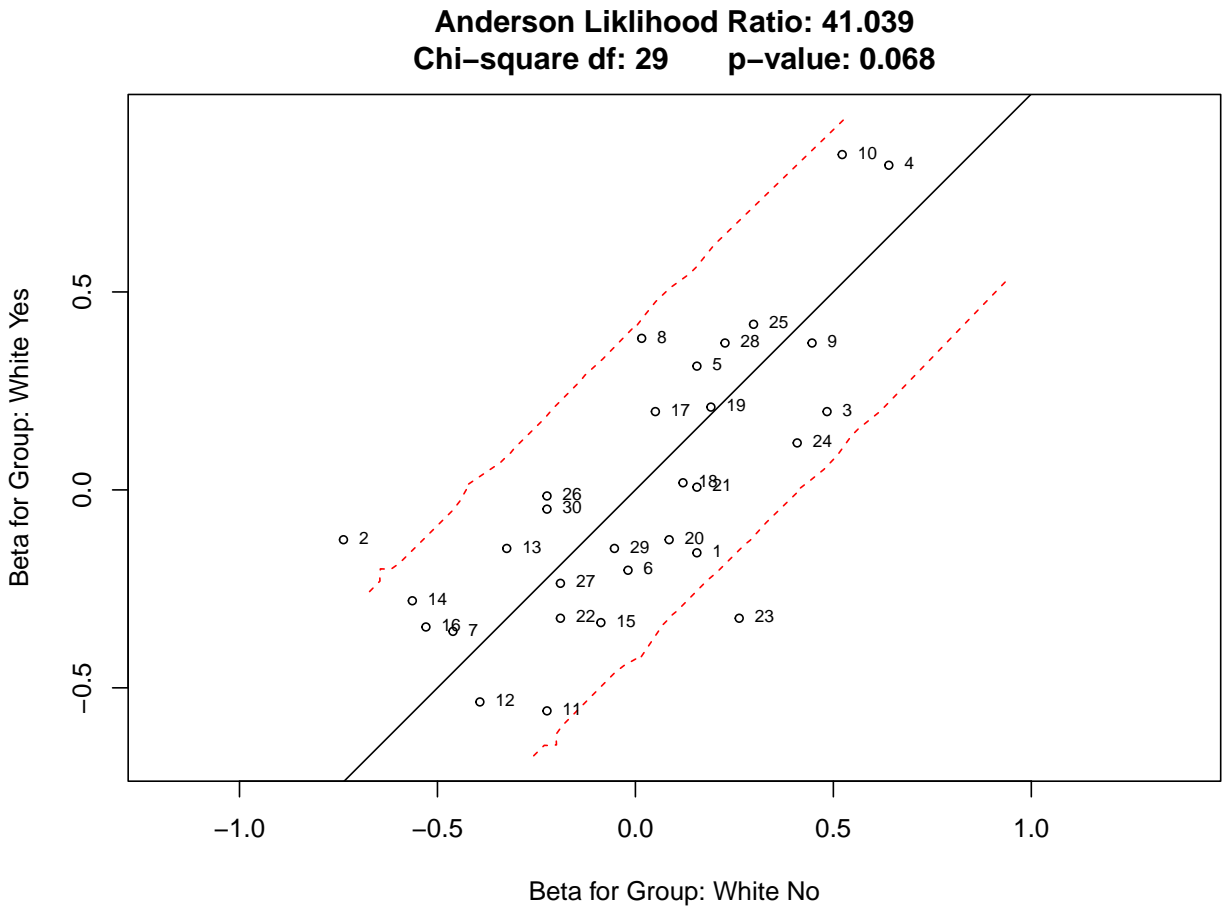


Figure 6: Reading 10 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.7381	0.1382	0.8764
False	0.0404	0.0832	0.1236
Total	0.7785	0.2215	1.0000

Accuracy = 0.8764

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.6536	0.1249
j	0.0661	0.1553

Proportion of Consistent Classifications = 0.809
Cohen's Kappa = 0.4941

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.1272	0.0540	0.7575	0.0614	0.6745	0.9335	0.8847	0.1036	0.0328	0.0732
Apprentice	0.4957	0.1017	0.2655	0.1371	0.7833	0.7230	0.7612	0.4355	0.3569	0.1222
Proficient	0.1313	0.0834	0.7387	0.0466	0.7380	0.8986	0.8700	0.1235	0.0461	0.0812
Distinguished	0.0005	0.0063	0.9930	0.0002	0.7220	0.9937	0.9935	0.0015	0.0000	0.0015

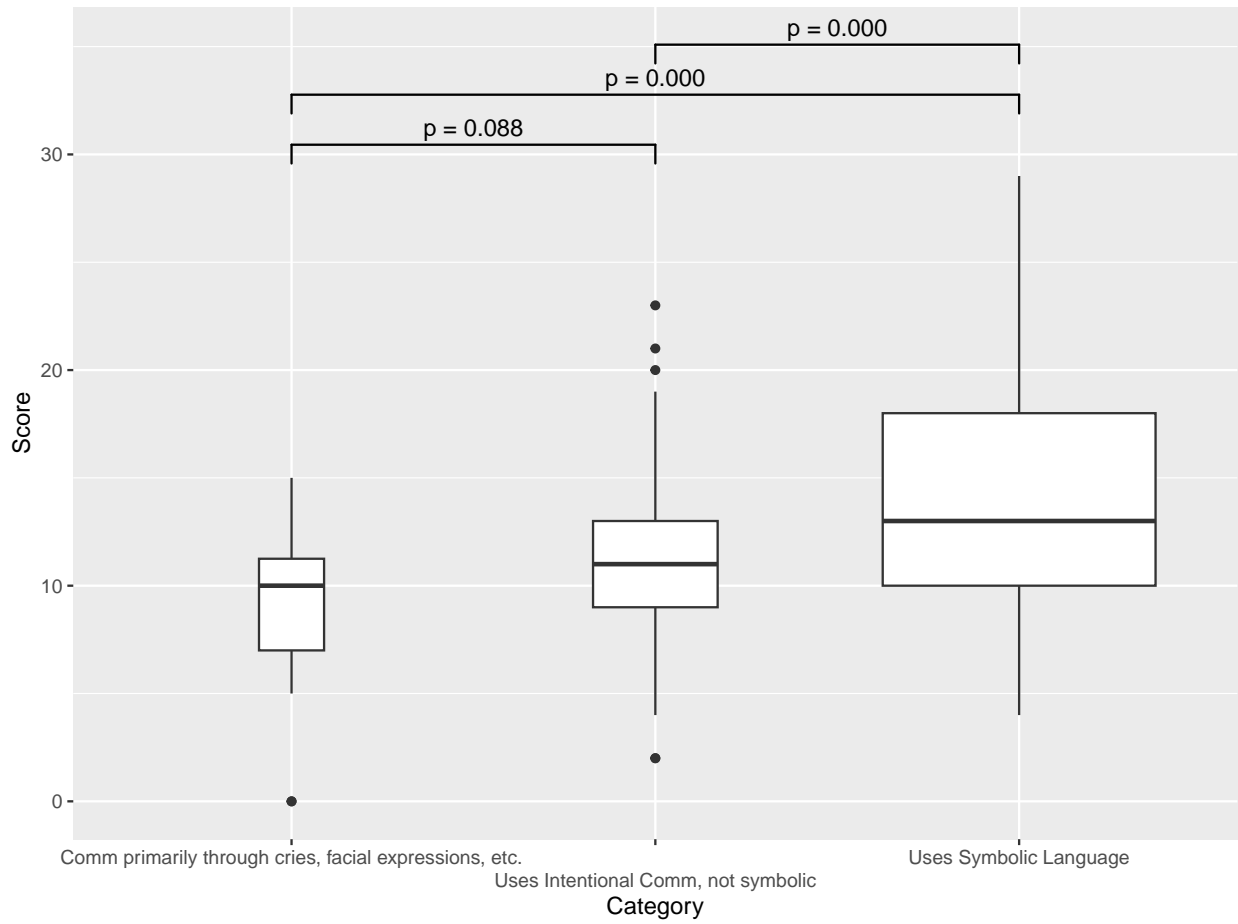


Figure 7: Reading 10 Learner Characteristic: Expressive Communication

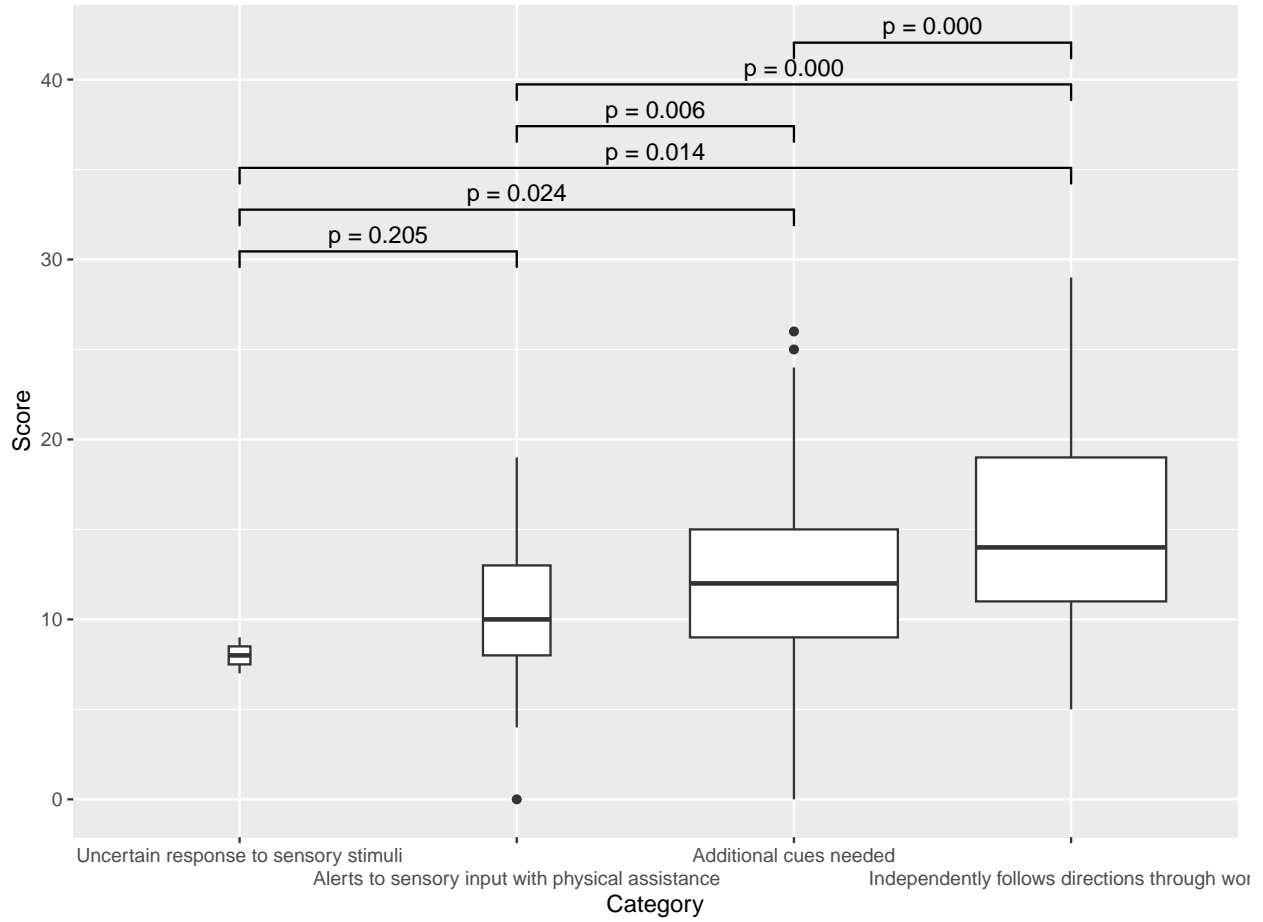


Figure 8: Reading 10 Learner Characteristic: Receptive Language

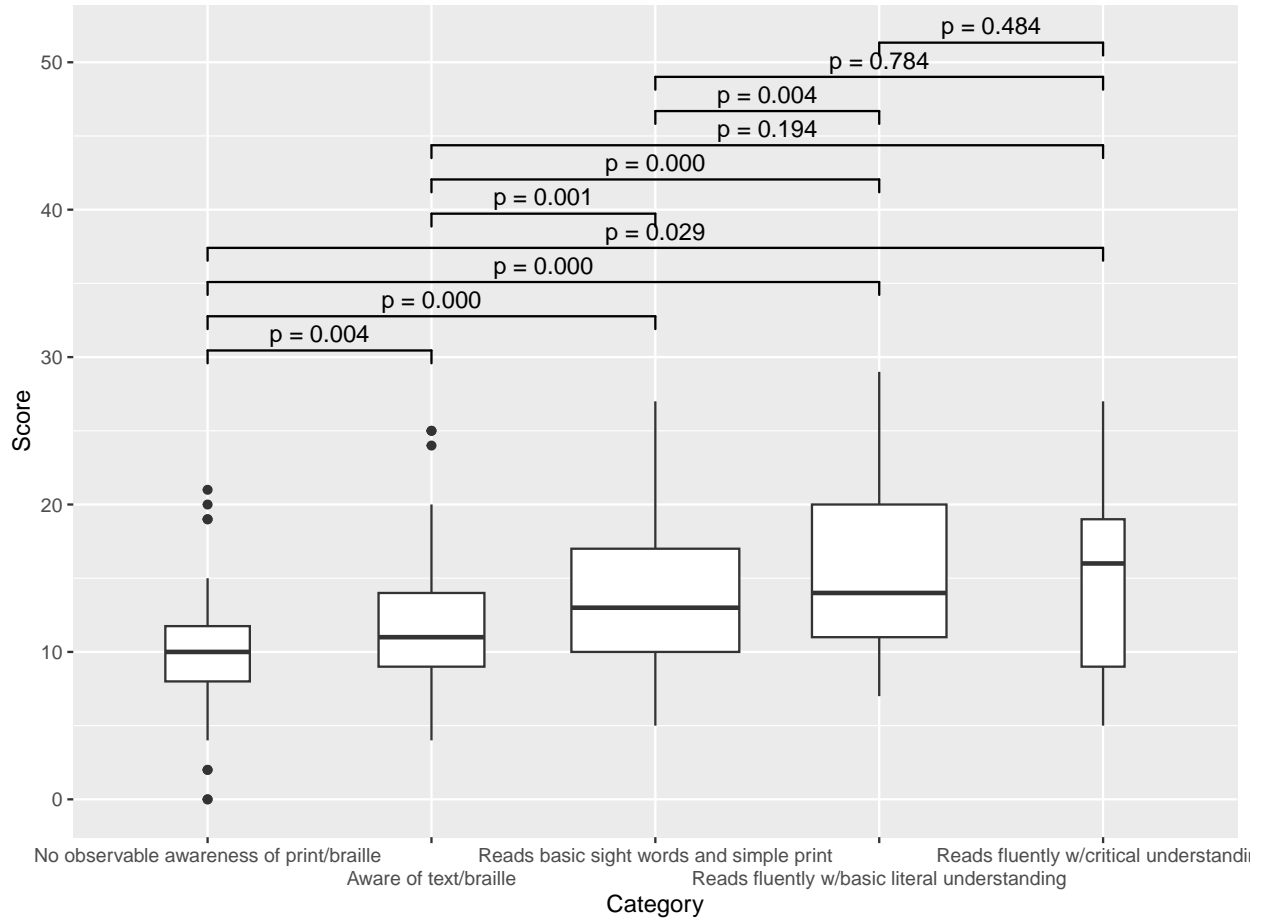


Figure 9: Reading 10 Learner Characteristic: Reading

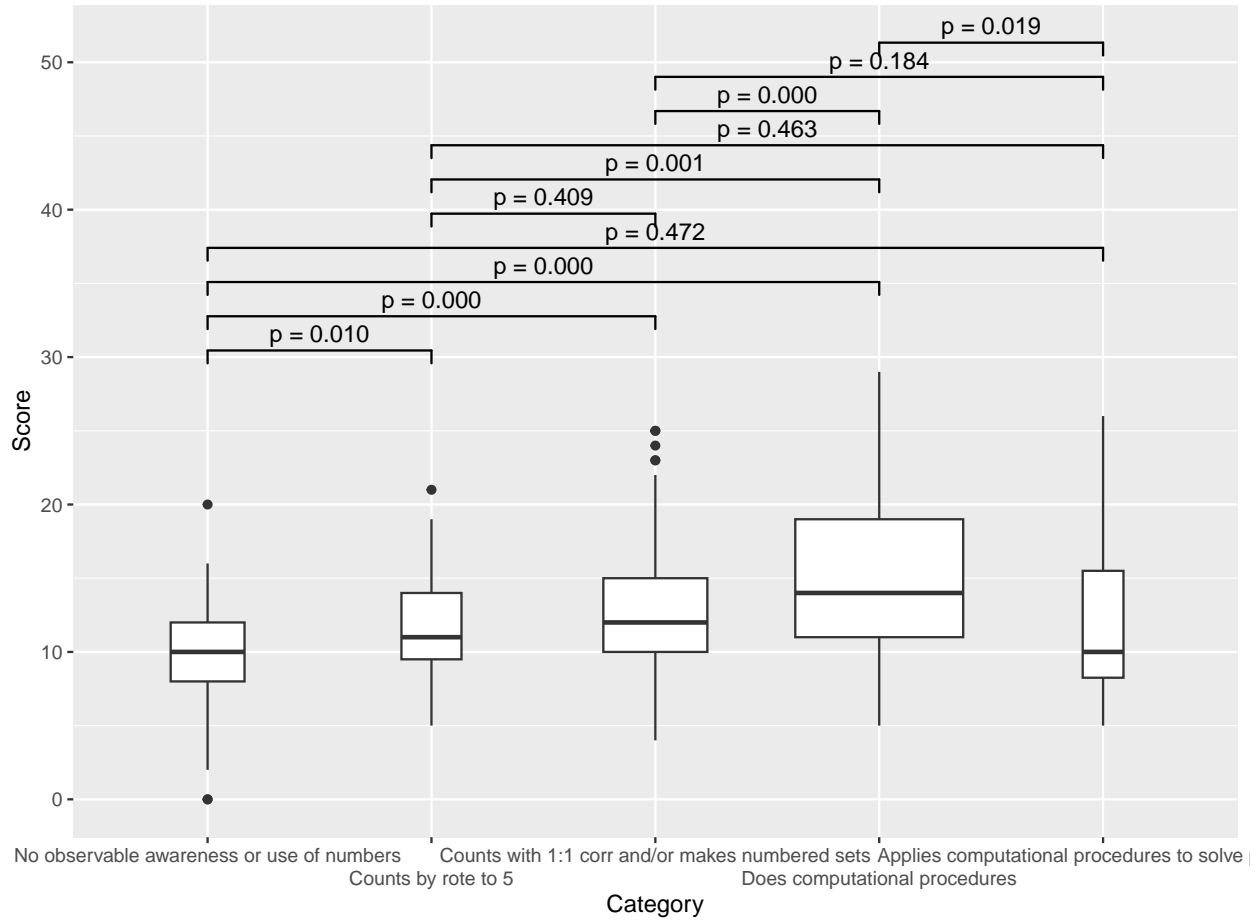


Figure 10: Reading 10 Learner Characteristic: Mathematics

Reading Grade 8

Table 1: Reading 08 Item Statistics

	Item	n	mean	sd	se	
	A1	1	545	0.510	0.500	0.021
	A2	2	545	0.561	0.497	0.021
	A3	3	545	0.512	0.500	0.021
	A4	4	545	0.528	0.500	0.021
	A5	5	545	0.380	0.486	0.021
	B1	6	545	0.710	0.454	0.019
	B2	7	545	0.723	0.448	0.019
	B3	8	545	0.741	0.438	0.019
	B4	9	545	0.239	0.427	0.018
	B5	10	545	0.508	0.500	0.021
	C1	11	545	0.539	0.499	0.021
	C2	12	545	0.492	0.500	0.021
	C3	13	545	0.486	0.500	0.021
	C4	14	545	0.569	0.496	0.021
	C5	15	545	0.659	0.475	0.020
	D1	16	545	0.681	0.467	0.020
	D2	17	545	0.444	0.497	0.021
	D3	18	545	0.420	0.494	0.021
	D4	19	545	0.466	0.499	0.021
	D5	20	545	0.450	0.498	0.021
	E1	21	545	0.506	0.500	0.021
	E2	22	545	0.288	0.453	0.019
	E3	23	545	0.525	0.500	0.021
	E4	24	545	0.374	0.484	0.021
	E5	25	545	0.345	0.476	0.020
	F1	26	545	0.450	0.498	0.021
	F2	27	545	0.521	0.500	0.021
	F3	28	545	0.336	0.473	0.020
	F4	29	545	0.382	0.486	0.021
	F5	30	545	0.521	0.500	0.021

Chronbach's Alpha: 0.7201

Table 2: Reading 08 Raw Score Frequencies

Score	freq	pct	pct_cum
5	1	0.183	0.183
6	3	0.550	0.734
7	15	2.752	3.486
8	21	3.853	7.339
9	35	6.422	13.761
10	44	8.073	21.835
11	37	6.789	28.624
12	44	8.073	36.697
13	31	5.688	42.385
14	42	7.706	50.092
15	38	6.972	57.064
16	41	7.523	64.587
17	32	5.872	70.459
18	34	6.239	76.697
19	31	5.688	82.385
20	23	4.220	86.606
21	21	3.853	90.459
22	17	3.119	93.578
23	10	1.835	95.413
24	3	0.550	95.963
25	5	0.917	96.881
26	10	1.835	98.716
27	5	0.917	99.633
28	1	0.183	99.817
29	1	0.183	100.000

Table 3: Reading 08 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.099	-0.013	0.013	0.000	0.000	0.000
A1	*	a	278	0.510	0.312	0.450	0.314	0.333	0.641	0.764
A1		b	118	0.217	-0.226	-0.128	0.231	0.325	0.214	0.102
A1		c	147	0.270	-0.389	-0.308	0.442	0.342	0.145	0.134
A2			1	0.002	-0.079	-0.006	0.006	0.000	0.000	0.000
A2		a	63	0.116	-0.220	-0.161	0.192	0.094	0.124	0.031
A2	*	b	306	0.561	0.324	0.555	0.327	0.487	0.593	0.882
A2		c	175	0.321	-0.409	-0.388	0.474	0.419	0.283	0.087
A3			3	0.006	-0.013	0.008	0.000	0.017	0.000	0.008
A3	*	a	279	0.512	0.342	0.504	0.276	0.385	0.634	0.780
A3		b	112	0.206	-0.328	-0.242	0.321	0.265	0.145	0.079
A3		c	151	0.277	-0.339	-0.270	0.404	0.333	0.221	0.134
A4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A4		a	65	0.119	-0.259	-0.188	0.212	0.120	0.103	0.024
A4		b	192	0.352	-0.234	-0.185	0.429	0.350	0.366	0.244
A4	*	c	288	0.528	0.160	0.373	0.359	0.530	0.531	0.732
A5			2	0.004	-0.099	-0.013	0.013	0.000	0.000	0.000
A5		a	120	0.220	-0.212	-0.138	0.256	0.248	0.248	0.118
A5	*	b	207	0.380	0.069	0.196	0.308	0.368	0.359	0.504
A5		c	216	0.396	-0.148	-0.045	0.423	0.385	0.393	0.378
B1			1	0.002	-0.061	-0.006	0.006	0.000	0.000	0.000
B1	*	a	387	0.710	0.451	0.625	0.359	0.650	0.897	0.984
B1		b	76	0.139	-0.357	-0.281	0.288	0.162	0.076	0.008
B1		c	81	0.149	-0.438	-0.338	0.346	0.188	0.028	0.008
B2			1	0.002	-0.052	-0.006	0.006	0.000	0.000	0.000
B2		a	51	0.094	-0.295	-0.183	0.199	0.103	0.041	0.016
B2		b	99	0.182	-0.347	-0.292	0.340	0.188	0.124	0.047
B2	*	c	394	0.723	0.315	0.482	0.455	0.709	0.834	0.937
B3			1	0.002	-0.061	-0.006	0.006	0.000	0.000	0.000
B3		a	56	0.103	-0.290	-0.196	0.212	0.094	0.069	0.016
B3		b	84	0.154	-0.360	-0.287	0.295	0.222	0.076	0.008
B3	*	c	404	0.741	0.328	0.489	0.487	0.684	0.855	0.976
B4			1	0.002	0.064	0.008	0.000	0.000	0.000	0.008
B4	*	a	130	0.239	0.144	0.224	0.154	0.188	0.248	0.378
B4		b	99	0.182	-0.227	-0.145	0.263	0.205	0.131	0.118
B4		c	315	0.578	-0.187	-0.087	0.583	0.607	0.621	0.496
B5			2	0.004	-0.099	-0.013	0.013	0.000	0.000	0.000
B5		a	96	0.176	-0.236	-0.156	0.250	0.197	0.152	0.094
B5	*	b	277	0.508	0.340	0.548	0.263	0.410	0.586	0.811
B5		c	170	0.312	-0.403	-0.380	0.474	0.393	0.262	0.094
C1			2	0.004	-0.023	0.001	0.006	0.000	0.000	0.008
C1		a	101	0.185	-0.265	-0.186	0.256	0.274	0.138	0.071
C1	*	b	294	0.539	0.327	0.505	0.314	0.402	0.648	0.819
C1		c	148	0.272	-0.381	-0.321	0.423	0.325	0.214	0.102
C2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C2		a	101	0.185	-0.185	-0.091	0.224	0.214	0.166	0.134
C2		b	176	0.323	-0.166	-0.078	0.346	0.316	0.352	0.268
C2	*	c	268	0.492	0.046	0.169	0.429	0.470	0.483	0.598
C3			1	0.002	-0.052	-0.006	0.006	0.000	0.000	0.000
C3	*	a	265	0.486	0.408	0.639	0.212	0.316	0.600	0.850

Table 3: Reading 08 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	124	0.228	-0.250	-0.195	0.282	0.308	0.228	0.087
C3		c	155	0.284	-0.461	-0.437	0.500	0.376	0.172	0.063
C4			1	0.002	-0.025	0.000	0.000	0.009	0.000	0.000
C4	*	a	104	0.191	-0.296	-0.211	0.282	0.239	0.159	0.071
C4		b	310	0.569	0.448	0.662	0.244	0.436	0.731	0.906
C4		c	130	0.239	-0.478	-0.451	0.474	0.316	0.110	0.024
C5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C5		a	78	0.143	-0.309	-0.220	0.244	0.179	0.110	0.024
C5		b	108	0.198	-0.374	-0.334	0.365	0.205	0.159	0.031
C5	*	c	359	0.659	0.347	0.554	0.391	0.615	0.731	0.945
D1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D1	*	a	371	0.681	0.430	0.642	0.327	0.658	0.828	0.969
D1		b	58	0.106	-0.274	-0.188	0.212	0.103	0.069	0.024
D1		c	116	0.213	-0.483	-0.454	0.462	0.239	0.103	0.008
D2			3	0.006	-0.049	-0.006	0.006	0.009	0.007	0.000
D2		a	105	0.193	-0.093	-0.018	0.199	0.162	0.221	0.181
D2	*	b	242	0.444	0.089	0.254	0.353	0.470	0.379	0.606
D2		c	195	0.358	-0.277	-0.230	0.442	0.359	0.393	0.213
D3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D3	*	a	229	0.420	0.258	0.427	0.250	0.308	0.469	0.677
D3		b	134	0.246	-0.223	-0.142	0.308	0.282	0.221	0.165
D3		c	182	0.334	-0.332	-0.285	0.442	0.410	0.310	0.157
D4			3	0.006	-0.018	0.001	0.006	0.000	0.007	0.008
D4		a	165	0.303	-0.205	-0.122	0.327	0.333	0.338	0.205
D4		b	123	0.226	-0.238	-0.185	0.295	0.256	0.228	0.110
D4	*	c	254	0.466	0.133	0.305	0.372	0.410	0.428	0.677
D5			8	0.015	-0.050	-0.005	0.013	0.026	0.014	0.008
D5	*	a	245	0.450	0.260	0.442	0.282	0.333	0.483	0.724
D5		b	123	0.226	-0.255	-0.185	0.295	0.291	0.200	0.110
D5		c	169	0.310	-0.308	-0.253	0.410	0.350	0.303	0.157
E1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E1		a	92	0.169	-0.303	-0.203	0.250	0.256	0.117	0.047
E1	*	b	276	0.506	0.327	0.510	0.301	0.402	0.545	0.811
E1		c	177	0.325	-0.348	-0.307	0.449	0.342	0.338	0.142
E2			1	0.002	0.028	0.008	0.000	0.000	0.000	0.008
E2	*	a	157	0.288	0.079	0.216	0.186	0.291	0.297	0.402
E2		b	156	0.286	-0.199	-0.174	0.340	0.299	0.324	0.165
E2		c	231	0.424	-0.163	-0.049	0.474	0.410	0.379	0.425
E3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E3		a	150	0.275	-0.097	-0.009	0.269	0.282	0.290	0.260
E3		b	109	0.200	-0.267	-0.194	0.288	0.222	0.179	0.094
E3	*	c	286	0.525	0.053	0.203	0.442	0.496	0.531	0.646
E4			1	0.002	-0.061	-0.006	0.006	0.000	0.000	0.000
E4		a	145	0.266	-0.110	-0.003	0.263	0.265	0.276	0.260
E4	*	b	204	0.374	0.188	0.325	0.218	0.325	0.434	0.543
E4		c	195	0.358	-0.353	-0.316	0.513	0.410	0.290	0.197
E5			4	0.007	-0.100	-0.013	0.013	0.017	0.000	0.000
E5	*	a	188	0.345	0.219	0.385	0.167	0.325	0.372	0.551
E5		b	171	0.314	-0.176	-0.118	0.346	0.316	0.352	0.228
E5		c	182	0.334	-0.308	-0.254	0.474	0.342	0.276	0.220

Table 3: Reading 08 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	0.028	0.008	0.000	0.000	0.000	0.008
F1		a	138	0.253	-0.208	-0.093	0.250	0.316	0.290	0.157
F1		b	161	0.295	-0.199	-0.113	0.333	0.325	0.297	0.220
F1	*	c	245	0.450	0.099	0.198	0.417	0.359	0.414	0.614
F2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F2		a	116	0.213	-0.180	-0.103	0.237	0.282	0.200	0.134
F2	*	b	284	0.521	0.283	0.480	0.276	0.462	0.628	0.756
F2		c	145	0.266	-0.413	-0.377	0.487	0.256	0.172	0.110
F3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F3	*	a	183	0.336	0.136	0.276	0.244	0.265	0.331	0.520
F3		b	117	0.215	-0.195	-0.132	0.250	0.231	0.248	0.118
F3		c	245	0.450	-0.226	-0.144	0.506	0.504	0.421	0.362
F4			3	0.006	-0.039	0.001	0.006	0.009	0.000	0.008
F4		a	215	0.394	-0.100	0.015	0.340	0.402	0.483	0.354
F4	*	b	208	0.382	0.213	0.373	0.218	0.350	0.400	0.591
F4		c	119	0.218	-0.431	-0.389	0.436	0.239	0.117	0.047
F5			2	0.004	-0.042	-0.006	0.006	0.009	0.000	0.000
F5		a	161	0.295	-0.081	0.024	0.276	0.291	0.317	0.299
F5		b	98	0.180	-0.301	-0.259	0.314	0.154	0.166	0.055
F5	*	c	284	0.521	0.063	0.242	0.404	0.547	0.517	0.646

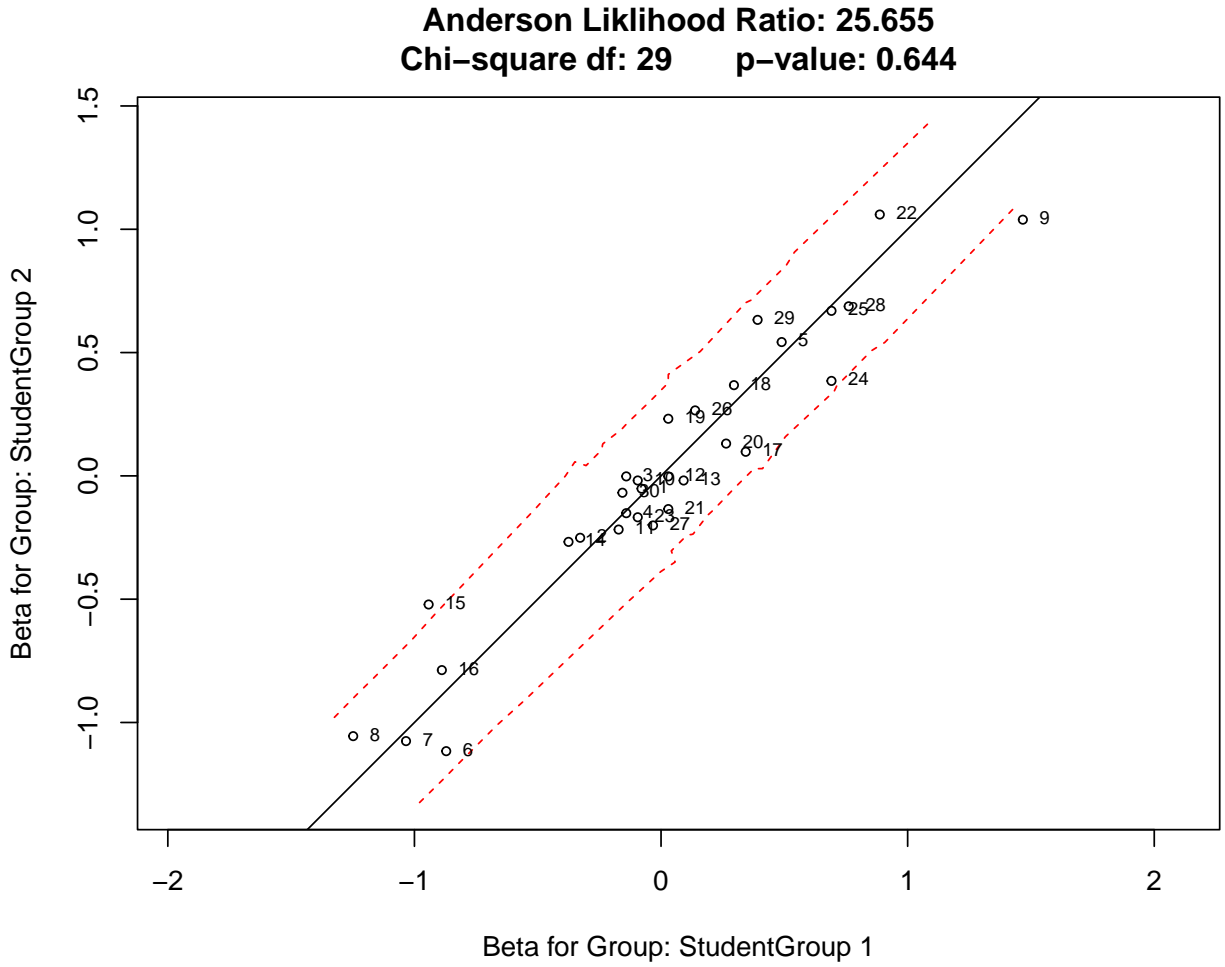


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Reading 08 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	545	0.9291	0.9437
A2	545	0.9147	0.9325
A3	545	0.8975	0.9226
A4	545	1.0449	1.0491
A5	545	1.1468	1.1168
B1	545	0.7314	0.8287
B2	545	0.8614	0.9101
B3	545	0.8102	0.9057
B4	545	1.0851	1.0300
B5	545	0.9071	0.9238
C1	545	0.9115	0.9315
C2	545	1.1293	1.1344
C3	545	0.8621	0.8787
C4	545	0.8109	0.8473
C5	545	0.8445	0.9050
D1	545	0.7755	0.8459
D2	545	1.1265	1.1042
D3	545	0.9903	0.9864
D4	545	1.0752	1.0701
D5	545	0.9744	0.9820
E1	545	0.9066	0.9342
E2	545	1.1433	1.0987
E3	545	1.1514	1.1249
E4	545	1.0306	1.0339
E5	545	0.9976	1.0093
F1	545	1.1002	1.0953
F2	545	0.9944	0.9610
F3	545	1.1004	1.0578
F4	545	1.0099	1.0121
F5	545	1.1631	1.1167

Table 5: Reading 08 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9809	0.1253
Infit	Infit	0.9897	0.0925

Table 6: Reading 08 Raw to Theta Table

Raw Score	theta	SE
5	-1.6252	0.4905
6	-1.4065	0.4613
7	-1.2104	0.4394
8	-1.0306	0.4224
9	-0.8629	0.4093
10	-0.7045	0.3991
11	-0.5529	0.3913
12	-0.4064	0.3856
13	-0.2636	0.3816
14	-0.1231	0.3792
15	0.0162	0.3784
16	0.1555	0.3791
17	0.2958	0.3813
18	0.4383	0.3851
19	0.5843	0.3908
20	0.7353	0.3984
21	0.8931	0.4085
22	1.0599	0.4215
23	1.2387	0.4383
24	1.4339	0.4602
25	1.6514	0.4893
26	1.9012	0.5293
27	2.2004	0.5875
28	2.5837	0.6807
29	3.1404	0.8607

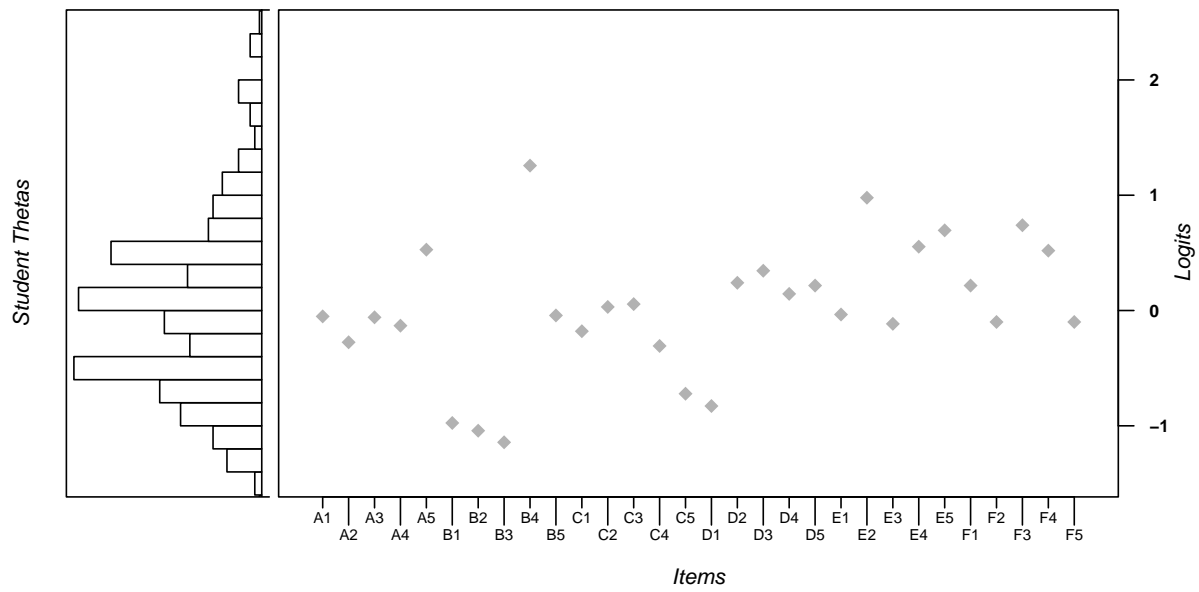


Figure 2: Student Ability - Item Difficulty Wright Map

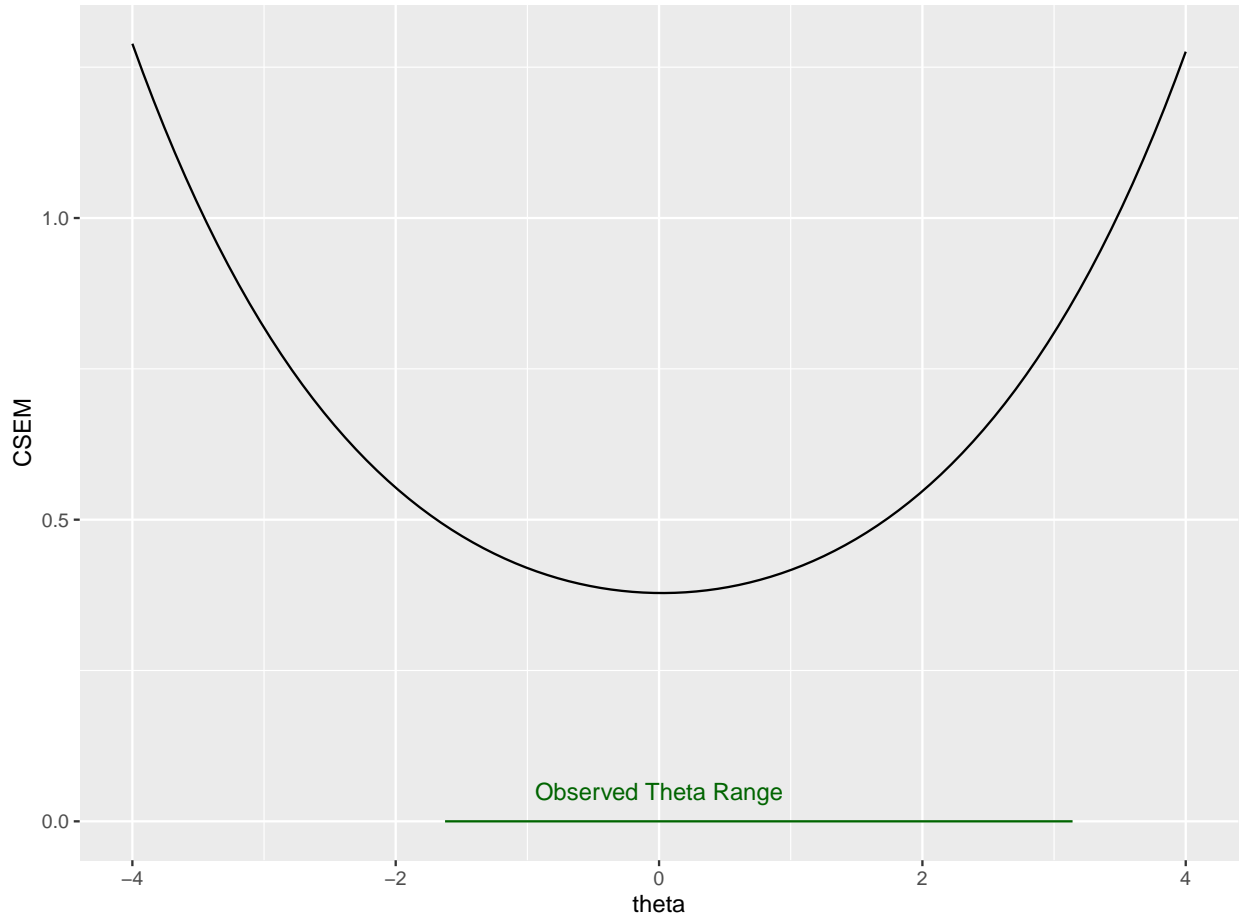


Figure 3: Reading 08 Conditional Standard Error of Measure

Table 7: Reading 08 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		545	0.71
Ethnic	Black	73	0.56
Ethnic	Hispanic	38	0.41
Ethnic	Other	28	0.70
Ethnic	White	396	0.73
Disadvantaged	No	406	0.73
Disadvantaged	Yes	139	0.64
LEP	No	520	0.72
LEP	Yes	25	0.24
Gender	Female	174	0.64
Gender	Male	371	0.73
Homeless	No	531	0.71
Homeless	Yes	14	0.76

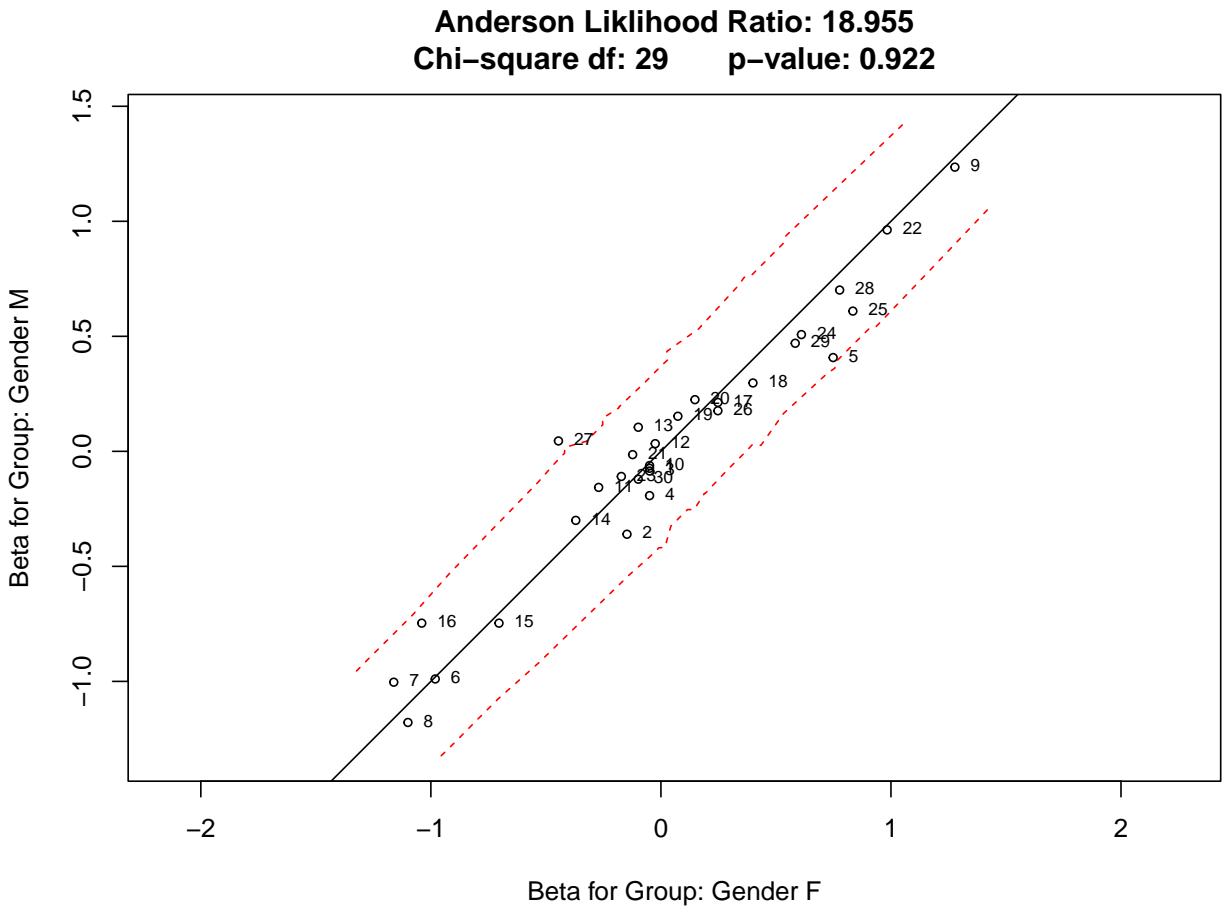


Figure 4: Reading 08 Differential Item (DIF) and Test (DTF) Function for Gender

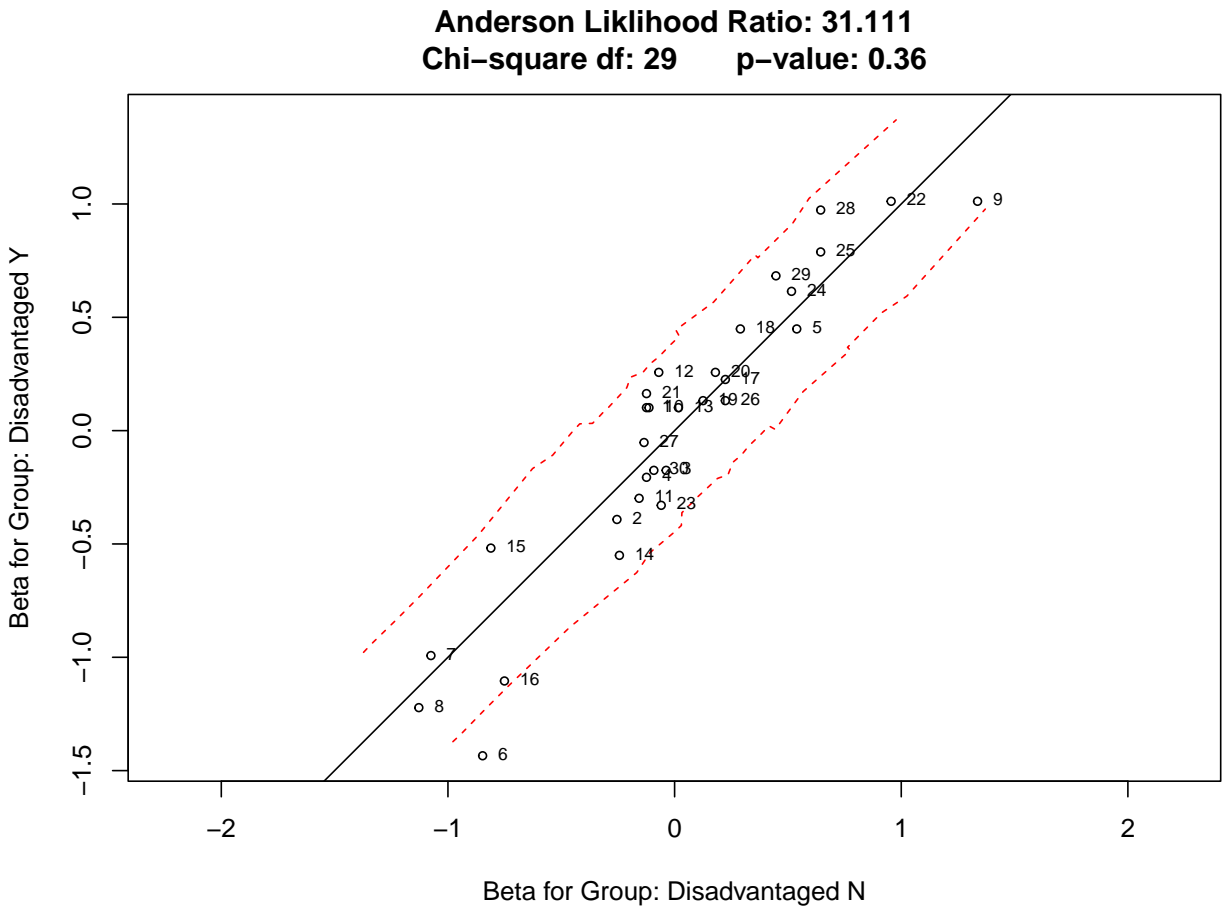


Figure 5: Reading 08 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

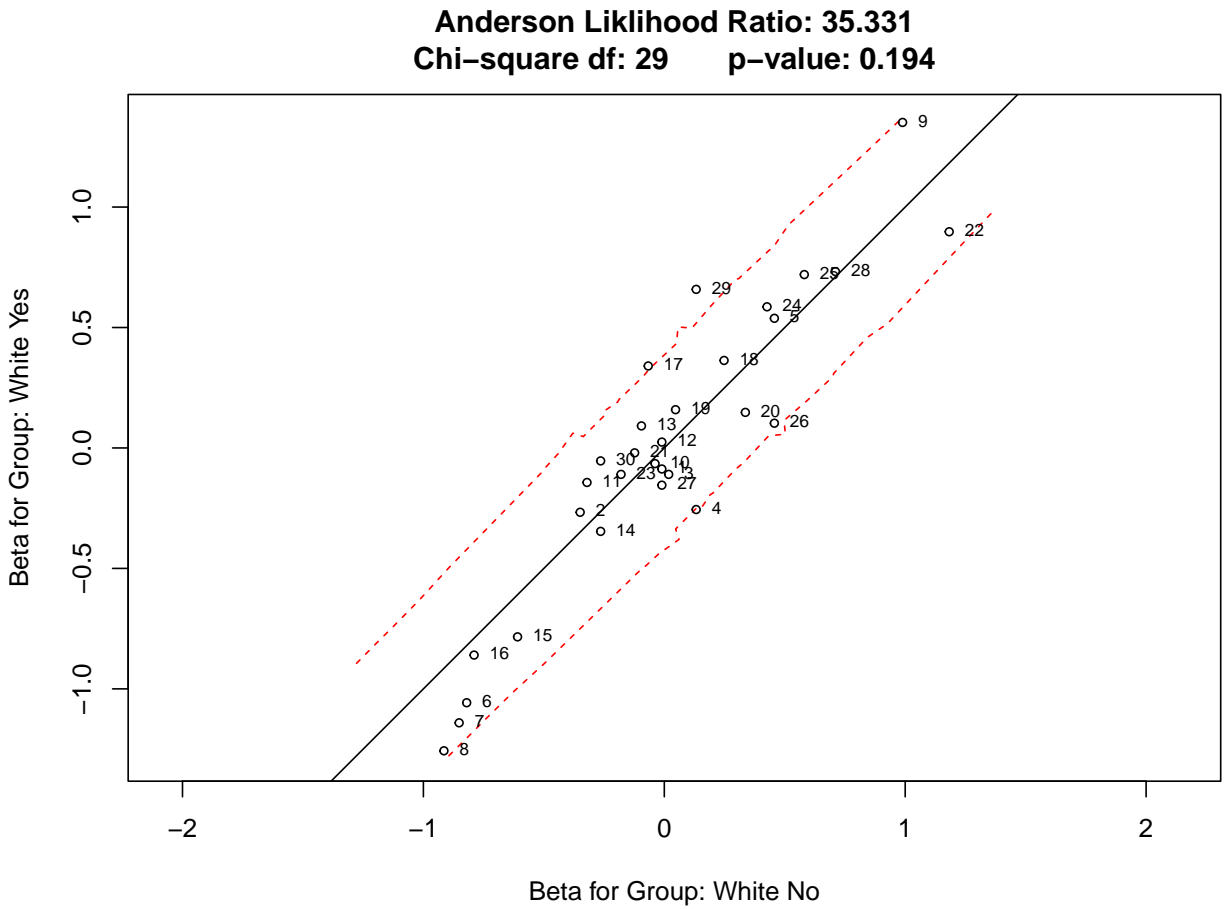


Figure 6: Reading 08 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.5697	0.2603	0.83
False	0.0495	0.1205	0.17
Total	0.6192	0.3808	1.00

Accuracy = 0.83

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5051	0.1141
j	0.1141	0.2667

Proportion of Consistent Classifications = 0.7717
Cohen's Kappa = 0.5159

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0567	0.0577	0.8634	0.0222	0.7186	0.9373	0.9201	0.0570	0.0131	0.0444
Apprentice	0.4332	0.0716	0.3171	0.1781	0.7086	0.8157	0.7502	0.3376	0.2548	0.1111
Proficient	0.2519	0.1208	0.5704	0.0569	0.8156	0.8252	0.8223	0.2524	0.1389	0.1319
Distinguished	0.0007	0.0074	0.9915	0.0003	0.6988	0.9926	0.9923	0.0019	0.0001	0.0018

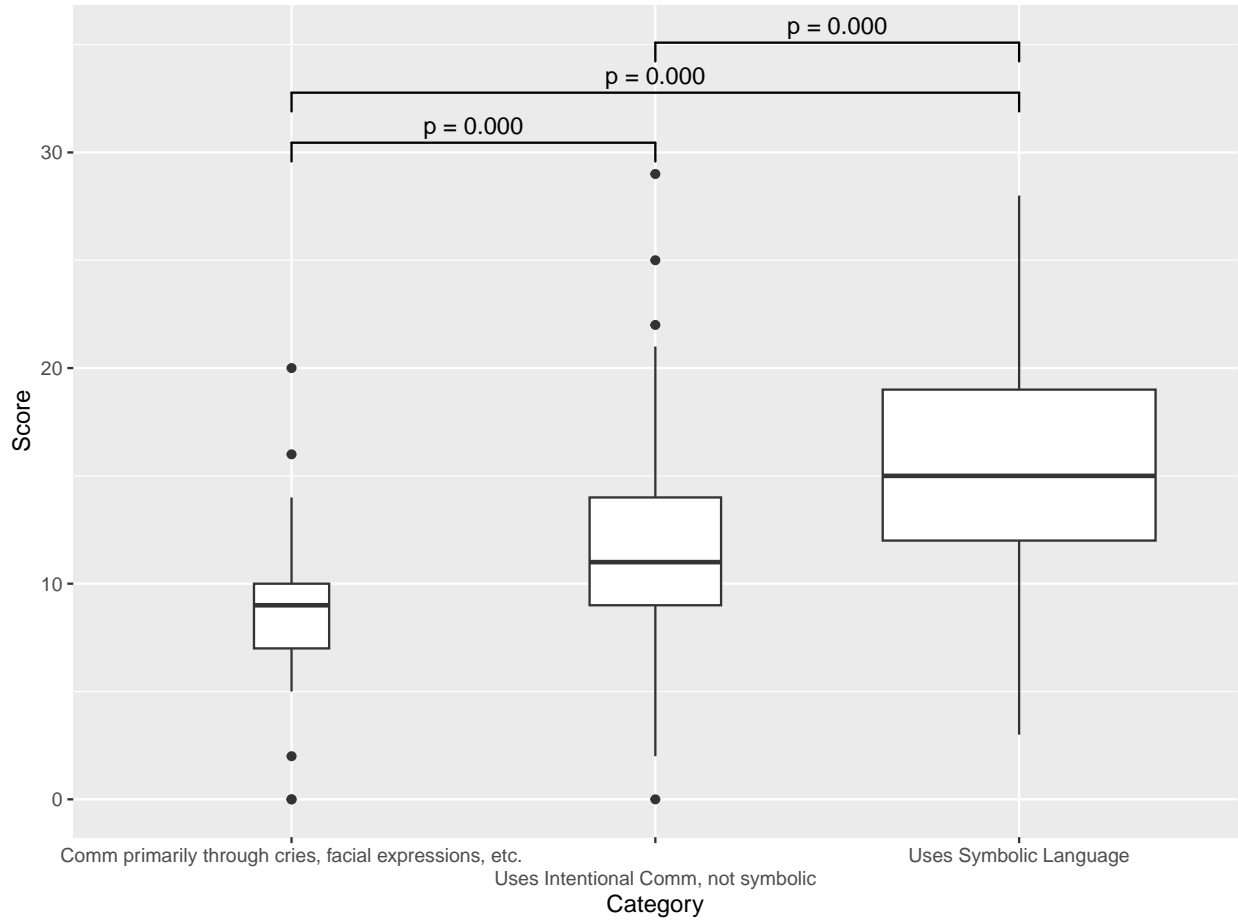


Figure 7: Reading 08 Learner Characteristic: Expressive Communication

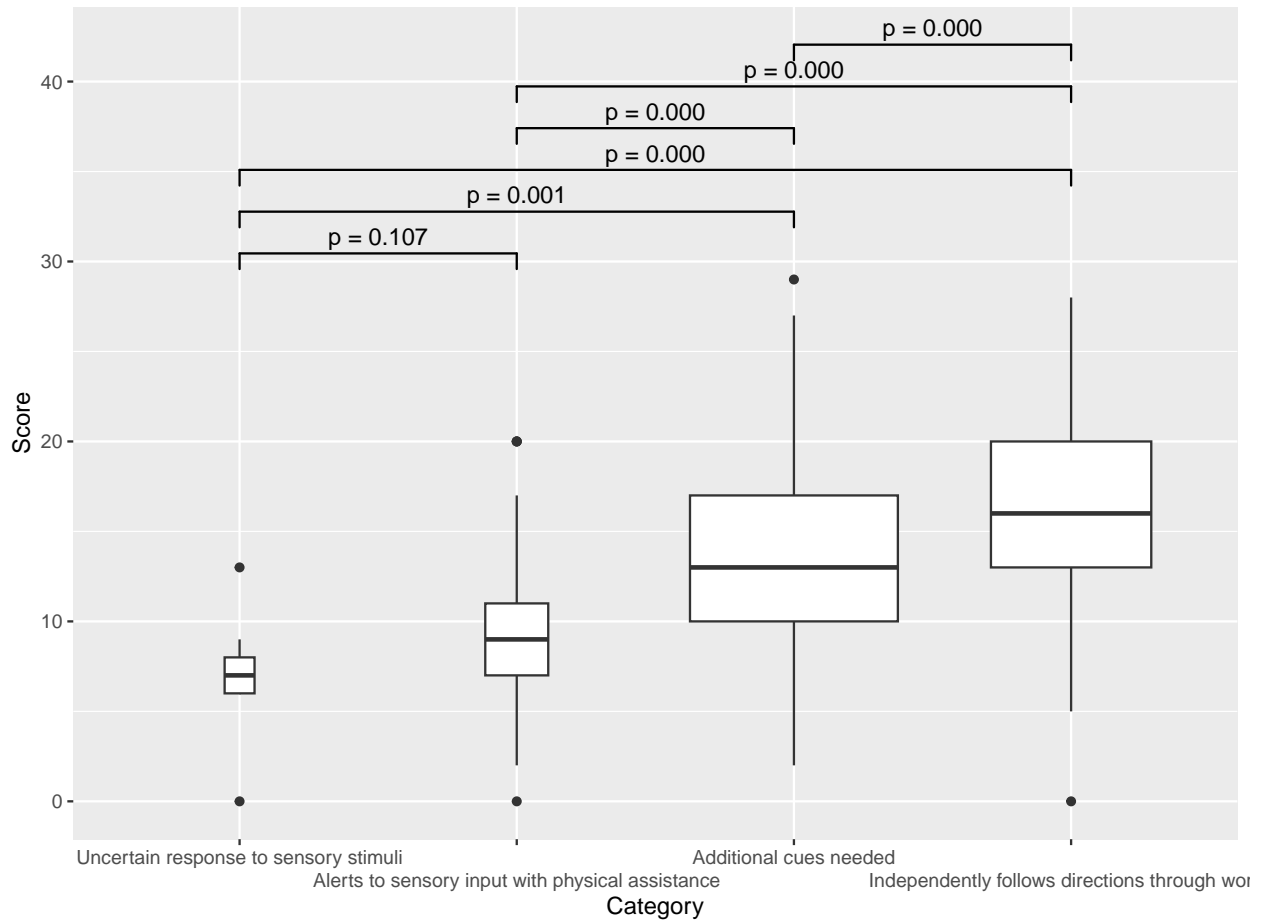


Figure 8: Reading 08 Learner Characteristic: Receptive Language

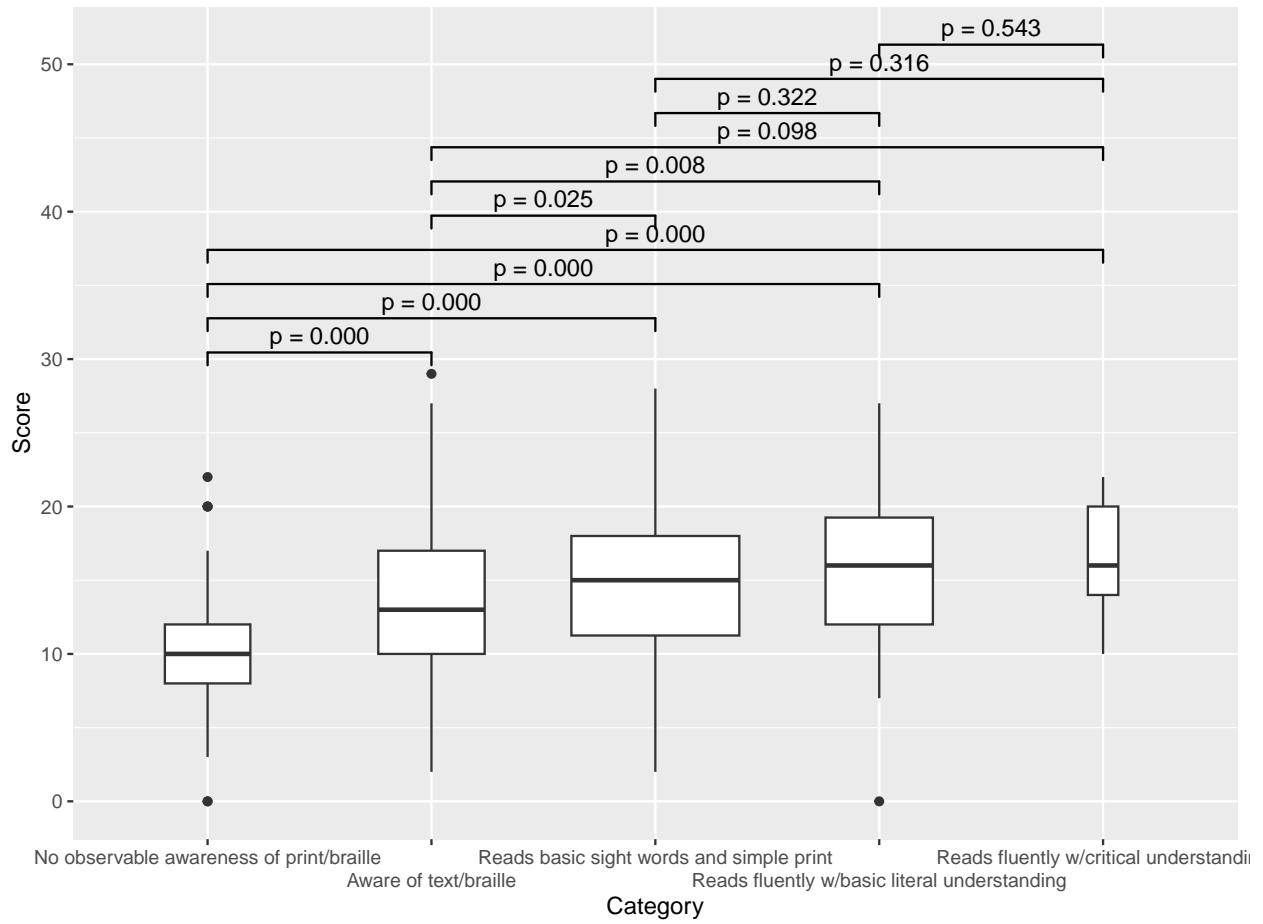


Figure 9: Reading 08 Learner Characteristic: Reading

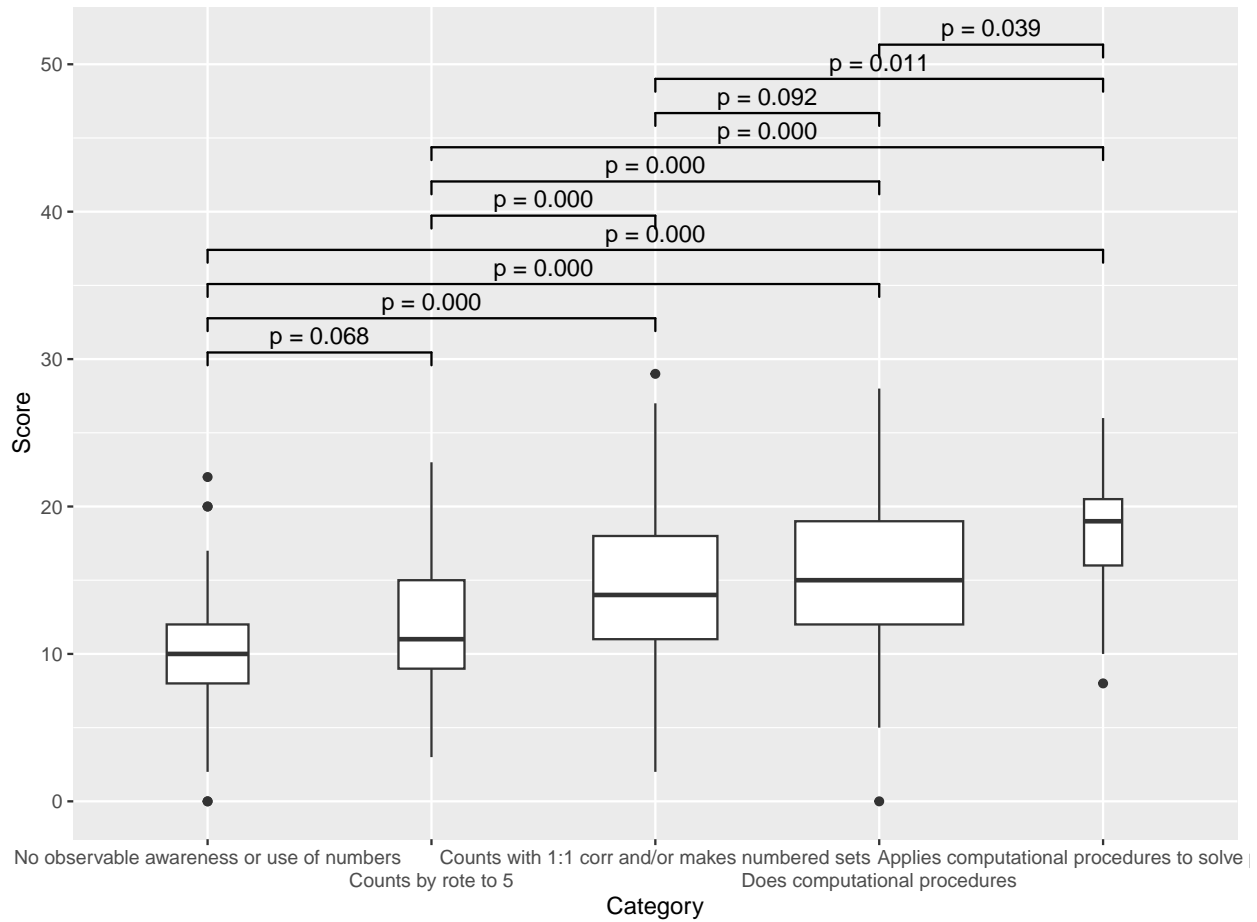


Figure 10: Reading 08 Learner Characteristic: Mathematics

Reading Grade 7

Table 1: Reading 07 Item Statistics

	Item	n	mean	sd	se
A1	1	515	0.258	0.438	0.019
A2	2	515	0.332	0.471	0.021
A3	3	515	0.480	0.500	0.022
A4	4	515	0.410	0.492	0.022
A5	5	515	0.344	0.475	0.021
B1	6	515	0.412	0.493	0.022
B2	7	515	0.563	0.496	0.022
B3	8	515	0.468	0.499	0.022
B4	9	515	0.326	0.469	0.021
B5	10	515	0.517	0.500	0.022
C1	11	515	0.375	0.485	0.021
C2	12	515	0.398	0.490	0.022
C3	13	515	0.462	0.499	0.022
C4	14	515	0.695	0.461	0.020
C5	15	515	0.534	0.499	0.022
D1	16	515	0.497	0.500	0.022
D2	17	515	0.561	0.497	0.022
D3	18	515	0.371	0.484	0.021
D4	19	515	0.423	0.495	0.022
D5	20	515	0.555	0.497	0.022
E1	21	515	0.536	0.499	0.022
E2	22	515	0.386	0.487	0.021
E3	23	515	0.320	0.467	0.021
E4	24	515	0.311	0.463	0.020
E5	25	515	0.483	0.500	0.022
F1	26	515	0.394	0.489	0.022
F2	27	515	0.617	0.486	0.021
F3	28	515	0.392	0.489	0.022
F4	29	515	0.283	0.451	0.020
F5	30	515	0.330	0.471	0.021

Chronbach's Alpha: 0.6222

Table 2: Reading 07 Raw Score Frequencies

Score	freq	pct	pct_cum
4	2	0.388	0.388
5	3	0.583	0.971
6	11	2.136	3.107
7	11	2.136	5.243
8	21	4.078	9.320
9	57	11.068	20.388
10	52	10.097	30.485
11	58	11.262	41.748
12	49	9.515	51.262
13	45	8.738	60.000
14	41	7.961	67.961
15	47	9.126	77.087
16	25	4.854	81.942
17	22	4.272	86.214
18	16	3.107	89.320
19	8	1.553	90.874
20	11	2.136	93.010
21	11	2.136	95.146
22	6	1.165	96.311
23	10	1.942	98.252
24	2	0.388	98.641
25	4	0.777	99.417
26	1	0.194	99.612
27	1	0.194	99.806
28	1	0.194	100.000

Table 3: Reading 07 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A1	*	a	220	0.427	-0.054	0.097	0.420	0.346	0.421	0.517
A1		b	133	0.258	-0.088	0.025	0.229	0.290	0.271	0.254
A1		c	162	0.315	-0.191	-0.122	0.350	0.364	0.308	0.229
A2			1	0.002	-0.032	0.000	0.000	0.009	0.000	0.000
A2	*	a	168	0.326	-0.185	-0.100	0.363	0.262	0.391	0.263
A2		b	171	0.332	0.189	0.362	0.197	0.299	0.316	0.559
A2		c	175	0.340	-0.320	-0.262	0.439	0.430	0.293	0.178
A3			3	0.006	0.024	0.008	0.000	0.000	0.015	0.008
A3	*	a	118	0.229	-0.183	-0.117	0.287	0.187	0.248	0.169
A3		b	147	0.285	-0.209	-0.094	0.280	0.346	0.331	0.186
A3		c	247	0.480	0.043	0.202	0.433	0.467	0.406	0.636
A4			3	0.006	-0.025	0.008	0.000	0.019	0.000	0.008
A4	*	a	211	0.410	0.277	0.438	0.248	0.308	0.436	0.686
A4		b	152	0.295	-0.276	-0.198	0.376	0.262	0.331	0.178
A4		c	149	0.289	-0.336	-0.249	0.376	0.411	0.233	0.127
A5			2	0.004	-0.023	0.002	0.006	0.000	0.000	0.008
A5	*	a	177	0.344	0.132	0.269	0.223	0.346	0.353	0.492
A5		b	147	0.285	-0.214	-0.087	0.299	0.346	0.286	0.212
A5		c	189	0.367	-0.243	-0.183	0.471	0.308	0.361	0.288
B1			3	0.006	-0.049	-0.004	0.013	0.000	0.000	0.008
B1	*	a	212	0.412	0.155	0.360	0.242	0.346	0.496	0.602
B1		b	180	0.350	-0.185	-0.094	0.408	0.318	0.338	0.314
B1		c	120	0.233	-0.315	-0.261	0.338	0.336	0.165	0.076
B2			2	0.004	-0.060	-0.006	0.006	0.009	0.000	0.000
B2	*	a	119	0.231	-0.230	-0.107	0.293	0.234	0.195	0.186
B2		b	104	0.202	-0.214	-0.126	0.261	0.196	0.195	0.136
B2		c	290	0.563	0.102	0.238	0.439	0.561	0.609	0.678
B3			1	0.002	-0.021	0.000	0.000	0.009	0.000	0.000
B3	*	a	109	0.212	-0.272	-0.166	0.293	0.224	0.180	0.127
B3		b	241	0.468	0.303	0.495	0.217	0.439	0.571	0.712
B3		c	164	0.318	-0.375	-0.329	0.490	0.327	0.248	0.161
B4			3	0.006	-0.073	-0.013	0.013	0.009	0.000	0.000
B4	*	a	157	0.305	-0.209	-0.122	0.350	0.290	0.331	0.229
B4		b	168	0.326	0.096	0.264	0.210	0.318	0.338	0.475
B4		c	187	0.363	-0.205	-0.130	0.427	0.383	0.331	0.297
B5			4	0.008	-0.079	-0.013	0.013	0.019	0.000	0.000
B5	*	a	122	0.237	-0.244	-0.149	0.293	0.252	0.241	0.144
B5		b	123	0.239	-0.187	-0.123	0.268	0.280	0.256	0.144
B5		c	266	0.517	0.094	0.285	0.427	0.449	0.504	0.712
C1			2	0.004	-0.023	0.000	0.000	0.009	0.008	0.000
C1	*	a	145	0.282	-0.248	-0.124	0.318	0.336	0.271	0.195
C1		b	193	0.375	0.214	0.351	0.242	0.262	0.429	0.593
C1		c	175	0.340	-0.295	-0.228	0.439	0.393	0.293	0.212
C2			3	0.006	0.018	0.008	0.000	0.009	0.008	0.008
C2	*	a	83	0.161	-0.300	-0.187	0.255	0.168	0.128	0.068
C2		b	205	0.398	0.332	0.514	0.197	0.271	0.459	0.712
C2		c	224	0.435	-0.375	-0.336	0.548	0.551	0.406	0.212
C3			2	0.004	-0.008	0.002	0.006	0.000	0.000	0.008
C3	*	a	238	0.462	0.331	0.561	0.185	0.421	0.571	0.746

Table 3: Reading 07 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	125	0.243	-0.339	-0.287	0.389	0.215	0.218	0.102
C3		c	150	0.291	-0.341	-0.276	0.420	0.364	0.211	0.144
C4			3	0.006	-0.013	0.000	0.000	0.009	0.015	0.000
C4		a	88	0.171	-0.300	-0.195	0.255	0.206	0.143	0.059
C4		b	66	0.128	-0.283	-0.198	0.223	0.140	0.098	0.025
C4	*	c	358	0.695	0.226	0.393	0.522	0.645	0.744	0.915
C5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C5	*	a	275	0.534	0.307	0.542	0.306	0.449	0.594	0.847
C5		b	116	0.225	-0.301	-0.217	0.293	0.290	0.226	0.076
C5		c	124	0.241	-0.367	-0.325	0.401	0.262	0.180	0.076
D1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D1	*	a	256	0.497	0.264	0.453	0.293	0.402	0.594	0.746
D1		b	133	0.258	-0.229	-0.104	0.299	0.234	0.286	0.195
D1		c	126	0.245	-0.391	-0.348	0.408	0.364	0.120	0.059
D2			2	0.004	-0.067	-0.013	0.013	0.000	0.000	0.000
D2		a	131	0.254	-0.277	-0.181	0.299	0.336	0.256	0.119
D2		b	93	0.181	-0.337	-0.246	0.280	0.196	0.180	0.034
D2	*	c	289	0.561	0.253	0.440	0.408	0.467	0.564	0.847
D3			1	0.002	0.010	0.000	0.000	0.000	0.008	0.000
D3		a	162	0.315	-0.069	0.059	0.280	0.299	0.346	0.339
D3	*	b	191	0.371	0.103	0.268	0.274	0.355	0.346	0.542
D3		c	161	0.313	-0.366	-0.327	0.446	0.346	0.301	0.119
D4			2	0.004	-0.097	-0.013	0.013	0.000	0.000	0.000
D4	*	a	218	0.423	0.237	0.434	0.261	0.318	0.459	0.695
D4		b	98	0.190	-0.200	-0.117	0.236	0.168	0.218	0.119
D4		c	197	0.383	-0.356	-0.304	0.490	0.514	0.323	0.186
D5			2	0.004	-0.112	-0.013	0.013	0.000	0.000	0.000
D5		a	134	0.260	-0.200	-0.109	0.287	0.318	0.256	0.178
D5		b	93	0.181	-0.253	-0.143	0.261	0.187	0.135	0.119
D5	*	c	286	0.555	0.112	0.264	0.439	0.495	0.609	0.703
E1			6	0.012	-0.099	-0.025	0.025	0.009	0.008	0.000
E1		a	112	0.217	-0.270	-0.172	0.248	0.318	0.226	0.076
E1		b	121	0.235	-0.305	-0.244	0.338	0.224	0.248	0.093
E1	*	c	276	0.536	0.233	0.442	0.389	0.449	0.519	0.831
E2			1	0.002	-0.021	0.000	0.000	0.009	0.000	0.000
E2	*	a	199	0.386	0.254	0.428	0.191	0.290	0.489	0.619
E2		b	139	0.270	-0.199	-0.105	0.325	0.252	0.263	0.220
E2		c	176	0.342	-0.377	-0.323	0.484	0.449	0.248	0.161
E3			2	0.004	-0.082	-0.013	0.013	0.000	0.000	0.000
E3		a	80	0.155	-0.223	-0.100	0.210	0.187	0.105	0.110
E3	*	b	165	0.320	0.066	0.205	0.210	0.355	0.338	0.415
E3		c	268	0.520	-0.171	-0.092	0.567	0.458	0.556	0.475
E4			3	0.006	-0.049	-0.006	0.006	0.009	0.008	0.000
E4	*	a	160	0.311	0.224	0.322	0.204	0.224	0.316	0.525
E4		b	119	0.231	-0.232	-0.126	0.287	0.224	0.233	0.161
E4		c	233	0.452	-0.295	-0.190	0.503	0.542	0.444	0.314
E5			1	0.002	-0.021	0.000	0.000	0.009	0.000	0.000
E5		a	130	0.252	-0.218	-0.098	0.268	0.336	0.241	0.169
E5		b	135	0.262	-0.210	-0.109	0.312	0.243	0.271	0.203
E5	*	c	249	0.483	0.082	0.207	0.420	0.411	0.489	0.627

Table 3: Reading 07 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			3	0.006	-0.043	-0.006	0.006	0.000	0.015	0.000
F1		a	117	0.227	-0.316	-0.240	0.299	0.280	0.248	0.059
F1	*	b	203	0.394	0.289	0.476	0.210	0.280	0.444	0.686
F1		c	192	0.373	-0.305	-0.230	0.484	0.439	0.293	0.254
F2			3	0.006	-0.067	-0.006	0.006	0.009	0.008	0.000
F2		a	91	0.177	-0.245	-0.147	0.197	0.224	0.226	0.051
F2		b	103	0.200	-0.224	-0.143	0.261	0.168	0.226	0.119
F2	*	c	318	0.617	0.128	0.295	0.535	0.598	0.541	0.831
F3			1	0.002	0.010	0.000	0.000	0.000	0.008	0.000
F3	*	a	202	0.392	0.160	0.360	0.217	0.355	0.466	0.576
F3		b	90	0.175	-0.204	-0.121	0.248	0.150	0.150	0.127
F3		c	222	0.431	-0.290	-0.238	0.535	0.495	0.376	0.297
F4			4	0.008	-0.048	-0.006	0.006	0.019	0.008	0.000
F4		a	149	0.289	-0.194	-0.077	0.331	0.308	0.256	0.254
F4	*	b	146	0.283	0.053	0.171	0.159	0.271	0.398	0.331
F4		c	216	0.419	-0.174	-0.088	0.503	0.402	0.338	0.415
F5			7	0.014	-0.048	-0.013	0.013	0.009	0.030	0.000
F5	*	a	170	0.330	0.183	0.347	0.178	0.318	0.346	0.525
F5		b	129	0.250	-0.202	-0.121	0.299	0.215	0.286	0.178
F5		c	209	0.406	-0.291	-0.213	0.510	0.458	0.338	0.297

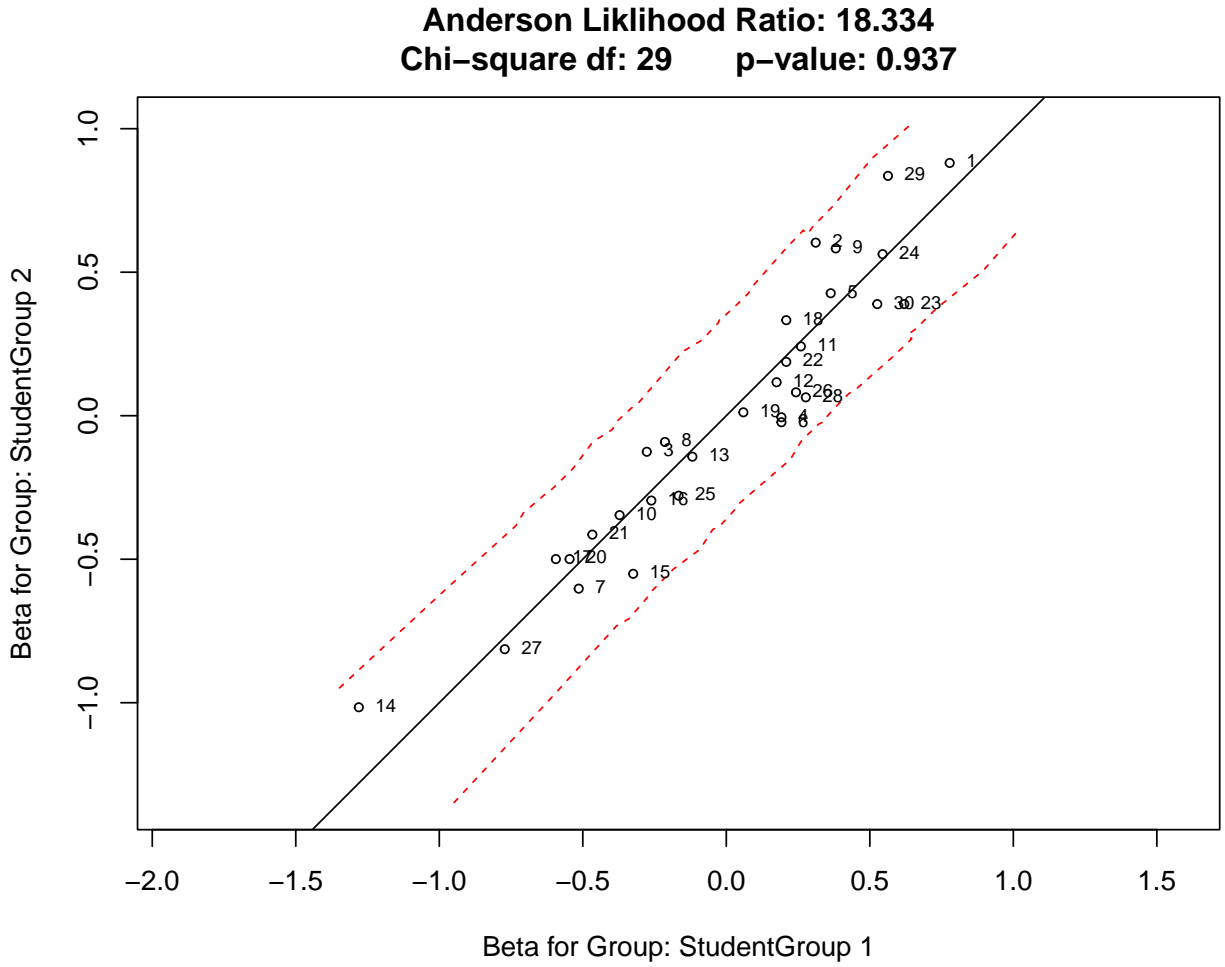


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Reading 07 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	515	1.2088	1.1440
A2	515	0.9851	0.9841
A3	515	1.0808	1.0753
A4	515	0.9281	0.9373
A5	515	1.0224	1.0213
B1	515	1.0296	1.0097
B2	515	1.0251	1.0317
B3	515	0.9022	0.9216
B4	515	1.0501	1.0437
B5	515	1.0543	1.0407
C1	515	0.9729	0.9717
C2	515	0.8920	0.9052
C3	515	0.8895	0.9060
C4	515	0.9059	0.9455
C5	515	0.8988	0.9189
D1	515	0.9300	0.9437
D2	515	0.9241	0.9464
D3	515	1.0522	1.0378
D4	515	0.9504	0.9610
D5	515	1.0551	1.0250
E1	515	0.9447	0.9598
E2	515	0.9449	0.9511
E3	515	1.0747	1.0584
E4	515	0.9594	0.9595
E5	515	1.0531	1.0518
F1	515	0.9159	0.9303
F2	515	0.9946	1.0148
F3	515	1.0075	1.0071
F4	515	1.0733	1.0671
F5	515	0.9746	0.9921

Table 5: Reading 07 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9900	0.0746
Infit	Infit	0.9921	0.0585

Table 6: Reading 07 Raw to Theta Table

Raw Score	theta	SE
4	-1.5677	0.5269
5	-1.3202	0.4867
6	-1.1051	0.4575
7	-0.9124	0.4355
8	-0.7359	0.4185
9	-0.5716	0.4053
10	-0.4164	0.3951
11	-0.2680	0.3873
12	-0.1247	0.3816
13	0.0151	0.3776
14	0.1525	0.3752
15	0.2887	0.3744
16	0.4249	0.3750
17	0.5621	0.3772
18	0.7014	0.3810
19	0.8442	0.3866
20	0.9918	0.3942
21	1.1462	0.4043
22	1.3094	0.4173
23	1.4846	0.4340
24	1.6759	0.4559
25	1.8894	0.4850
26	2.1349	0.5250
27	2.4296	0.5833
28	2.8082	0.6765

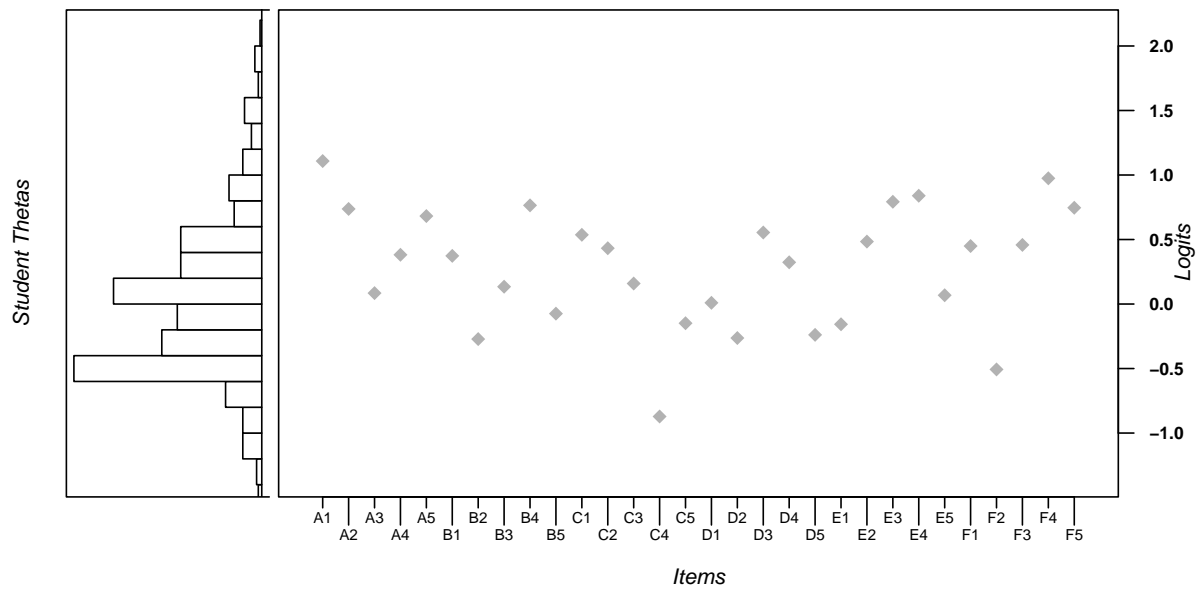


Figure 2: Student Ability - Item Difficulty Wright Map

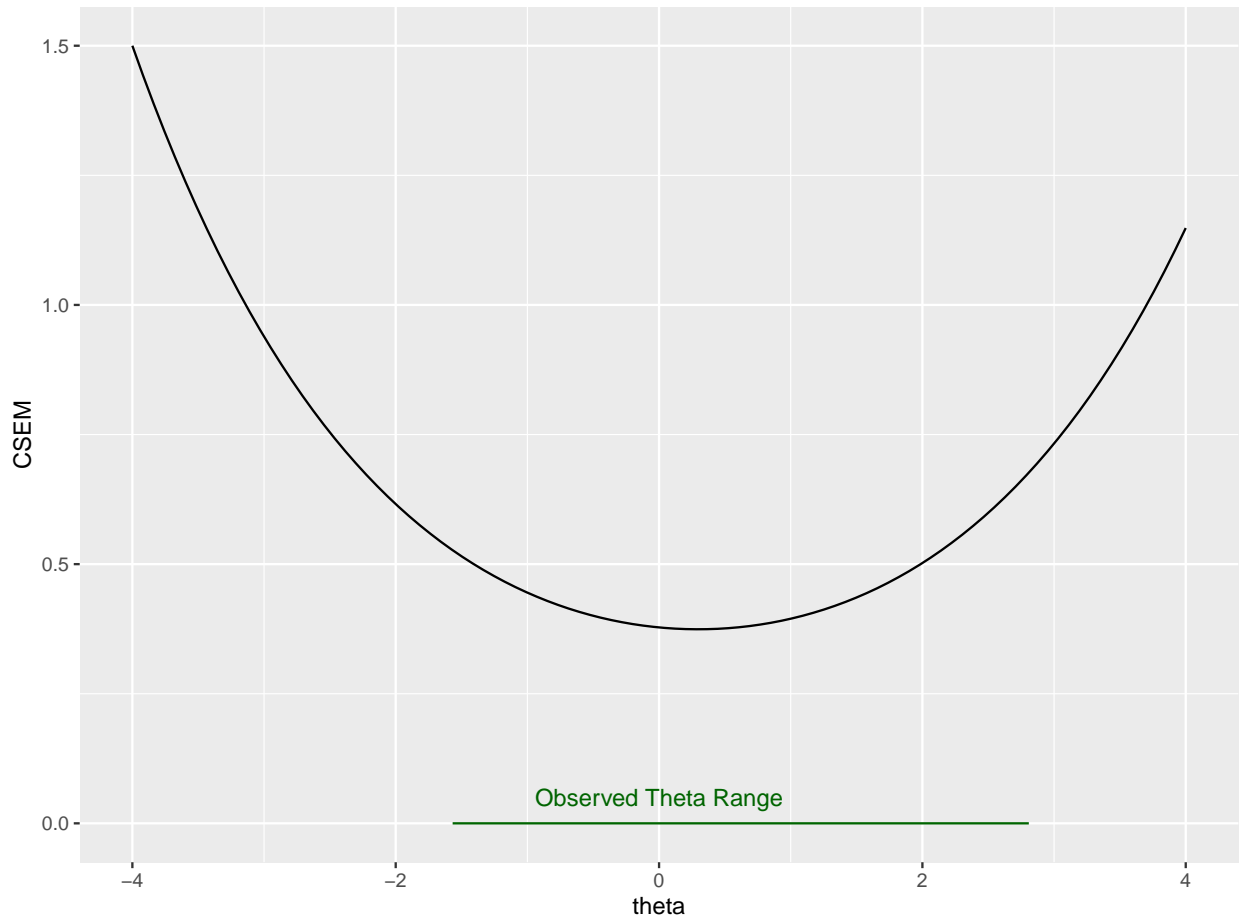


Figure 3: Reading 07 Conditional Standard Error of Measure

Table 7: Reading 07 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		515	0.60
Ethnic	Black	69	0.38
Ethnic	Hispanic	24	0.19
Ethnic	Other	24	0.65
Ethnic	White	387	0.63
Disadvantaged	No	370	0.58
Disadvantaged	Yes	145	0.64
LEP	No	488	0.61
LEP	Yes	27	-0.15
Gender	Female	180	0.59
Gender	Male	335	0.61
Homeless	No	498	0.61
Homeless	Yes	17	0.34

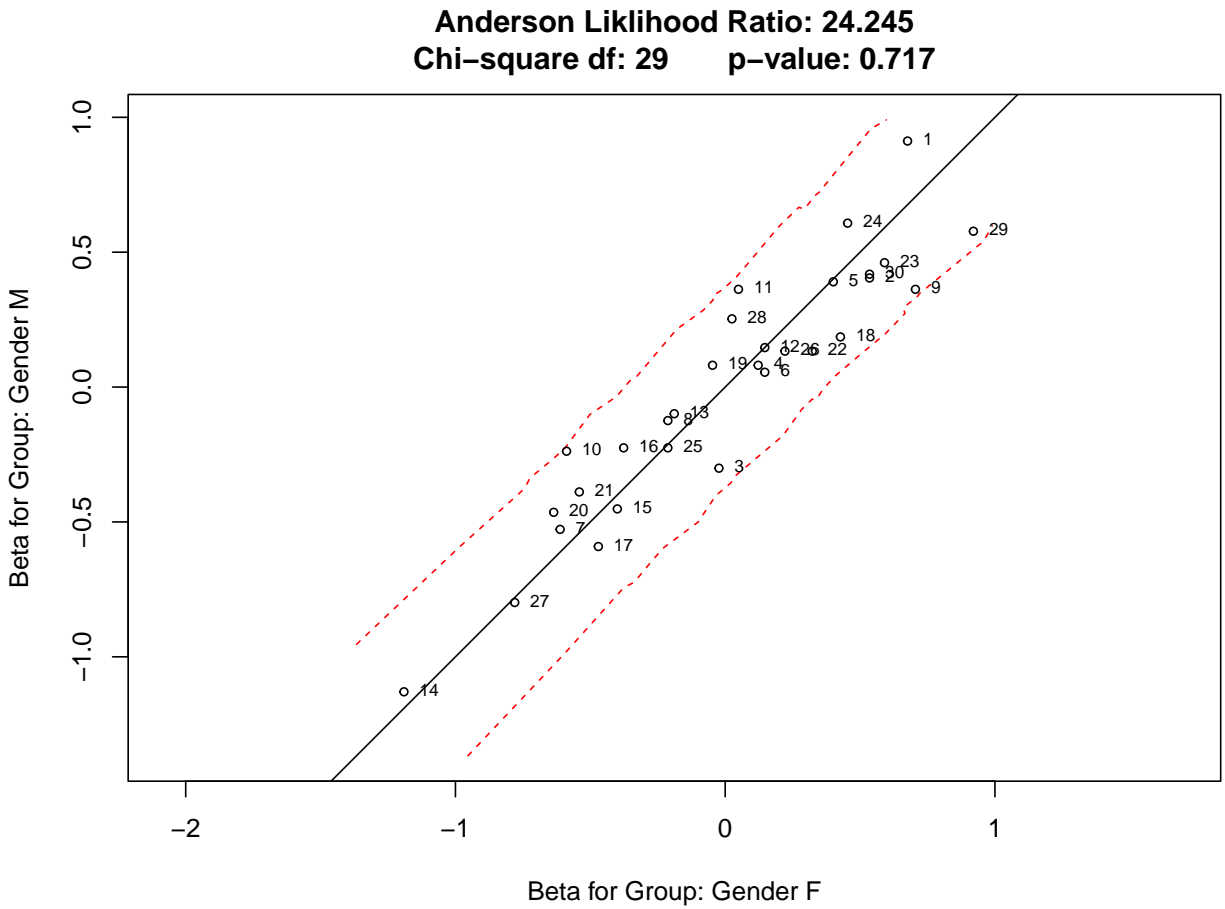


Figure 4: Reading 07 Differential Item (DIF) and Test (DTF) Function for Gender

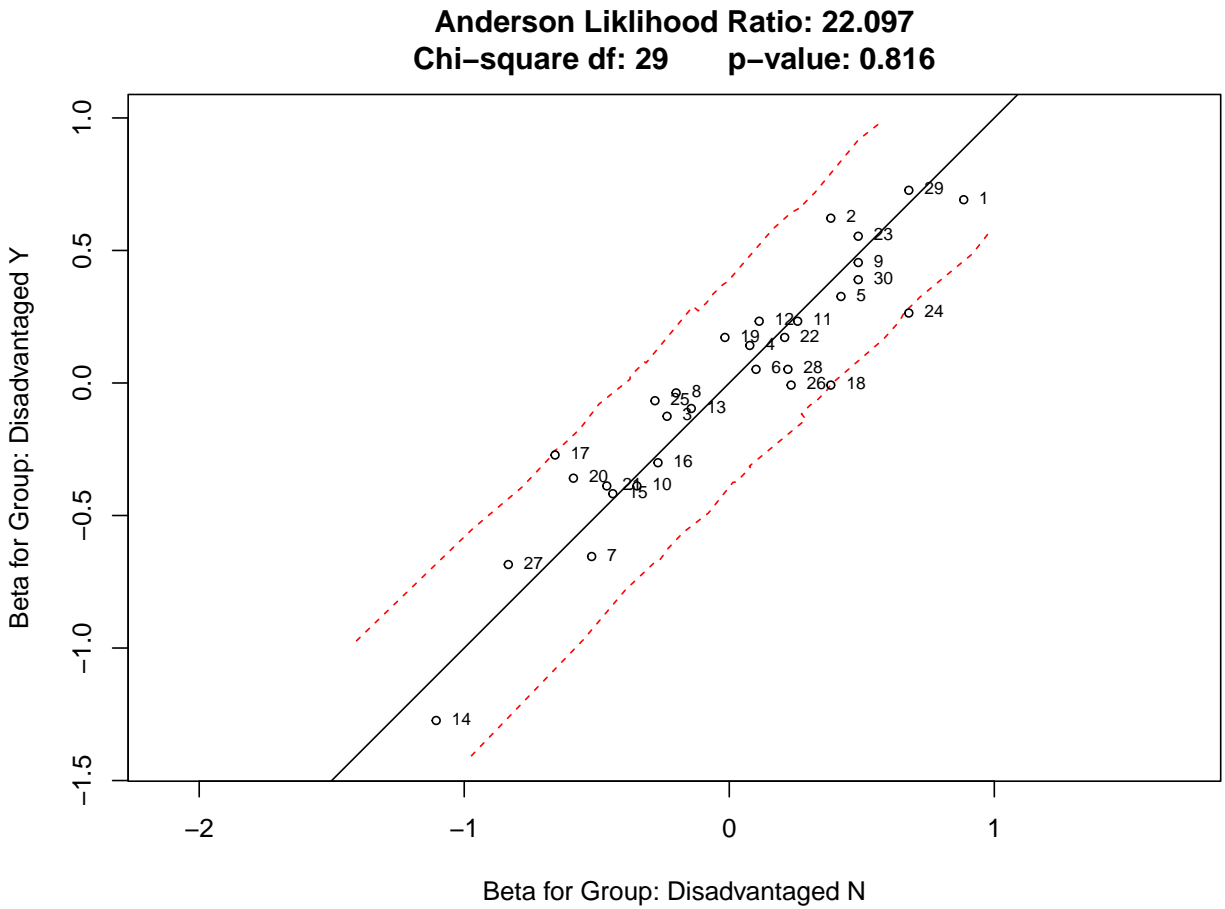


Figure 5: Reading 07 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

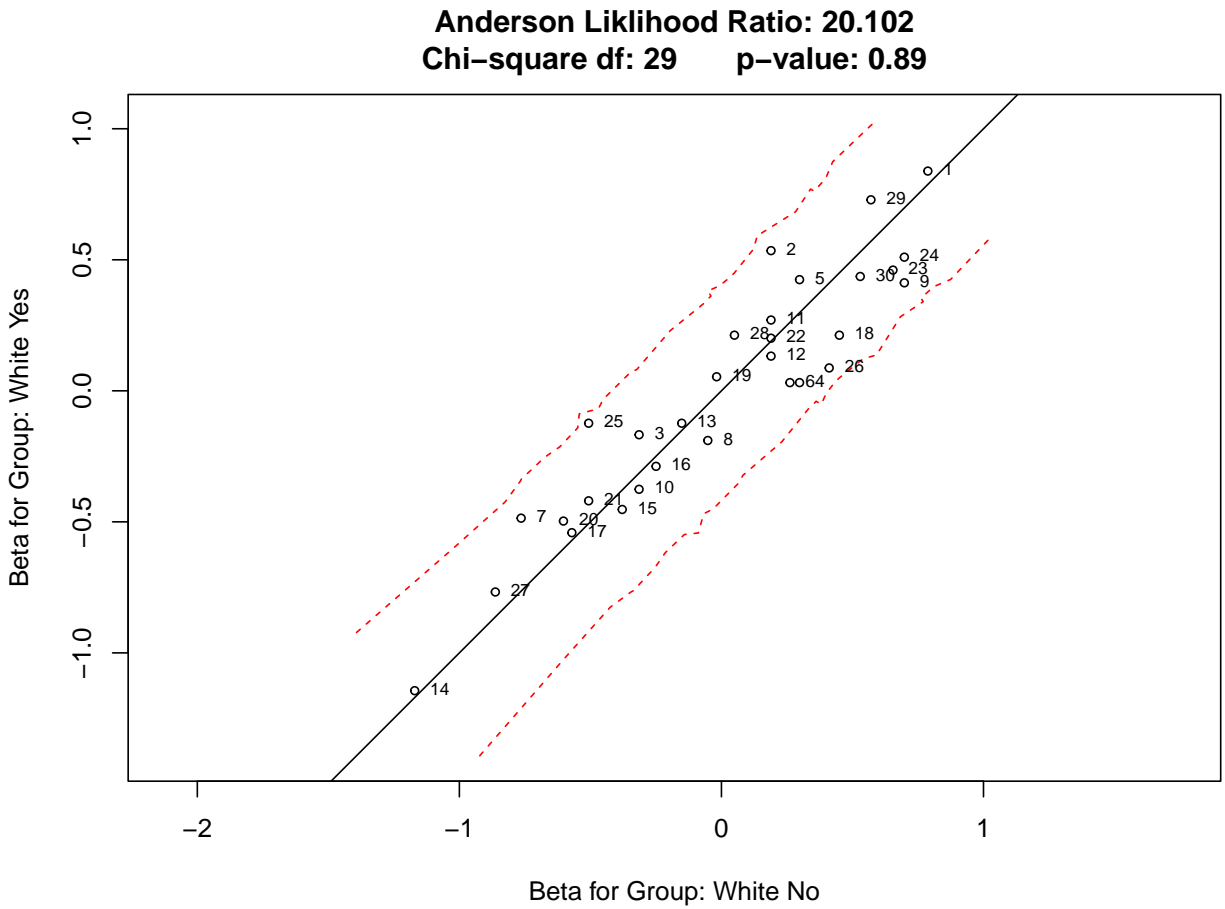


Figure 6: Reading 07 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.7018	0.1396	0.8414
False	0.0514	0.1073	0.1586
Total	0.7532	0.2468	1.0000

Accuracy = 0.8414

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5942	0.1590
j	0.0853	0.1615

Proportion of Consistent Classifications = 0.7557
Cohen's Kappa = 0.4029

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0361	0.0486	0.8894	0.0259	0.5827	0.9482	0.9255	0.0315	0.0072	0.0245
Apprentice	0.5913	0.0772	0.1757	0.1558	0.7915	0.6947	0.7670	0.5071	0.4469	0.1089
Proficient	0.1386	0.1073	0.7018	0.0523	0.7261	0.8674	0.8404	0.1348	0.0605	0.0791
Distinguished	0.0000	0.0009	0.9991	0.0000	0.6782	0.9991	0.9991	0.0001	0.0000	0.0001

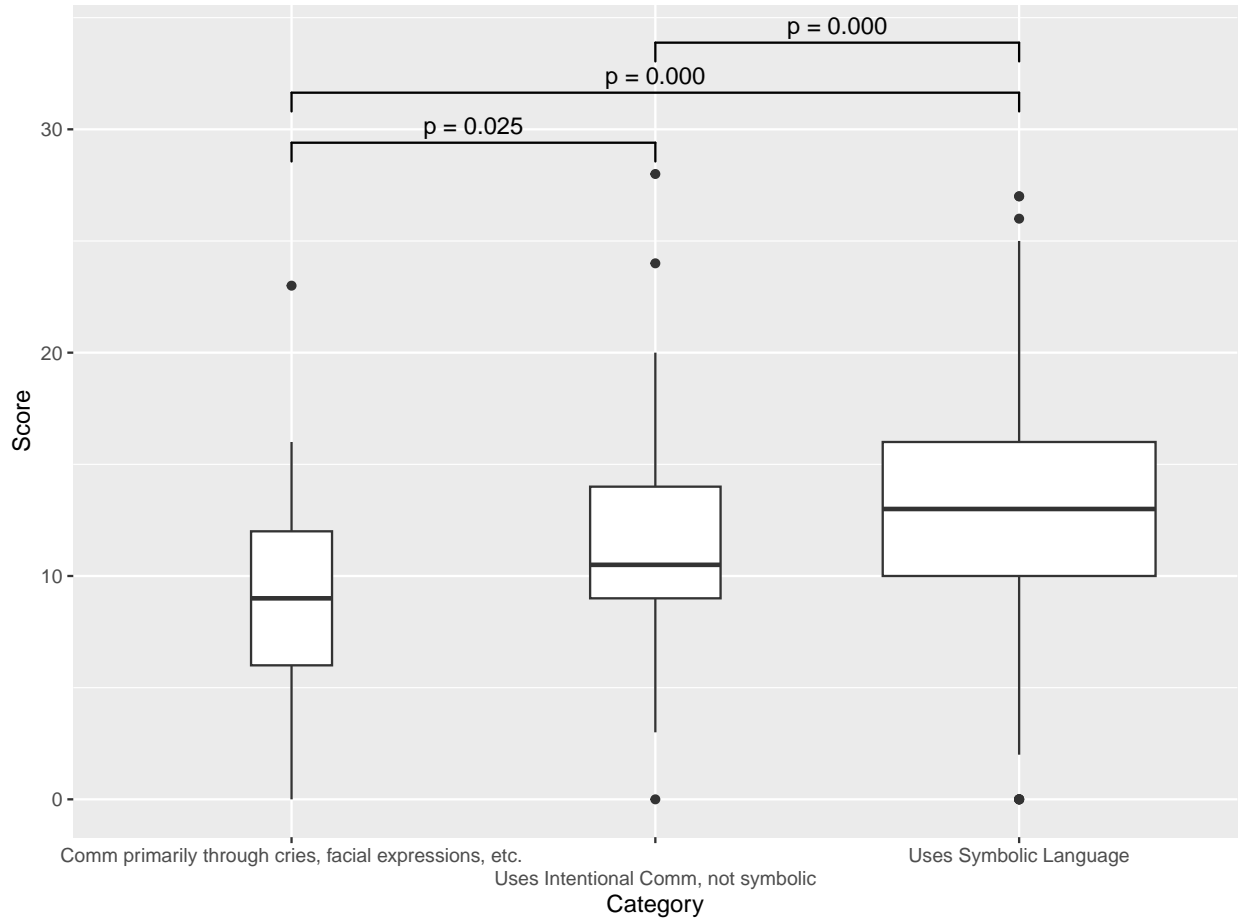


Figure 7: Reading 07 Learner Characteristic: Expressive Communication

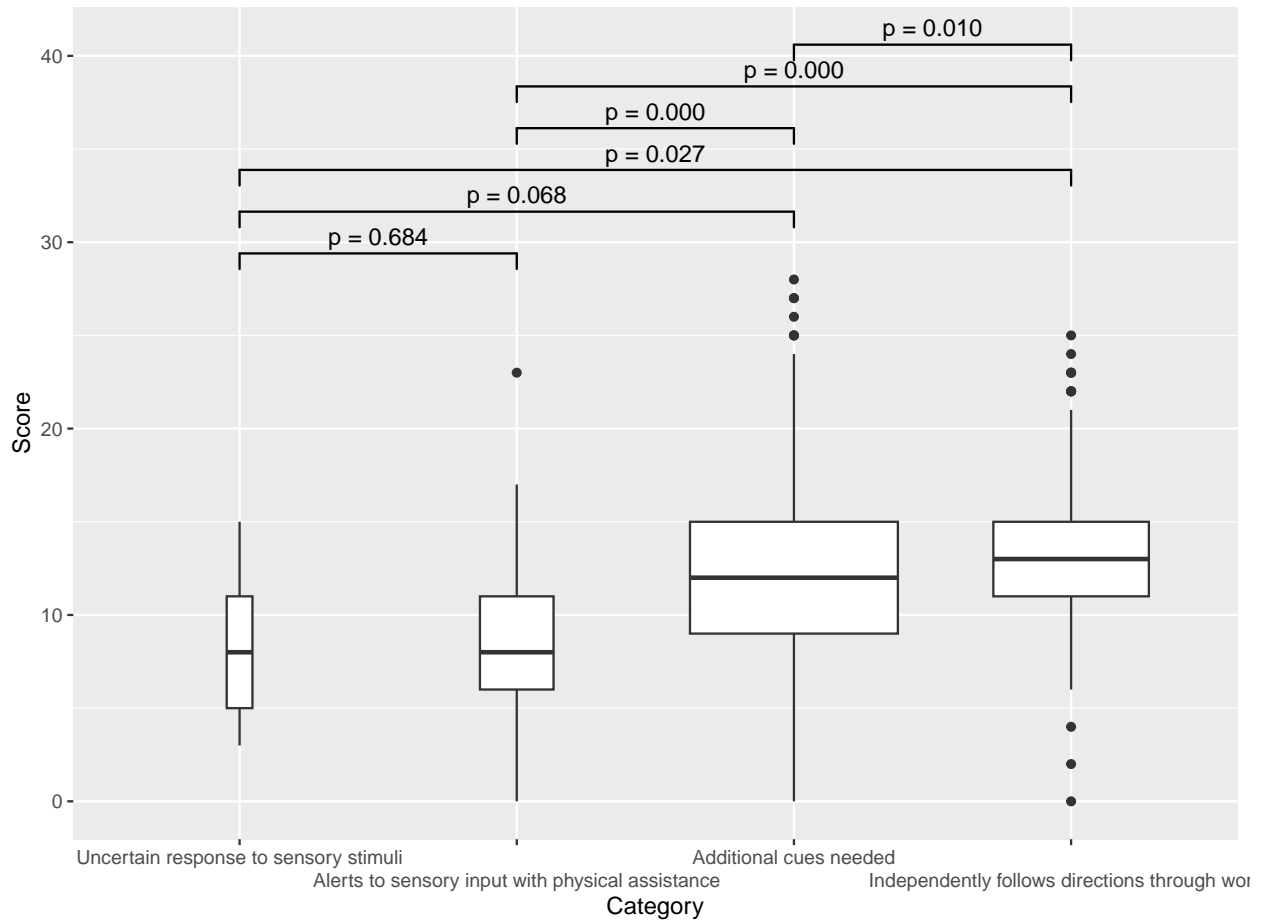


Figure 8: Reading 07 Learner Characteristic: Receptive Language

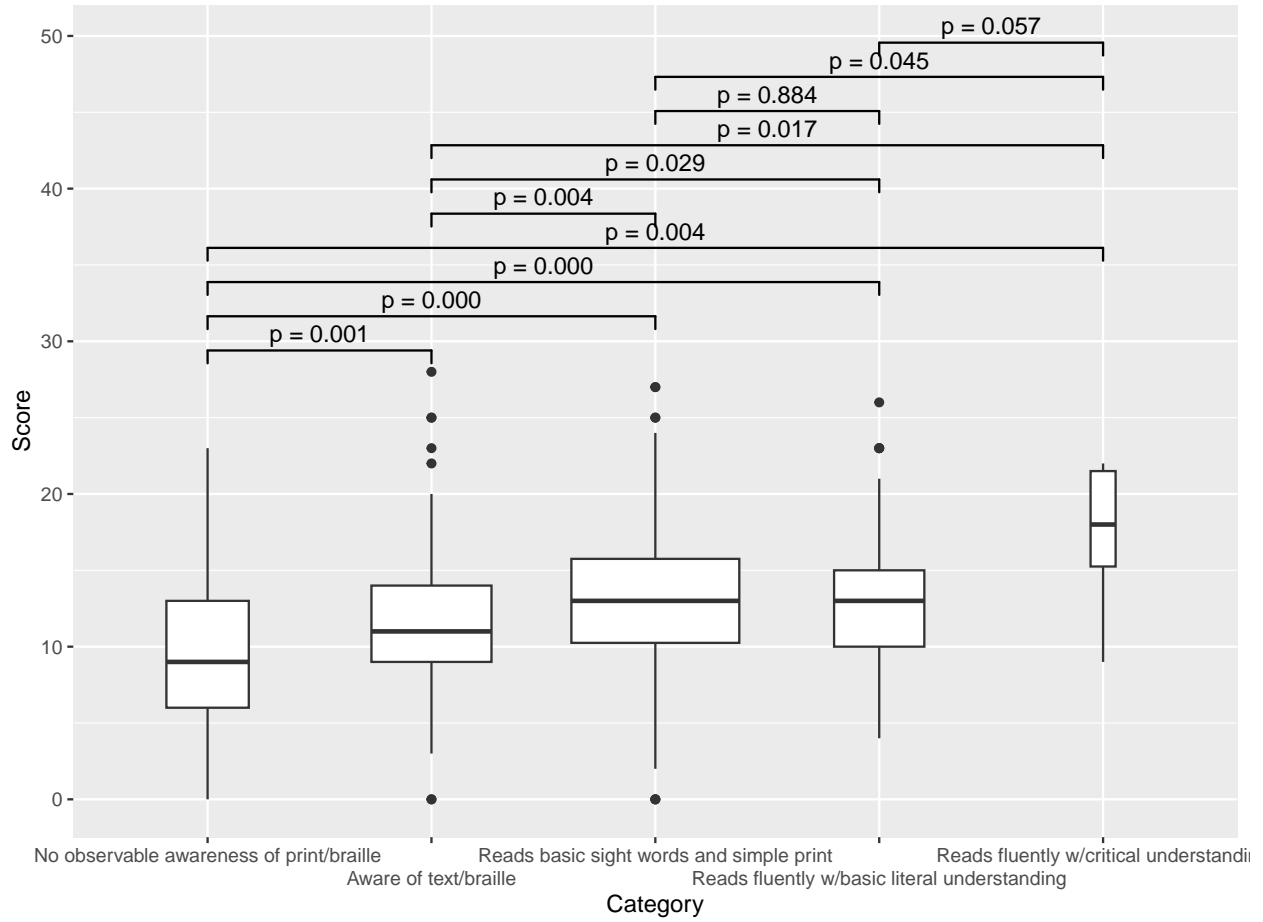


Figure 9: Reading 07 Learner Characteristic: Reading

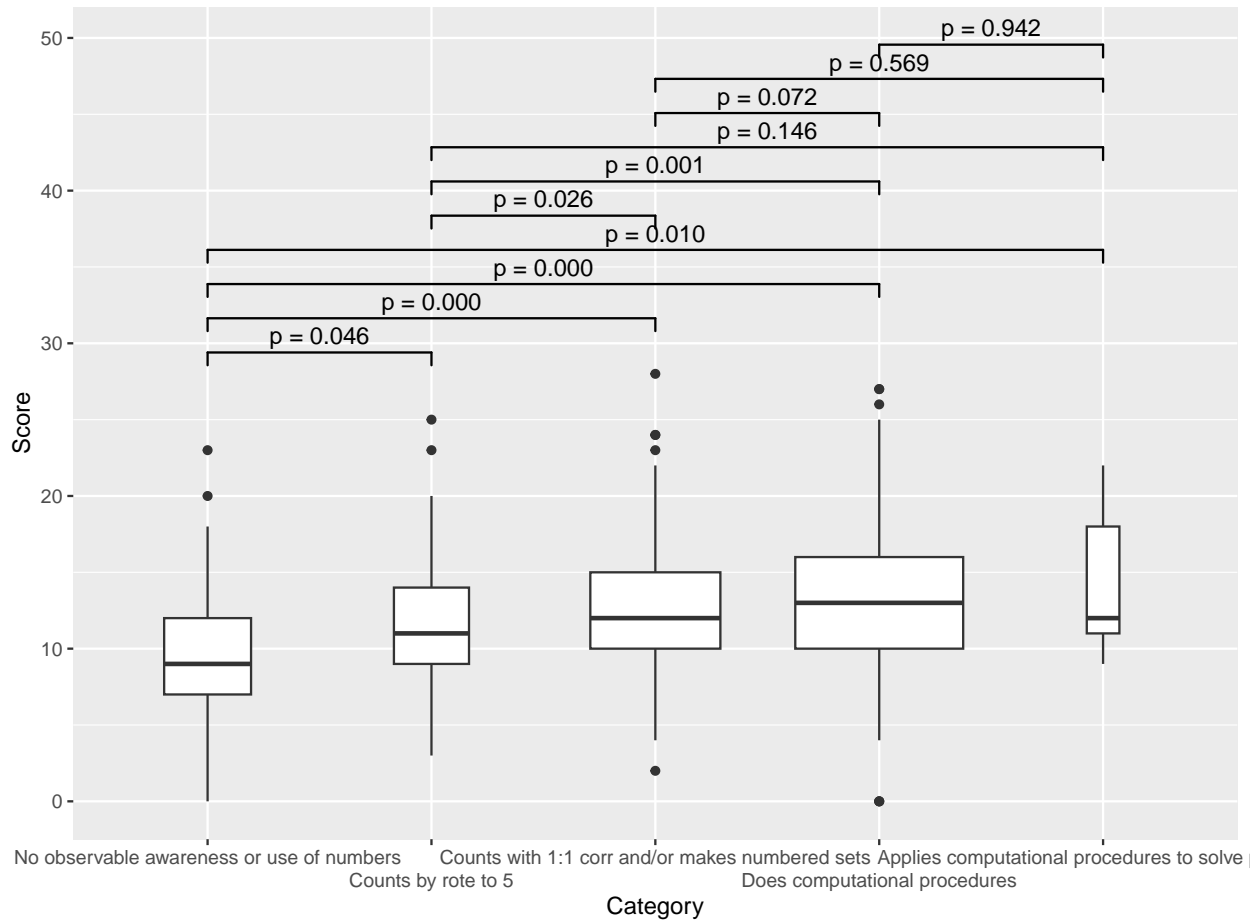


Figure 10: Reading 07 Learner Characteristic: Mathematics

Reading Grade 6

Table 1: Reading 06 Item Statistics

	Item	n	mean	sd	se
	A1	1 451	0.716	0.451	0.021
	A2	2 451	0.406	0.492	0.023
	A3	3 451	0.674	0.469	0.022
	A4	4 451	0.490	0.500	0.024
	A5	5 451	0.588	0.493	0.023
	B1	6 451	0.541	0.499	0.023
	B2	7 451	0.503	0.501	0.024
	B3	8 451	0.501	0.501	0.024
	B4	9 451	0.506	0.501	0.024
	B5	10 451	0.614	0.487	0.023
	C1	11 451	0.492	0.500	0.024
	C2	12 451	0.455	0.498	0.023
	C3	13 451	0.670	0.471	0.022
	C4	14 451	0.395	0.489	0.023
	C5	15 451	0.293	0.455	0.021
	D1	16 451	0.541	0.499	0.023
	D2	17 451	0.619	0.486	0.023
	D3	18 451	0.463	0.499	0.024
	D4	19 451	0.459	0.499	0.023
	D5	20 451	0.410	0.492	0.023
	E1	21 451	0.417	0.494	0.023
	E2	22 451	0.525	0.500	0.024
	E3	23 451	0.692	0.462	0.022
	E4	24 451	0.319	0.467	0.022
	E5	25 451	0.534	0.499	0.024
	F1	26 451	0.570	0.496	0.023
	F2	27 451	0.736	0.441	0.021
	F3	28 451	0.288	0.453	0.021
	F4	29 451	0.639	0.481	0.023
	F5	30 451	0.350	0.478	0.022

Chronbach's Alpha: 0.732

Table 2: Reading 06 Raw Score Frequencies

Score	freq	pct	pct_cum
6	2	0.443	0.443
7	14	3.104	3.548
8	13	2.882	6.430
9	17	3.769	10.200
10	25	5.543	15.743
11	44	9.756	25.499
12	30	6.652	32.151
13	40	8.869	41.020
14	29	6.430	47.450
15	33	7.317	54.767
16	24	5.322	60.089
17	28	6.208	66.297
18	33	7.317	73.614
19	22	4.878	78.492
20	16	3.548	82.040
21	21	4.656	86.696
22	18	3.991	90.687
23	9	1.996	92.683
24	12	2.661	95.344
25	14	3.104	98.448
26	2	0.443	98.891
27	1	0.222	99.113
28	3	0.665	99.778
29	1	0.222	100.000

Table 3: Reading 06 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			3	0.007	-0.062	-0.017	0.017	0.000	0.009	0.000
A1		a	57	0.126	-0.391	-0.284	0.304	0.136	0.019	0.021
A1		b	68	0.151	-0.348	-0.259	0.270	0.220	0.065	0.010
A1	*	c	323	0.716	0.403	0.560	0.409	0.644	0.907	0.969
A2			1	0.002	-0.033	0.000	0.000	0.008	0.000	0.000
A2	*	a	183	0.406	0.301	0.490	0.252	0.280	0.421	0.742
A2		b	183	0.406	-0.272	-0.208	0.435	0.462	0.467	0.227
A2		c	84	0.186	-0.336	-0.282	0.313	0.250	0.112	0.031
A3			1	0.002	-0.081	-0.009	0.009	0.000	0.000	0.000
A3		a	58	0.129	-0.374	-0.294	0.304	0.136	0.037	0.010
A3	*	b	304	0.674	0.465	0.692	0.287	0.636	0.860	0.979
A3		c	88	0.195	-0.429	-0.390	0.400	0.227	0.103	0.010
A4			1	0.002	-0.052	-0.009	0.009	0.000	0.000	0.000
A4	*	a	221	0.490	0.335	0.560	0.296	0.348	0.542	0.856
A4		b	124	0.275	-0.289	-0.246	0.339	0.326	0.308	0.093
A4		c	105	0.233	-0.357	-0.305	0.357	0.326	0.150	0.052
A5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A5		a	72	0.160	-0.283	-0.201	0.252	0.174	0.140	0.052
A5	*	b	265	0.588	0.160	0.350	0.443	0.561	0.589	0.794
A5		c	114	0.253	-0.197	-0.150	0.304	0.265	0.271	0.155
B1			2	0.004	-0.107	-0.017	0.017	0.000	0.000	0.000
B1		a	87	0.193	-0.219	-0.166	0.270	0.189	0.196	0.103
B1		b	118	0.262	-0.219	-0.134	0.278	0.303	0.299	0.144
B1	*	c	244	0.541	0.144	0.318	0.435	0.508	0.505	0.753
B2			1	0.002	-0.090	-0.009	0.009	0.000	0.000	0.000
B2	*	a	227	0.503	0.276	0.470	0.313	0.394	0.589	0.784
B2		b	90	0.200	-0.193	-0.161	0.243	0.212	0.243	0.082
B2		c	133	0.295	-0.378	-0.301	0.435	0.394	0.168	0.134
B3			2	0.004	-0.053	-0.009	0.009	0.000	0.009	0.000
B3		a	127	0.282	-0.193	-0.138	0.313	0.280	0.346	0.175
B3	*	b	226	0.501	0.266	0.507	0.287	0.447	0.533	0.794
B3		c	96	0.213	-0.390	-0.360	0.391	0.273	0.112	0.031
B4			1	0.002	-0.052	-0.009	0.009	0.000	0.000	0.000
B4		a	93	0.206	-0.167	-0.086	0.261	0.189	0.196	0.175
B4	*	b	228	0.506	0.241	0.431	0.270	0.477	0.617	0.701
B4		c	129	0.286	-0.370	-0.337	0.461	0.333	0.187	0.124
B5			2	0.004	-0.026	0.002	0.009	0.000	0.000	0.010
B5		a	81	0.180	-0.308	-0.223	0.296	0.212	0.112	0.072
B5		b	91	0.202	-0.278	-0.237	0.278	0.258	0.196	0.041
B5	*	c	277	0.614	0.263	0.459	0.417	0.530	0.692	0.876
C1			2	0.004	-0.080	-0.009	0.009	0.008	0.000	0.000
C1		a	86	0.191	-0.197	-0.160	0.304	0.114	0.206	0.144
C1	*	b	222	0.492	0.249	0.500	0.252	0.462	0.551	0.753
C1		c	141	0.313	-0.344	-0.332	0.435	0.417	0.243	0.103
C2			2	0.004	-0.060	-0.009	0.009	0.000	0.009	0.000
C2	*	a	205	0.455	0.244	0.454	0.278	0.371	0.495	0.732
C2		b	103	0.228	-0.243	-0.212	0.304	0.235	0.262	0.093
C2		c	141	0.313	-0.297	-0.233	0.409	0.394	0.234	0.175
C3			1	0.002	-0.090	-0.009	0.009	0.000	0.000	0.000
C3		a	69	0.153	-0.343	-0.291	0.322	0.136	0.103	0.031

Table 3: Reading 06 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	79	0.175	-0.262	-0.180	0.252	0.212	0.140	0.072
C3	*	c	302	0.670	0.286	0.480	0.417	0.652	0.757	0.897
C4			2	0.004	-0.114	-0.017	0.017	0.000	0.000	0.000
C4		a	119	0.264	-0.184	-0.097	0.365	0.250	0.168	0.268
C4		b	152	0.337	0.021	0.155	0.278	0.311	0.346	0.433
C4	*	c	178	0.395	-0.111	-0.040	0.339	0.439	0.486	0.299
C5			1	0.002	-0.090	-0.009	0.009	0.000	0.000	0.000
C5		a	117	0.259	-0.208	-0.184	0.339	0.235	0.299	0.155
C5	*	b	132	0.293	0.023	0.138	0.243	0.273	0.290	0.381
C5		c	201	0.446	-0.091	0.055	0.409	0.492	0.411	0.464
D1			1	0.002	-0.090	-0.009	0.009	0.000	0.000	0.000
D1		a	55	0.122	-0.353	-0.247	0.278	0.121	0.037	0.031
D1		b	151	0.335	-0.319	-0.263	0.417	0.432	0.290	0.155
D1	*	c	244	0.541	0.332	0.519	0.296	0.447	0.673	0.814
D2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D2		a	85	0.188	-0.297	-0.260	0.322	0.197	0.150	0.062
D2	*	b	279	0.619	0.294	0.523	0.374	0.523	0.748	0.897
D2		c	87	0.193	-0.323	-0.263	0.304	0.280	0.103	0.041
D3			3	0.007	-0.084	-0.017	0.017	0.008	0.000	0.000
D3	*	a	209	0.463	0.282	0.457	0.296	0.288	0.598	0.753
D3		b	92	0.204	-0.261	-0.166	0.270	0.288	0.121	0.103
D3		c	147	0.326	-0.315	-0.273	0.417	0.417	0.280	0.144
D4			2	0.004	0.022	0.000	0.000	0.000	0.019	0.000
D4		a	115	0.255	-0.149	-0.086	0.261	0.288	0.280	0.175
D4		b	127	0.282	-0.301	-0.266	0.400	0.311	0.252	0.134
D4	*	c	207	0.459	0.146	0.352	0.339	0.402	0.449	0.691
D5			3	0.007	-0.012	-0.009	0.009	0.000	0.019	0.000
D5		a	97	0.215	-0.221	-0.188	0.322	0.205	0.187	0.134
D5	*	b	185	0.410	0.113	0.248	0.278	0.356	0.514	0.526
D5		c	166	0.368	-0.191	-0.051	0.391	0.439	0.280	0.340
E1			1	0.002	-0.023	0.000	0.000	0.008	0.000	0.000
E1		a	81	0.180	-0.374	-0.319	0.339	0.197	0.131	0.021
E1	*	b	188	0.417	0.244	0.452	0.270	0.333	0.402	0.722
E1		c	181	0.401	-0.196	-0.134	0.391	0.462	0.467	0.258
E2			3	0.007	-0.140	-0.026	0.026	0.000	0.000	0.000
E2		a	120	0.266	-0.220	-0.186	0.330	0.273	0.299	0.144
E2		b	91	0.202	-0.334	-0.296	0.348	0.212	0.168	0.052
E2	*	c	237	0.525	0.254	0.508	0.296	0.515	0.533	0.804
E3			2	0.004	-0.128	-0.017	0.017	0.000	0.000	0.000
E3		a	74	0.164	-0.320	-0.281	0.322	0.152	0.121	0.041
E3		b	63	0.140	-0.299	-0.216	0.278	0.121	0.084	0.062
E3	*	c	312	0.692	0.310	0.514	0.383	0.727	0.794	0.897
E4			1	0.002	-0.033	0.000	0.000	0.008	0.000	0.000
E4	*	a	144	0.319	0.176	0.334	0.191	0.250	0.355	0.526
E4		b	137	0.304	-0.241	-0.211	0.417	0.295	0.280	0.206
E4		c	169	0.375	-0.206	-0.123	0.391	0.447	0.364	0.268
E5			4	0.009	-0.051	-0.007	0.017	0.008	0.000	0.010
E5		a	133	0.295	-0.227	-0.177	0.322	0.356	0.327	0.144
E5		b	73	0.162	-0.321	-0.249	0.270	0.189	0.140	0.021
E5	*	c	241	0.534	0.223	0.433	0.391	0.447	0.533	0.825

Table 3: Reading 06 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	0.054	0.010	0.000	0.000	0.000	0.010
F1		a	91	0.202	-0.324	-0.263	0.304	0.258	0.168	0.041
F1	*	b	257	0.570	0.362	0.585	0.322	0.439	0.692	0.907
F1		c	102	0.226	-0.373	-0.333	0.374	0.303	0.140	0.041
F2			1	0.002	-0.013	0.000	0.000	0.008	0.000	0.000
F2		a	66	0.146	-0.436	-0.374	0.374	0.159	0.019	0.000
F2		b	52	0.115	-0.322	-0.224	0.235	0.129	0.065	0.010
F2	*	c	332	0.736	0.421	0.598	0.391	0.705	0.916	0.990
F3			2	0.004	-0.060	-0.009	0.009	0.000	0.009	0.000
F3	*	a	130	0.288	0.167	0.236	0.217	0.197	0.327	0.454
F3		b	99	0.220	-0.282	-0.162	0.296	0.280	0.140	0.134
F3		c	220	0.488	-0.158	-0.066	0.478	0.523	0.523	0.412
F4			2	0.004	-0.067	-0.009	0.009	0.008	0.000	0.000
F4		a	68	0.151	-0.301	-0.220	0.261	0.152	0.131	0.041
F4		b	93	0.206	-0.398	-0.360	0.391	0.242	0.121	0.031
F4	*	c	288	0.639	0.375	0.589	0.339	0.598	0.748	0.928
F5			2	0.004	-0.005	0.000	0.000	0.008	0.009	0.000
F5	*	a	158	0.350	0.198	0.325	0.252	0.242	0.383	0.577
F5		b	157	0.348	-0.158	-0.073	0.330	0.371	0.421	0.258
F5		c	134	0.297	-0.324	-0.252	0.417	0.379	0.187	0.165

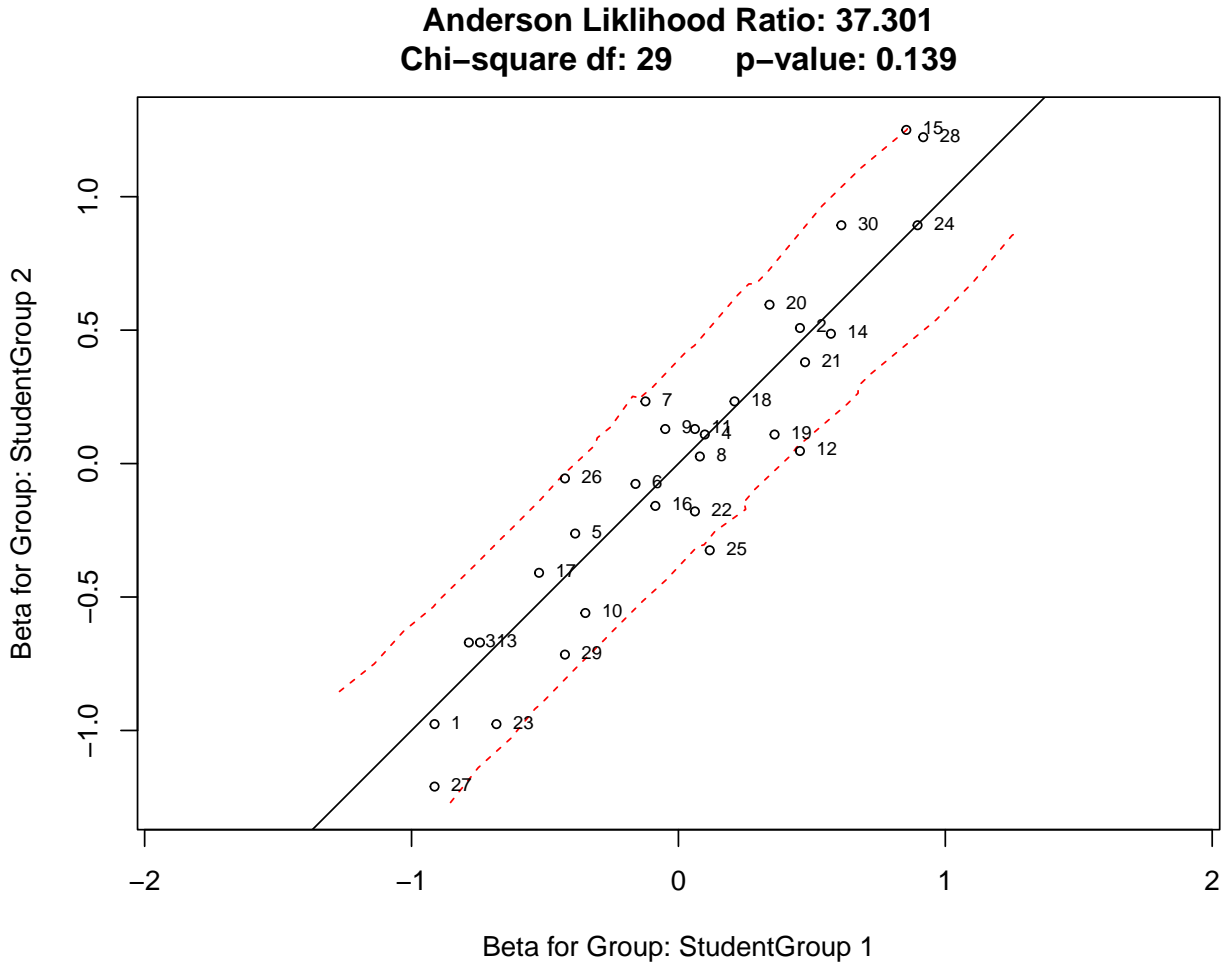


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Reading 06 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	451	0.7761	0.8607
A2	451	0.9633	0.9513
A3	451	0.7524	0.8259
A4	451	0.9164	0.9331
A5	451	1.0336	1.0510
B1	451	1.0539	1.0685
B2	451	0.9685	0.9748
B3	451	0.9776	0.9824
B4	451	1.0080	1.0007
B5	451	0.9489	0.9735
C1	451	1.0050	0.9958
C2	451	1.0006	0.9998
C3	451	0.9153	0.9434
C4	451	1.3251	1.2804
C5	451	1.2157	1.1583
D1	451	0.9147	0.9325
D2	451	0.9230	0.9539
D3	451	0.9769	0.9701
D4	451	1.0725	1.0721
D5	451	1.1298	1.0981
E1	451	0.9956	0.9967
E2	451	0.9712	0.9902
E3	451	0.9118	0.9148
E4	451	1.0733	1.0408
E5	451	0.9902	1.0121
F1	451	0.8737	0.9109
F2	451	0.7369	0.8461
F3	451	1.0681	1.0350
F4	451	0.8490	0.8890
F5	451	1.0461	1.0195

Table 5: Reading 06 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9798	0.1231
Infit	Infit	0.9894	0.0921

Table 6: Reading 06 Raw to Theta Table

Raw Score	theta	SE
6	-1.4872	0.4603
7	-1.2920	0.4384
8	-1.1130	0.4217
9	-0.9460	0.4087
10	-0.7881	0.3986
11	-0.6369	0.3910
12	-0.4907	0.3853
13	-0.3480	0.3814
14	-0.2076	0.3792
15	-0.0682	0.3784
16	0.0711	0.3792
17	0.2116	0.3815
18	0.3543	0.3853
19	0.5005	0.3910
20	0.6518	0.3987
21	0.8098	0.4087
22	0.9768	0.4217
23	1.1559	0.4385
24	1.3511	0.4604
25	1.5688	0.4894
26	1.8186	0.5294
27	2.1178	0.5875
28	2.5009	0.6806
29	3.0572	0.8605

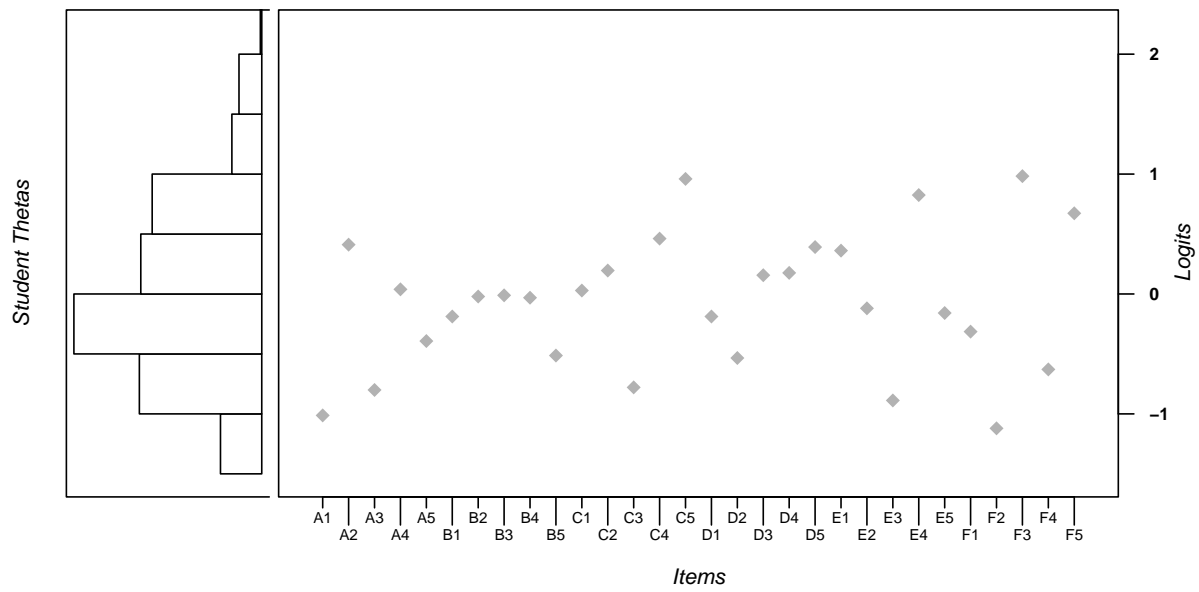


Figure 2: Student Ability - Item Difficulty Wright Map

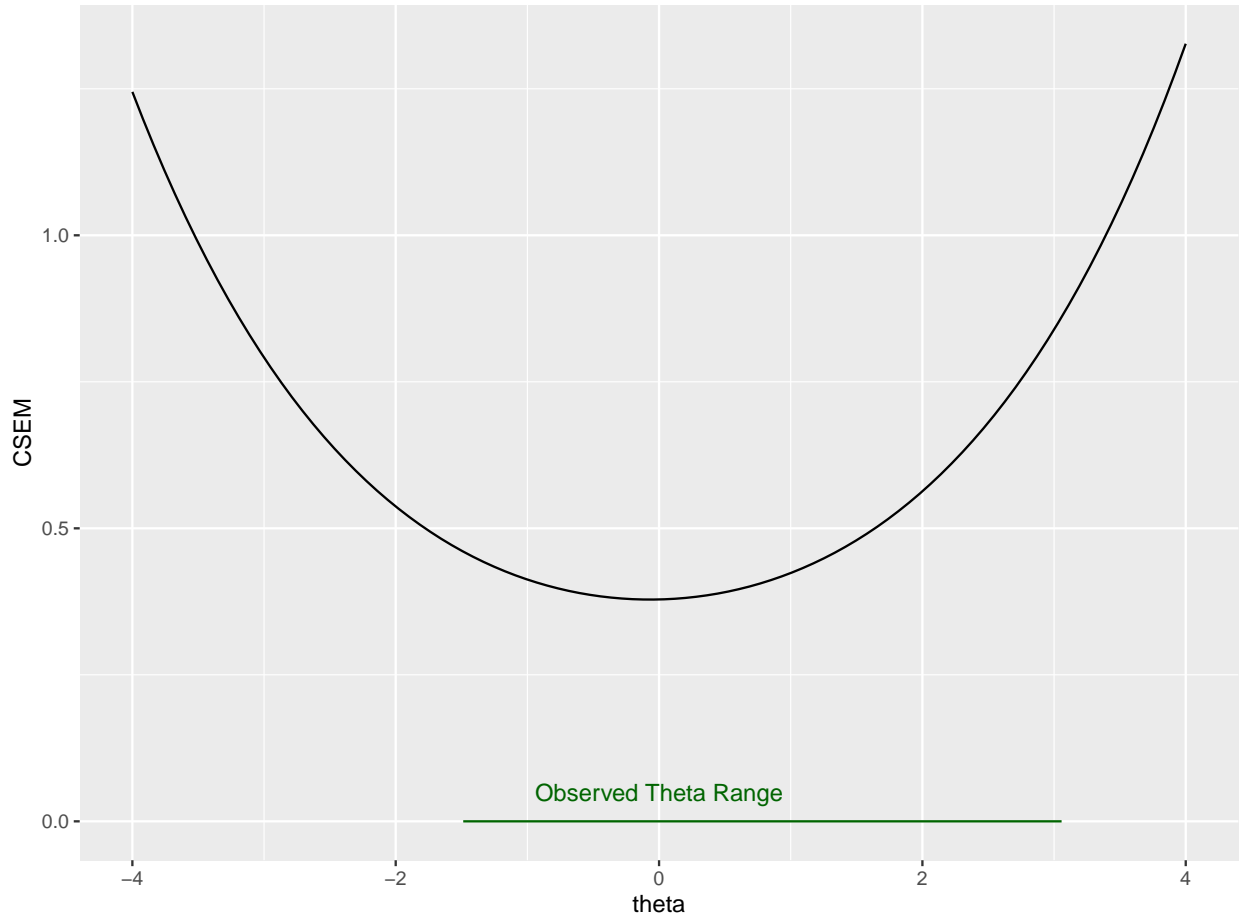


Figure 3: Reading 06 Conditional Standard Error of Measure

Table 7: Reading 06 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		451	0.72
Ethnic	Black	55	0.68
Ethnic	Hispanic	28	0.57
Ethnic	Other	25	0.73
Ethnic	White	333	0.73
Disadvantaged	No	347	0.71
Disadvantaged	Yes	104	0.75
LEP	No	426	0.72
LEP	Yes	25	0.39
Gender	Female	138	0.67
Gender	Male	313	0.73
Homeless	No	435	0.70
Homeless	Yes	16	0.86

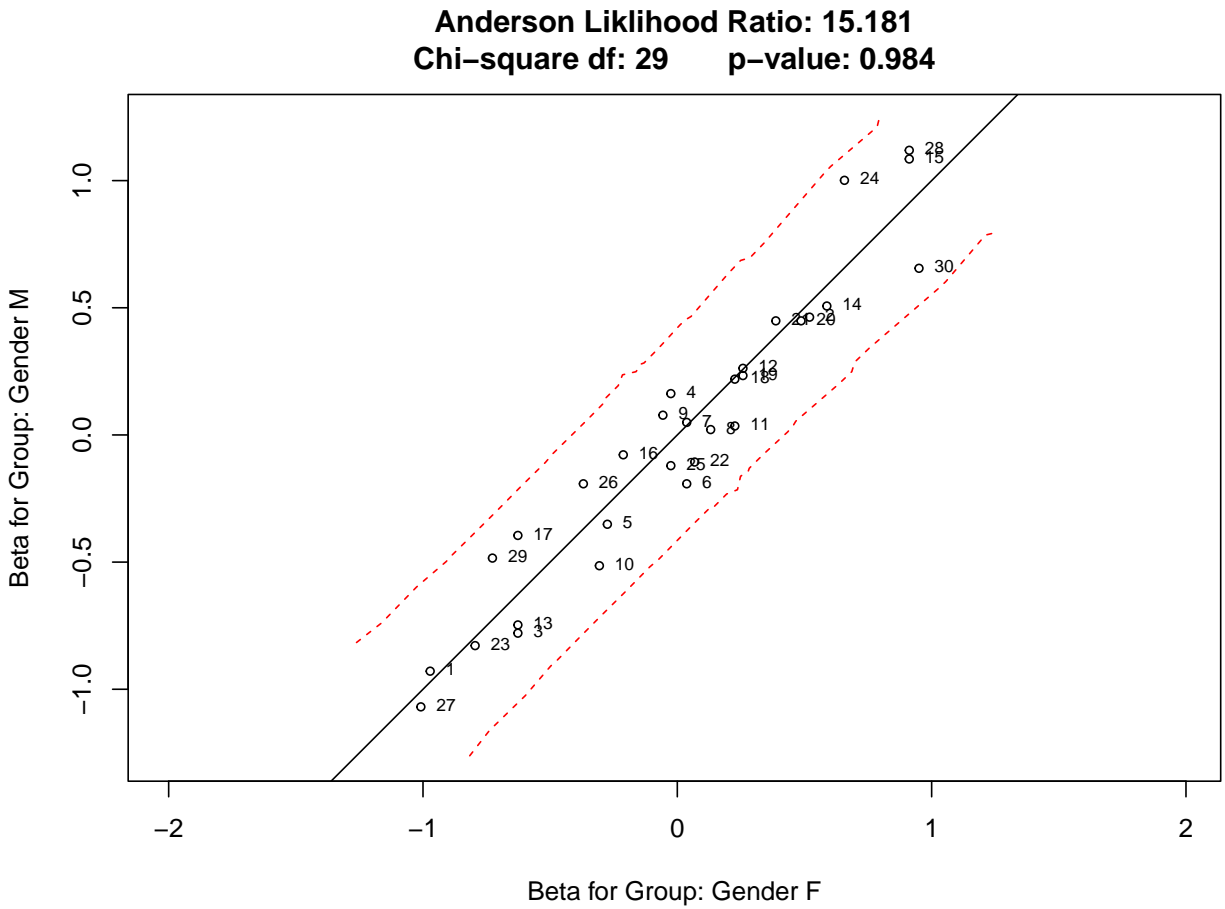


Figure 4: Reading 06 Differential Item (DIF) and Test (DTF) Function for Gender

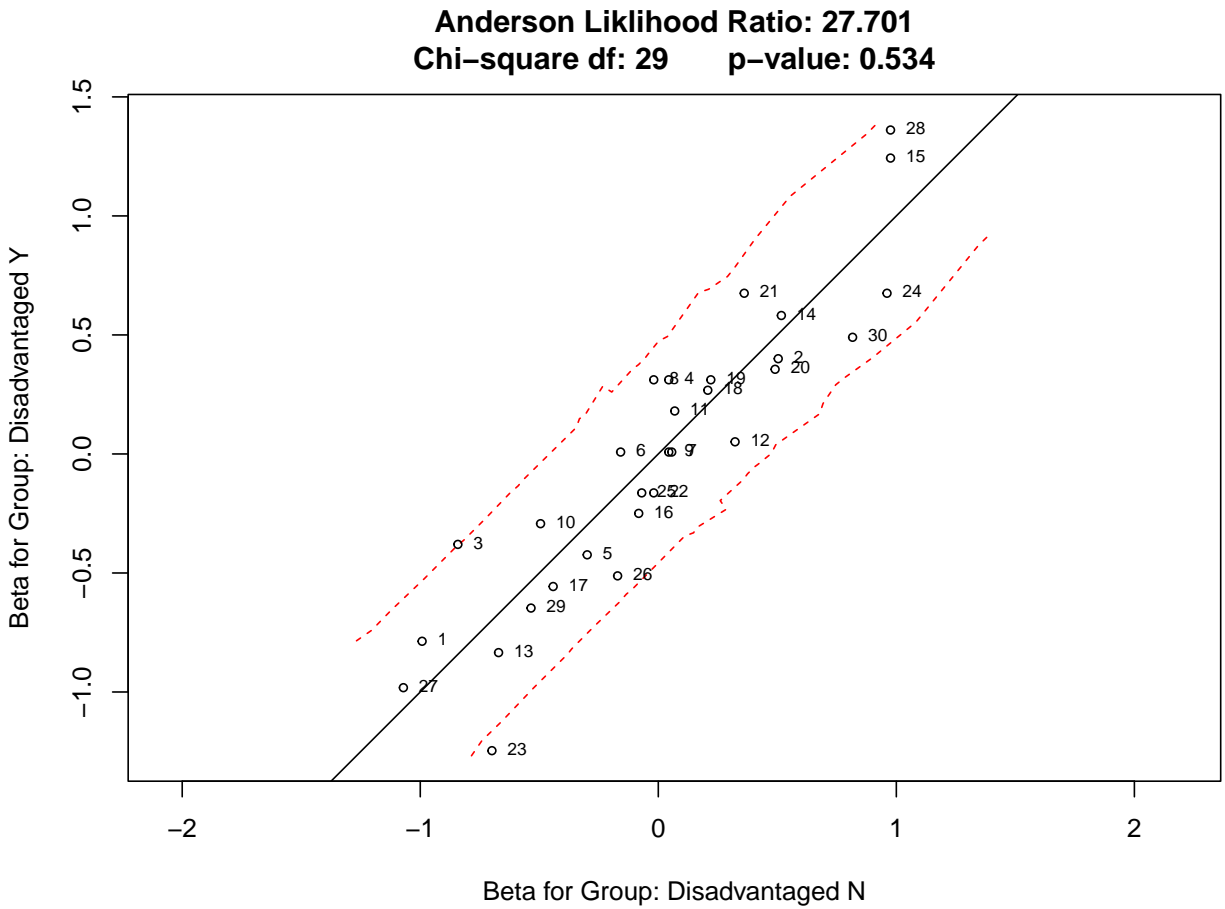


Figure 5: Reading 06 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

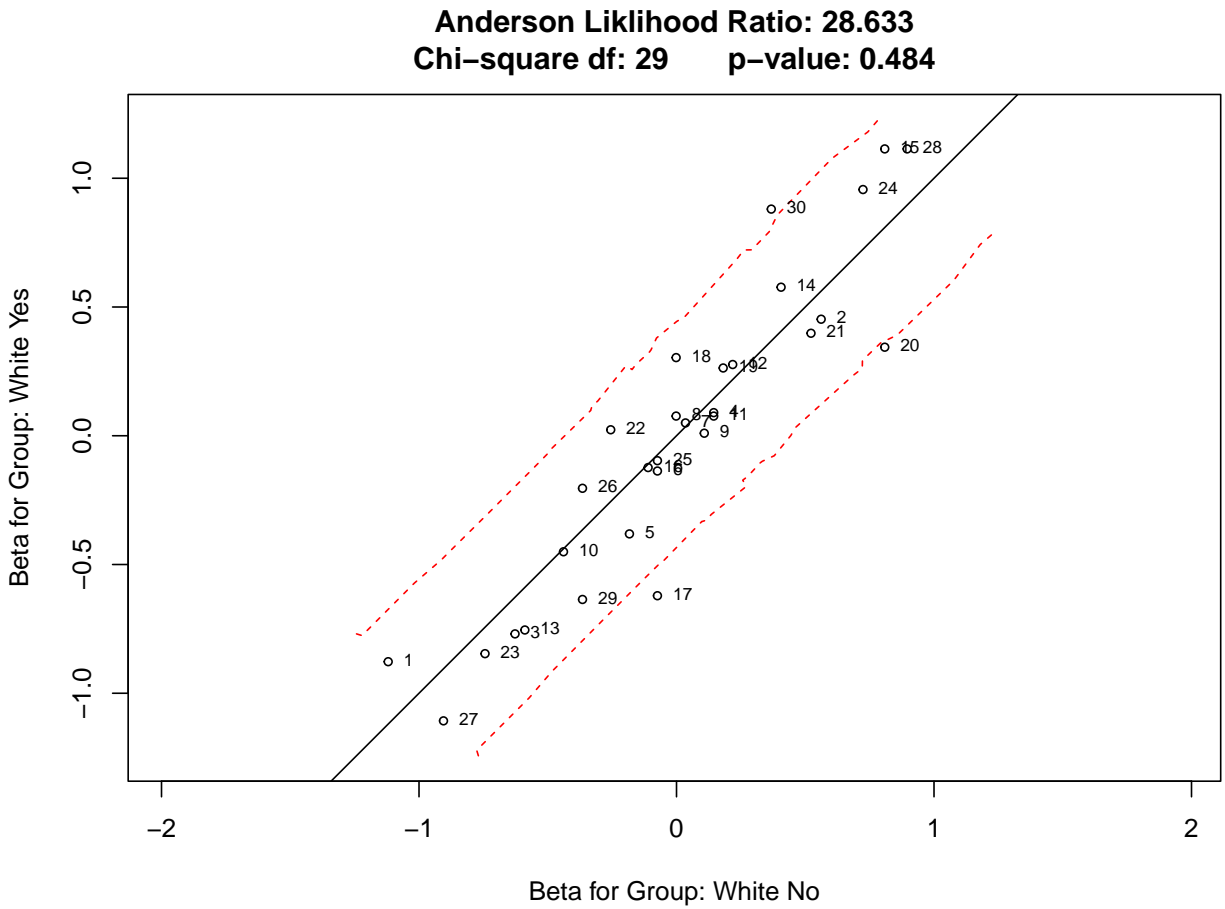


Figure 6: Reading 06 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.5204	0.3085	0.8289
False	0.0535	0.1176	0.1711
Total	0.5739	0.4261	1.0000

Accuracy = 0.8289

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.4591	0.1148
j	0.1148	0.3113

Proportion of Consistent Classifications = 0.7704
Cohen's Kappa = 0.5306

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0115	0.0159	0.9634	0.0091	0.5590	0.9837	0.9750	0.0095	0.0008	0.0087
Apprentice	0.4838	0.0626	0.3201	0.1336	0.7837	0.8364	0.8038	0.4138	0.2985	0.1644
Proficient	0.3025	0.1178	0.5207	0.0590	0.8368	0.8155	0.8232	0.3009	0.1766	0.1510
Distinguished	0.0004	0.0055	0.9940	0.0001	0.7140	0.9945	0.9944	0.0012	0.0000	0.0012

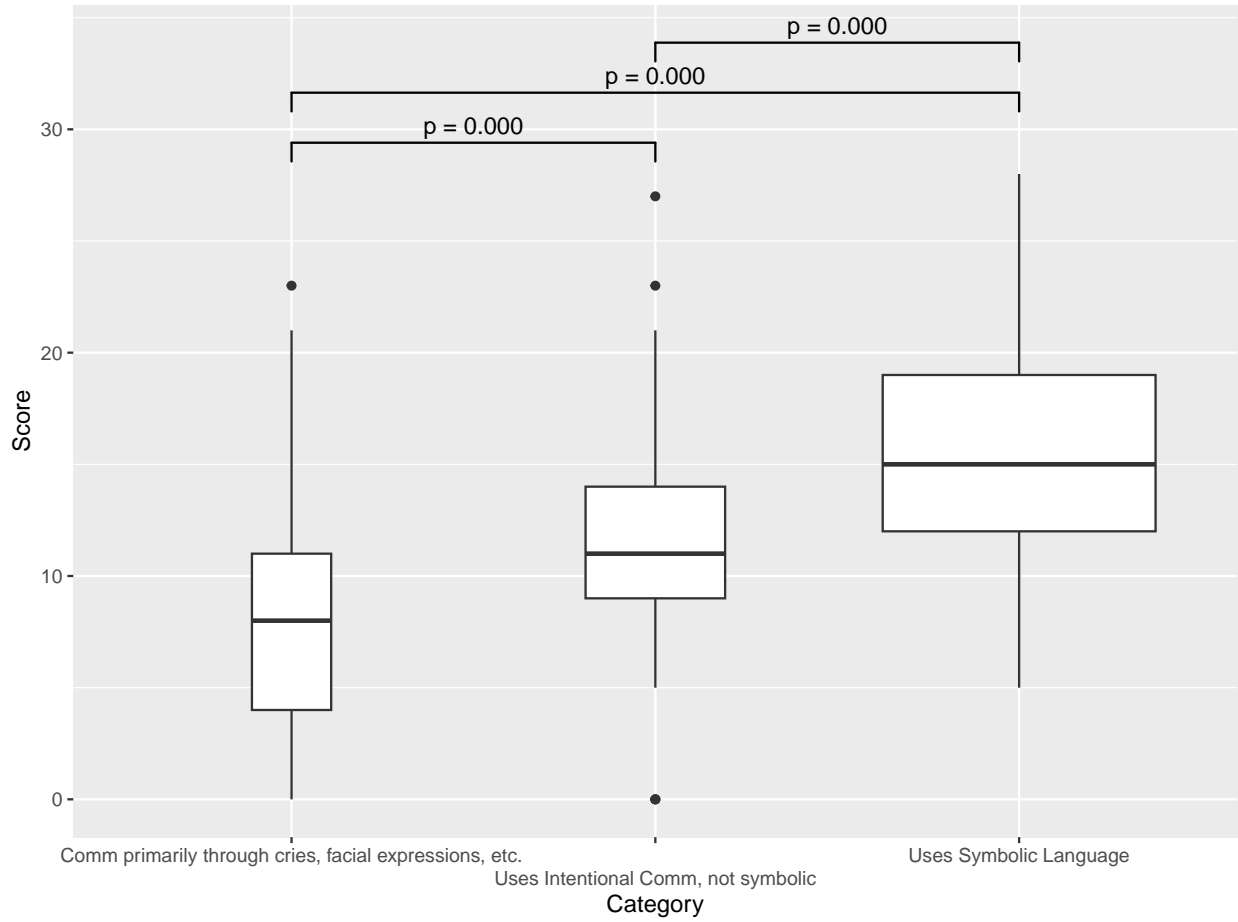


Figure 7: Reading 06 Learner Characteristic: Expressive Communication

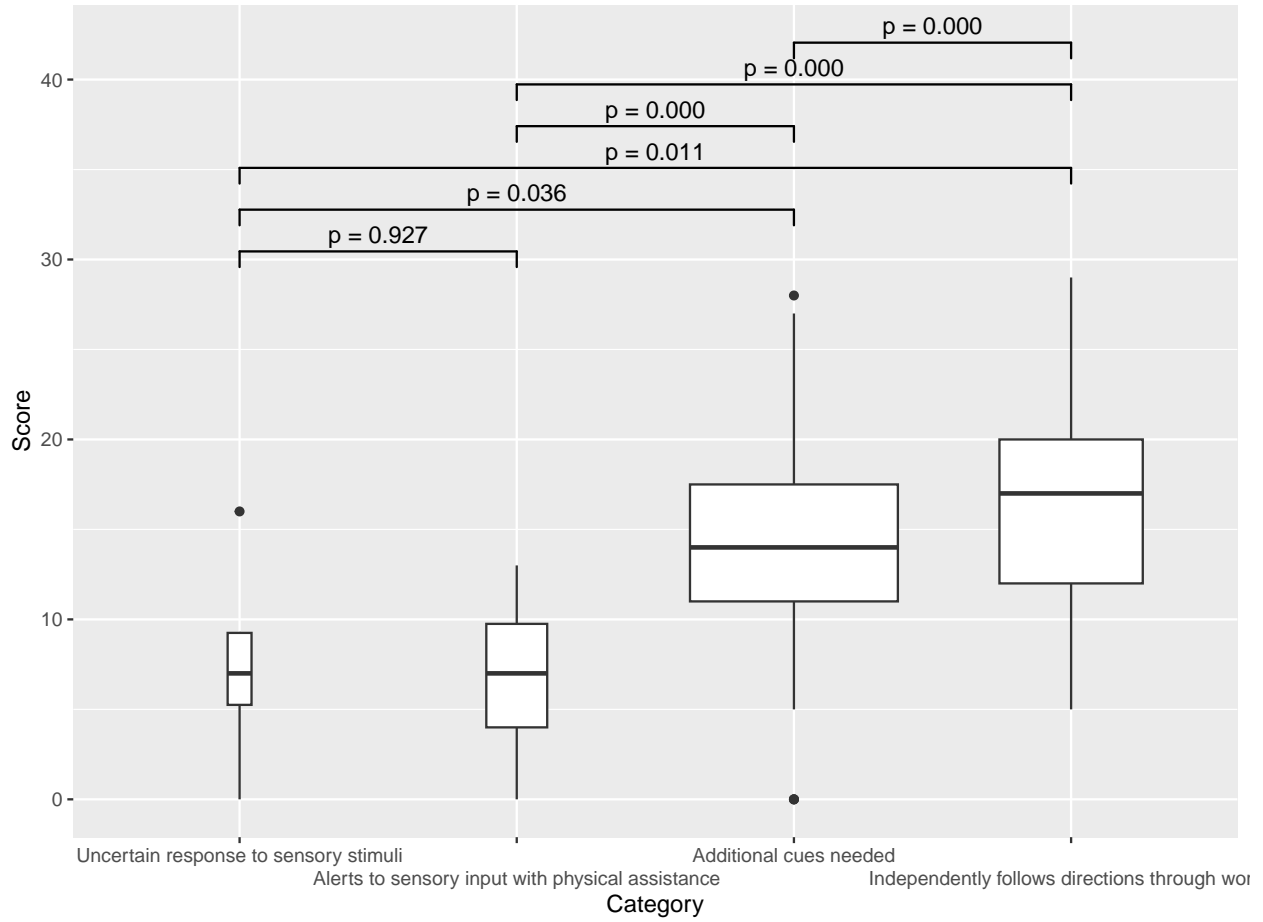


Figure 8: Reading 06 Learner Characteristic: Receptive Language

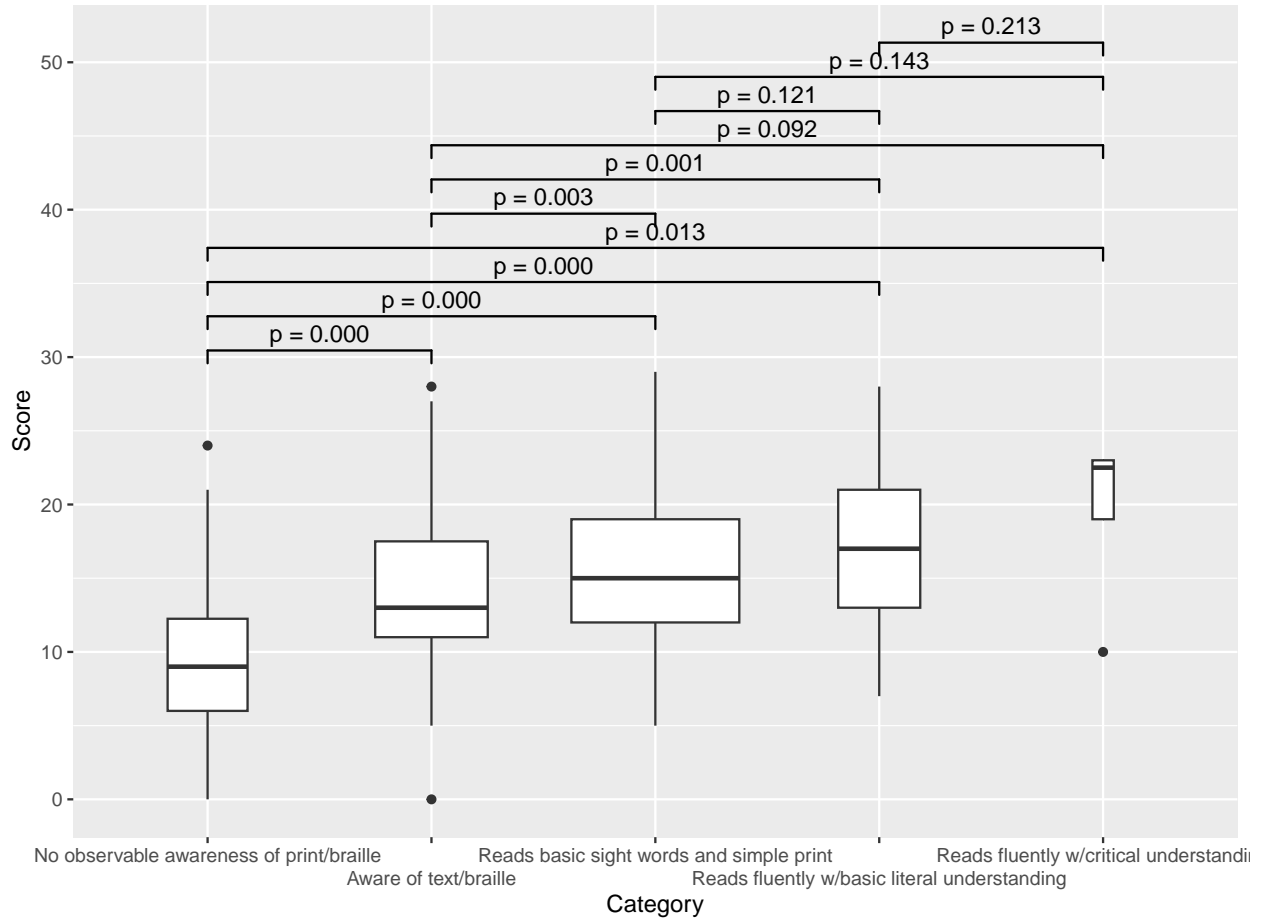


Figure 9: Reading 06 Learner Characteristic: Reading

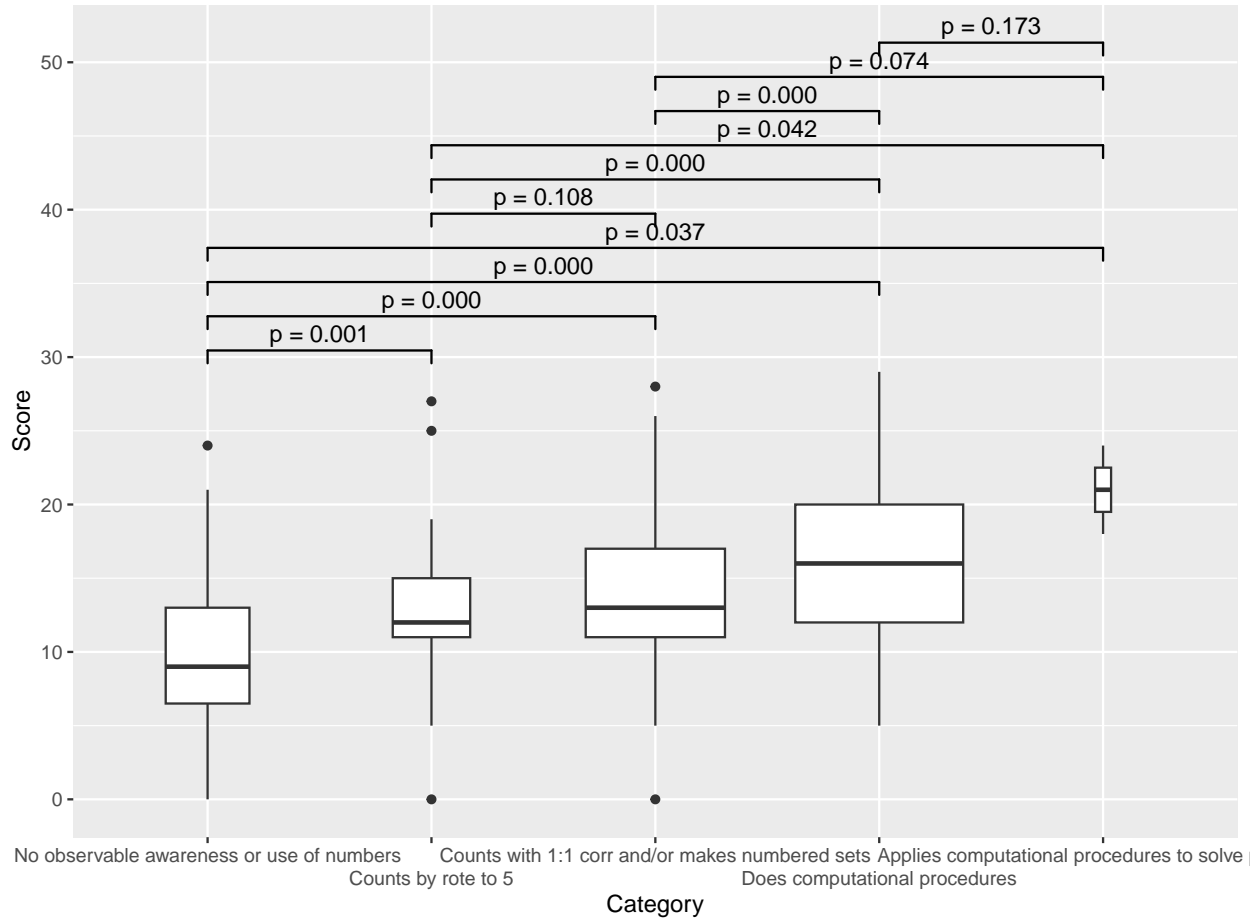


Figure 10: Reading 06 Learner Characteristic: Mathematics

Reading Grade 5

Table 1: Reading 05 Item Statistics

	Item	n	mean	sd	se	
	A1	1	501	0.521	0.500	0.022
	A2	2	501	0.499	0.500	0.022
	A3	3	501	0.329	0.470	0.021
	A4	4	501	0.389	0.488	0.022
	A5	5	501	0.389	0.488	0.022
	B1	6	501	0.319	0.467	0.021
	B2	7	501	0.687	0.464	0.021
	B3	8	501	0.457	0.499	0.022
	B4	9	501	0.395	0.489	0.022
	B5	10	501	0.519	0.500	0.022
	C1	11	501	0.533	0.499	0.022
	C2	12	501	0.489	0.500	0.022
	C3	13	501	0.417	0.494	0.022
	C4	14	501	0.319	0.467	0.021
	C5	15	501	0.545	0.498	0.022
	D1	16	501	0.355	0.479	0.021
	D2	17	501	0.405	0.491	0.022
	D3	18	501	0.533	0.499	0.022
	D4	19	501	0.401	0.491	0.022
	D5	20	501	0.667	0.472	0.021
	E1	21	501	0.405	0.491	0.022
	E2	22	501	0.275	0.447	0.020
	E3	23	501	0.507	0.500	0.022
	E4	24	501	0.459	0.499	0.022
	E5	25	501	0.553	0.498	0.022
	F1	26	501	0.477	0.500	0.022
	F2	27	501	0.405	0.491	0.022
	F3	28	501	0.405	0.491	0.022
	F4	29	501	0.361	0.481	0.021
	F5	30	501	0.371	0.484	0.022

Chronbach's Alpha: 0.6965

Table 2: Reading 05 Raw Score Frequencies

Score	freq	pct	pct_cum
4	1	0.200	0.200
5	6	1.198	1.397
6	5	0.998	2.395
7	16	3.194	5.589
8	32	6.387	11.976
9	45	8.982	20.958
10	52	10.379	31.337
11	51	10.180	41.517
12	39	7.784	49.301
13	42	8.383	57.685
14	36	7.186	64.870
15	31	6.188	71.058
16	33	6.587	77.645
17	20	3.992	81.637
18	21	4.192	85.828
19	14	2.794	88.623
20	14	2.794	91.417
21	10	1.996	93.413
22	4	0.798	94.212
23	8	1.597	95.808
24	5	0.998	96.806
25	7	1.397	98.204
26	6	1.198	99.401
27	2	0.399	99.800
28	1	0.200	100.000

Table 3: Reading 05 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.012	0.000	0.000	0.008	0.01	0.000
A1	*	a	261	0.521	0.238	0.453	0.306	0.485	0.64	0.759
A1		b	88	0.176	-0.303	-0.209	0.280	0.212	0.08	0.071
A1		c	150	0.299	-0.271	-0.244	0.414	0.295	0.27	0.170
A2			2	0.004	-0.086	-0.013	0.013	0.000	0.00	0.000
A2	*	a	250	0.499	0.301	0.503	0.274	0.417	0.65	0.777
A2		b	72	0.144	-0.215	-0.135	0.197	0.174	0.11	0.062
A2		c	177	0.353	-0.390	-0.355	0.516	0.409	0.24	0.161
A3			3	0.006	-0.150	-0.019	0.019	0.000	0.00	0.000
A3		a	151	0.301	-0.087	0.056	0.229	0.371	0.34	0.286
A3	*	b	165	0.329	0.095	0.222	0.242	0.311	0.34	0.464
A3		c	182	0.363	-0.275	-0.260	0.510	0.318	0.32	0.250
A4			1	0.002	-0.061	-0.006	0.006	0.000	0.00	0.000
A4		a	182	0.363	-0.096	0.020	0.338	0.348	0.43	0.357
A4	*	b	195	0.389	0.140	0.295	0.268	0.417	0.35	0.562
A4		c	123	0.246	-0.357	-0.308	0.389	0.235	0.22	0.080
A5			3	0.006	-0.089	-0.013	0.013	0.000	0.01	0.000
A5	*	a	195	0.389	0.267	0.445	0.197	0.348	0.46	0.643
A5		b	150	0.299	-0.210	-0.118	0.350	0.318	0.27	0.232
A5		c	153	0.305	-0.346	-0.314	0.439	0.333	0.26	0.125
B1			1	0.002	-0.052	-0.006	0.006	0.000	0.00	0.000
B1		a	105	0.210	-0.190	-0.099	0.242	0.242	0.19	0.143
B1	*	b	160	0.319	0.340	0.500	0.089	0.311	0.39	0.589
B1		c	235	0.469	-0.400	-0.395	0.662	0.447	0.42	0.268
B2			6	0.012	-0.099	-0.019	0.019	0.023	0.00	0.000
B2		a	81	0.162	-0.297	-0.238	0.274	0.167	0.12	0.036
B2		b	70	0.140	-0.241	-0.144	0.197	0.159	0.12	0.054
B2	*	c	344	0.687	0.230	0.401	0.510	0.652	0.76	0.911
B3			1	0.002	-0.080	-0.006	0.006	0.000	0.00	0.000
B3	*	a	229	0.457	0.294	0.499	0.242	0.417	0.53	0.741
B3		b	136	0.271	-0.223	-0.134	0.312	0.288	0.29	0.179
B3		c	135	0.269	-0.382	-0.359	0.439	0.295	0.18	0.080
B4			4	0.008	-0.094	-0.019	0.019	0.008	0.00	0.000
B4		a	146	0.291	-0.280	-0.163	0.350	0.341	0.25	0.188
B4		b	153	0.305	-0.138	-0.057	0.280	0.326	0.41	0.223
B4	*	c	198	0.395	0.125	0.239	0.350	0.326	0.34	0.589
B5			1	0.002	-0.042	-0.006	0.006	0.000	0.00	0.000
B5		a	82	0.164	-0.247	-0.178	0.223	0.212	0.14	0.045
B5	*	b	260	0.519	0.331	0.562	0.287	0.455	0.60	0.848
B5		c	158	0.315	-0.402	-0.377	0.484	0.333	0.26	0.107
C1			1	0.002	-0.090	-0.006	0.006	0.000	0.00	0.000
C1	*	a	267	0.533	0.313	0.500	0.312	0.439	0.69	0.812
C1		b	114	0.228	-0.314	-0.223	0.312	0.303	0.15	0.089
C1		c	119	0.238	-0.324	-0.271	0.369	0.258	0.16	0.098
C2			2	0.004	-0.066	-0.013	0.013	0.000	0.00	0.000
C2		a	95	0.190	-0.260	-0.162	0.287	0.182	0.12	0.125
C2	*	b	245	0.489	0.314	0.508	0.242	0.485	0.59	0.750
C2		c	159	0.317	-0.368	-0.334	0.459	0.333	0.29	0.125
C3			3	0.006	-0.062	-0.013	0.013	0.008	0.00	0.000
C3		a	144	0.287	-0.295	-0.214	0.357	0.371	0.23	0.143

Table 3: Reading 05 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	145	0.289	-0.123	-0.025	0.293	0.303	0.29	0.268
C3	*	c	209	0.417	0.117	0.252	0.338	0.318	0.48	0.589
C4			4	0.008	-0.036	-0.004	0.013	0.008	0.00	0.009
C4		a	149	0.297	-0.209	-0.135	0.331	0.318	0.33	0.196
C4	*	b	160	0.319	0.226	0.408	0.172	0.318	0.26	0.580
C4		c	188	0.375	-0.292	-0.270	0.484	0.356	0.41	0.214
C5			4	0.008	-0.122	-0.019	0.019	0.008	0.00	0.000
C5		a	103	0.206	-0.204	-0.112	0.255	0.227	0.17	0.143
C5		b	121	0.242	-0.186	-0.057	0.236	0.311	0.23	0.179
C5	*	c	273	0.545	0.095	0.188	0.490	0.455	0.60	0.679
D1			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
D1	*	a	178	0.355	0.170	0.306	0.229	0.348	0.36	0.536
D1		b	113	0.226	-0.264	-0.168	0.293	0.265	0.18	0.125
D1		c	210	0.419	-0.210	-0.138	0.478	0.386	0.46	0.339
D2			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
D2		a	133	0.265	-0.225	-0.139	0.299	0.318	0.26	0.161
D2	*	b	203	0.405	0.301	0.490	0.197	0.371	0.46	0.688
D2		c	165	0.329	-0.375	-0.351	0.503	0.311	0.28	0.152
D3			2	0.004	-0.032	-0.006	0.006	0.000	0.01	0.000
D3		a	114	0.228	-0.157	-0.074	0.261	0.197	0.26	0.188
D3		b	118	0.236	-0.174	-0.072	0.287	0.258	0.15	0.214
D3	*	c	267	0.533	0.026	0.152	0.446	0.545	0.58	0.598
D4			2	0.004	-0.059	-0.006	0.006	0.008	0.00	0.000
D4		a	124	0.248	-0.226	-0.140	0.274	0.326	0.23	0.134
D4	*	b	201	0.401	0.274	0.405	0.229	0.311	0.53	0.634
D4		c	174	0.347	-0.341	-0.258	0.490	0.356	0.24	0.232
D5			3	0.006	-0.078	-0.013	0.013	0.008	0.00	0.000
D5	*	a	334	0.667	0.372	0.582	0.382	0.644	0.81	0.964
D5		b	70	0.140	-0.305	-0.246	0.255	0.159	0.08	0.009
D5		c	94	0.188	-0.401	-0.324	0.350	0.189	0.11	0.027
E1			1	0.002	0.015	0.000	0.000	0.000	0.01	0.000
E1		a	106	0.212	-0.242	-0.168	0.248	0.280	0.21	0.080
E1		b	191	0.381	-0.205	-0.123	0.427	0.402	0.37	0.304
E1	*	c	203	0.405	0.131	0.291	0.325	0.318	0.41	0.616
E2			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
E2	*	a	138	0.275	0.220	0.345	0.146	0.212	0.32	0.491
E2		b	167	0.333	-0.317	-0.285	0.446	0.364	0.31	0.161
E2		c	196	0.391	-0.169	-0.059	0.408	0.424	0.37	0.348
E3			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
E3		a	84	0.168	-0.209	-0.108	0.197	0.205	0.16	0.089
E3	*	b	254	0.507	0.284	0.498	0.306	0.432	0.59	0.804
E3		c	163	0.325	-0.388	-0.390	0.497	0.364	0.25	0.107
E4			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
E4		a	94	0.188	-0.099	-0.028	0.197	0.167	0.22	0.170
E4		b	177	0.353	-0.210	-0.123	0.382	0.394	0.36	0.259
E4	*	c	230	0.459	0.013	0.151	0.420	0.439	0.42	0.571
E5			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
E5		a	95	0.190	-0.225	-0.127	0.217	0.273	0.15	0.089
E5	*	b	277	0.553	0.292	0.472	0.376	0.432	0.66	0.848
E5		c	129	0.257	-0.392	-0.345	0.408	0.295	0.19	0.062

Table 3: Reading 05 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			2	0.004	0.022	0.003	0.006	0.000	0.00	0.009
F1	*	a	239	0.477	0.341	0.523	0.280	0.341	0.60	0.804
F1		b	94	0.188	-0.296	-0.234	0.261	0.265	0.15	0.027
F1		c	166	0.331	-0.372	-0.292	0.452	0.394	0.25	0.161
F2			1	0.002	0.054	0.009	0.000	0.000	0.00	0.009
F2		a	114	0.228	-0.162	-0.063	0.242	0.258	0.22	0.179
F2		b	183	0.365	-0.240	-0.159	0.427	0.364	0.38	0.268
F2	*	c	203	0.405	0.093	0.213	0.331	0.379	0.40	0.545
F3			2	0.004	-0.053	-0.006	0.006	0.008	0.00	0.000
F3		a	112	0.224	-0.108	-0.020	0.217	0.227	0.26	0.196
F3	*	b	203	0.405	0.213	0.428	0.242	0.409	0.36	0.670
F3		c	184	0.367	-0.386	-0.401	0.535	0.356	0.38	0.134
F4			1	0.002	0.073	0.009	0.000	0.000	0.00	0.009
F4	*	a	181	0.361	0.211	0.369	0.229	0.318	0.36	0.598
F4		b	142	0.283	-0.266	-0.168	0.338	0.326	0.27	0.170
F4		c	177	0.353	-0.249	-0.210	0.433	0.356	0.37	0.223
F5			1	0.002	0.073	0.009	0.000	0.000	0.00	0.009
F5	*	a	186	0.371	0.308	0.503	0.185	0.280	0.43	0.688
F5		b	124	0.248	-0.252	-0.188	0.331	0.242	0.24	0.143
F5		c	190	0.379	-0.352	-0.323	0.484	0.477	0.33	0.161

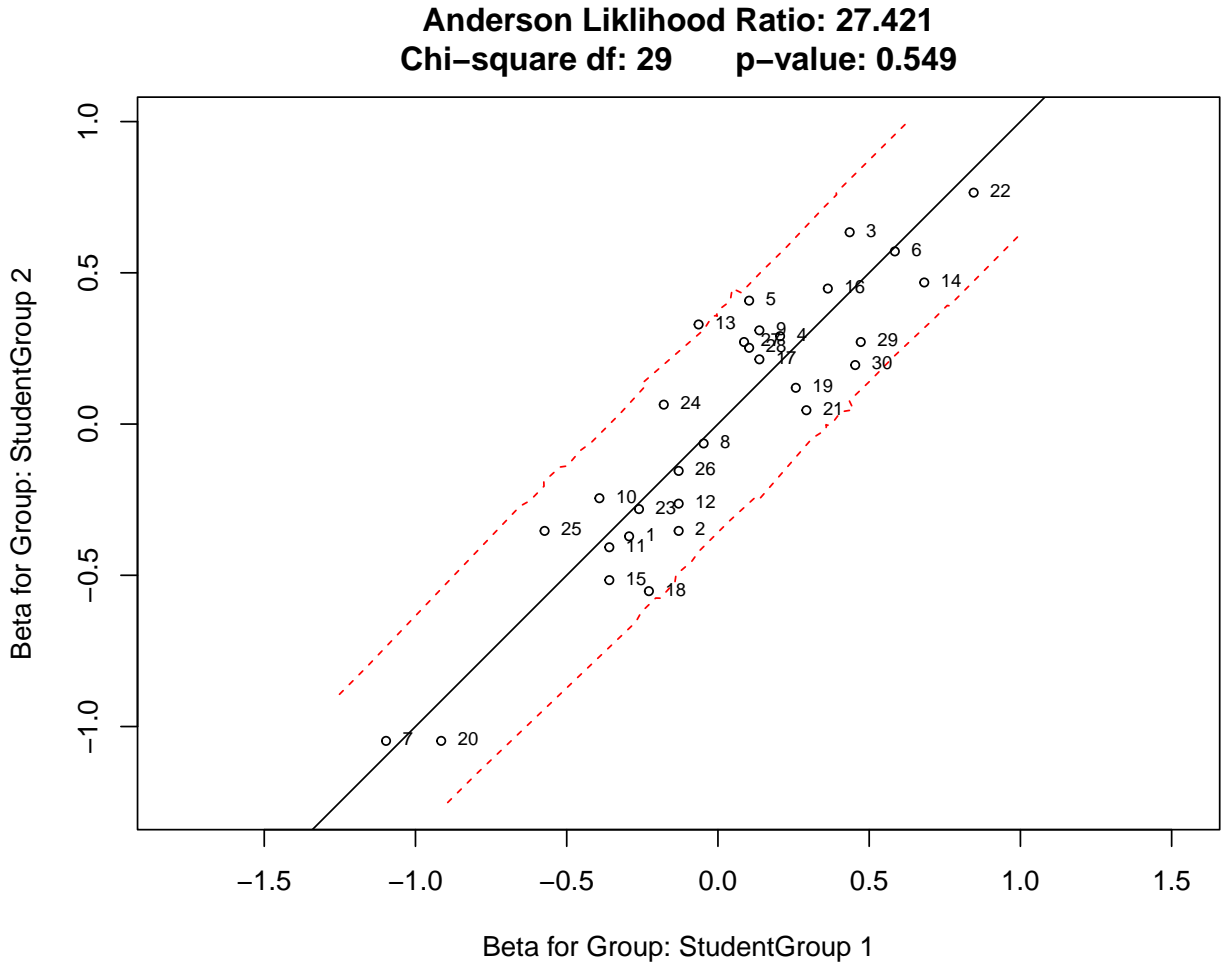


Figure 1: Anderson’s LR-test (Student Groups Randomly Selected)

Table 4: Reading 05 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	501	1.0052	0.9754
A2	501	0.9313	0.9381
A3	501	1.1007	1.0769
A4	501	1.0444	1.0487
A5	501	0.9549	0.9670
B1	501	0.8807	0.9185
B2	501	0.9414	0.9609
B3	501	0.9329	0.9459
B4	501	1.0619	1.0587
B5	501	0.8973	0.9200
C1	501	0.9042	0.9283
C2	501	0.9058	0.9318
C3	501	1.0835	1.0637
C4	501	0.9948	0.9862
C5	501	1.0627	1.0735
D1	501	1.0254	1.0287
D2	501	0.9222	0.9433
D3	501	1.1527	1.1137
D4	501	0.9440	0.9616
D5	501	0.8628	0.8704
E1	501	1.0806	1.0547
E2	501	0.9689	0.9934
E3	501	0.9608	0.9468
E4	501	1.1606	1.1343
E5	501	0.9367	0.9386
F1	501	0.8948	0.9153
F2	501	1.1073	1.0801
F3	501	0.9944	1.0015
F4	501	0.9984	1.0015
F5	501	0.9256	0.9385

Table 5: Reading 05 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9879	0.0828
Infit	Infit	0.9905	0.0674

Table 6: Reading 05 Raw to Theta Table

Raw Score	theta	SE
4	-1.6116	0.5262
5	-1.3648	0.4860
6	-1.1503	0.4567
7	-0.9583	0.4346
8	-0.7827	0.4176
9	-0.6191	0.4043
10	-0.4647	0.3941
11	-0.3172	0.3862
12	-0.1747	0.3804
13	-0.0359	0.3764
14	0.1006	0.3740
15	0.2360	0.3732
16	0.3712	0.3738
17	0.5074	0.3760
18	0.6458	0.3798
19	0.7876	0.3854
20	0.9344	0.3931
21	1.0878	0.4031
22	1.2501	0.4161
23	1.4243	0.4330
24	1.6146	0.4549
25	1.8272	0.4840
26	2.0718	0.5241
27	2.3656	0.5824
28	2.7433	0.6756

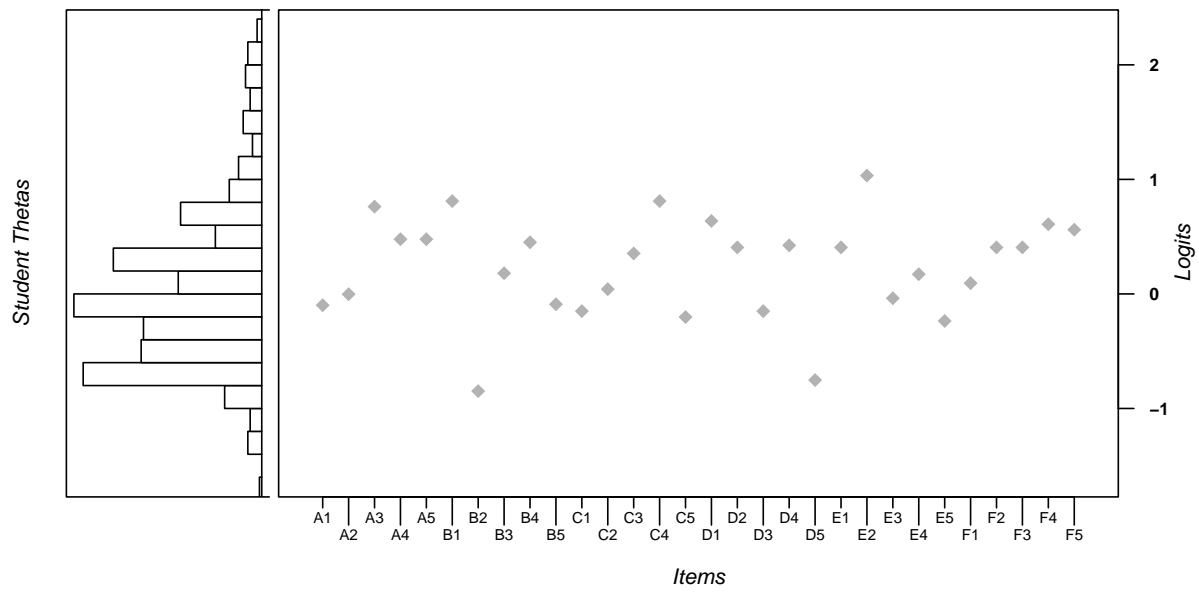


Figure 2: Student Ability - Item Difficulty Wright Map

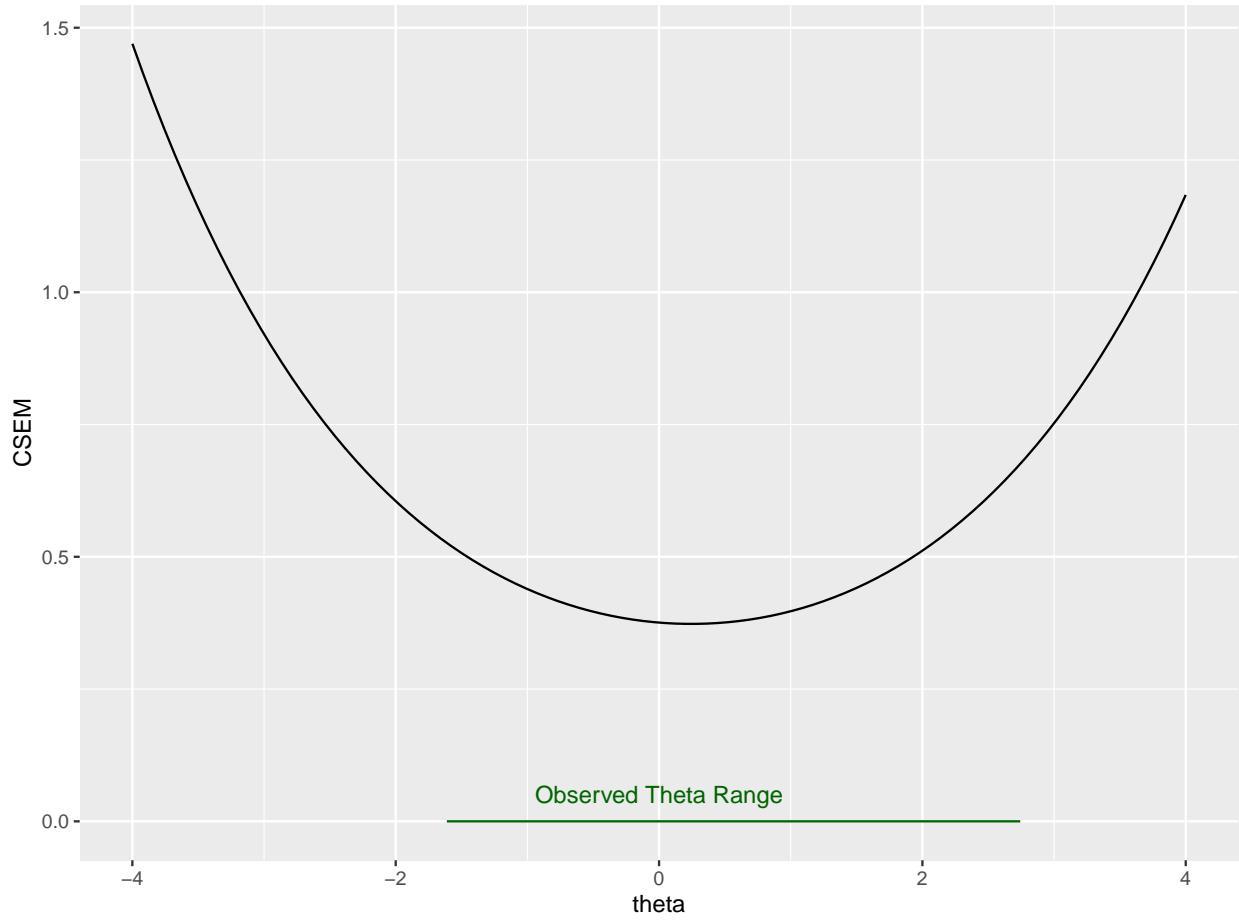


Figure 3: Reading 05 Conditional Standard Error of Measure

Table 7: Reading 05 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		501	0.68
Ethnic	Black	62	0.57
Ethnic	Hispanic	33	0.62
Ethnic	Other	25	0.61
Ethnic	White	373	0.69
Disadvantaged	No	374	0.68
Disadvantaged	Yes	127	0.68
LEP	No	472	0.69
LEP	Yes	29	0.16
Gender	Female	171	0.63
Gender	Male	330	0.70
Homeless	No	483	0.68
Homeless	Yes	18	0.70

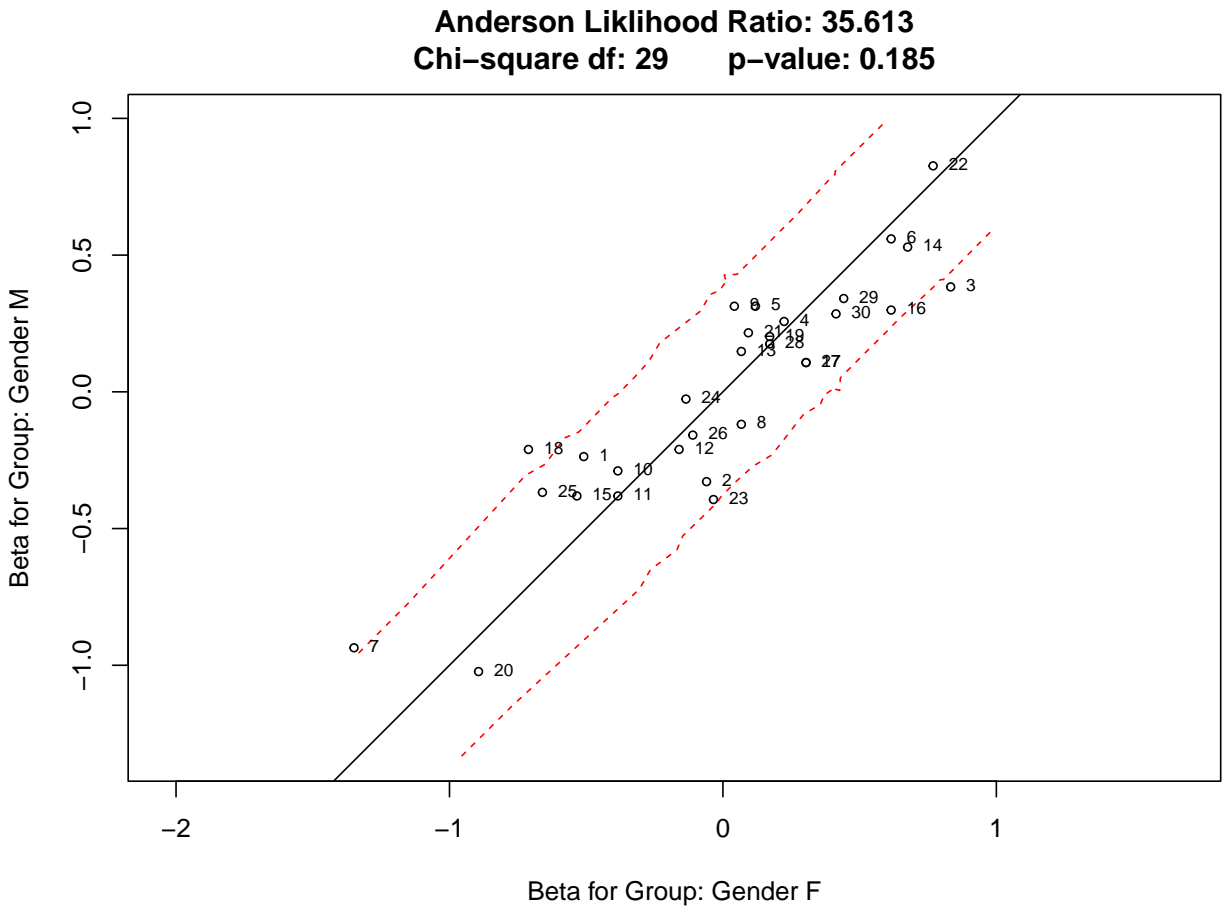


Figure 4: Reading 05 Differential Item (DIF) and Test (DTF) Function for Gender

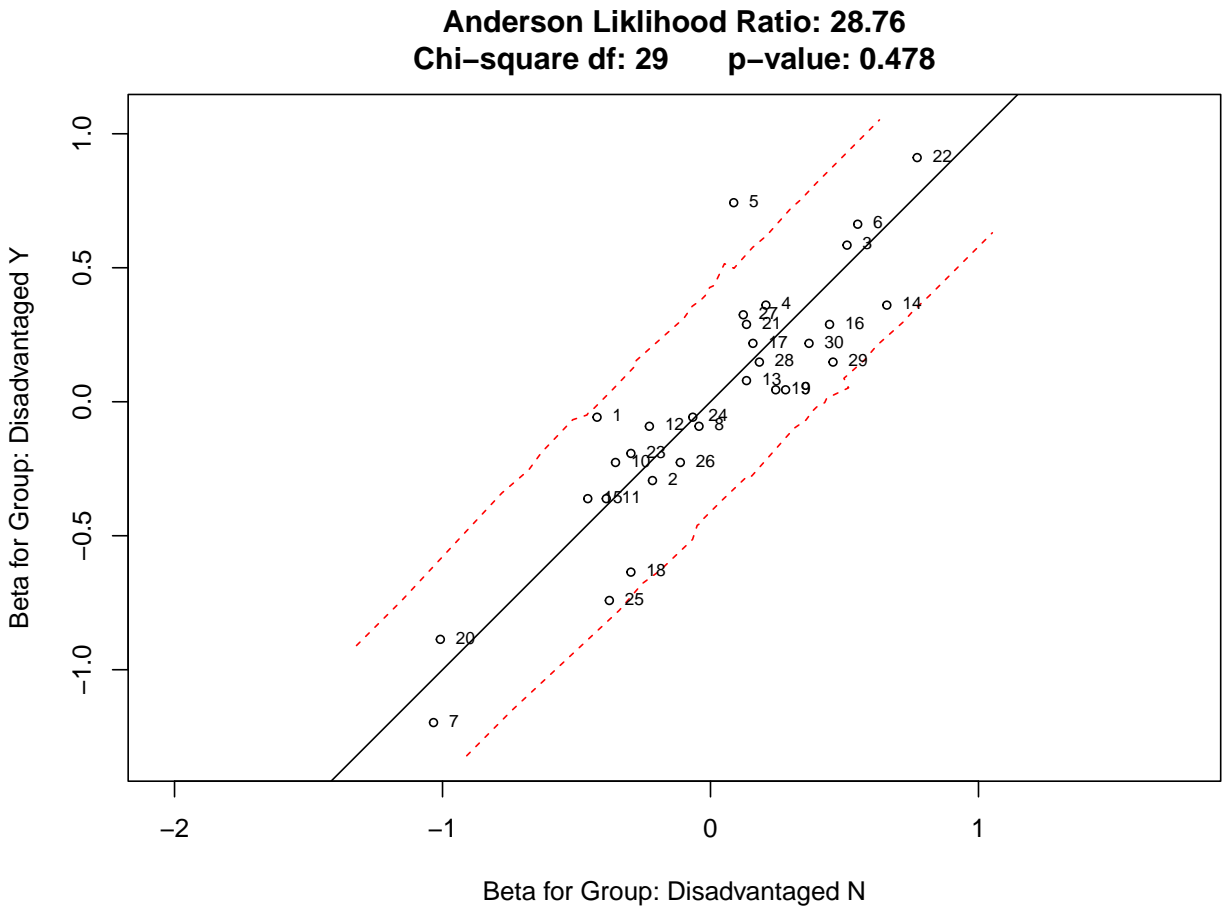


Figure 5: Reading 05 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

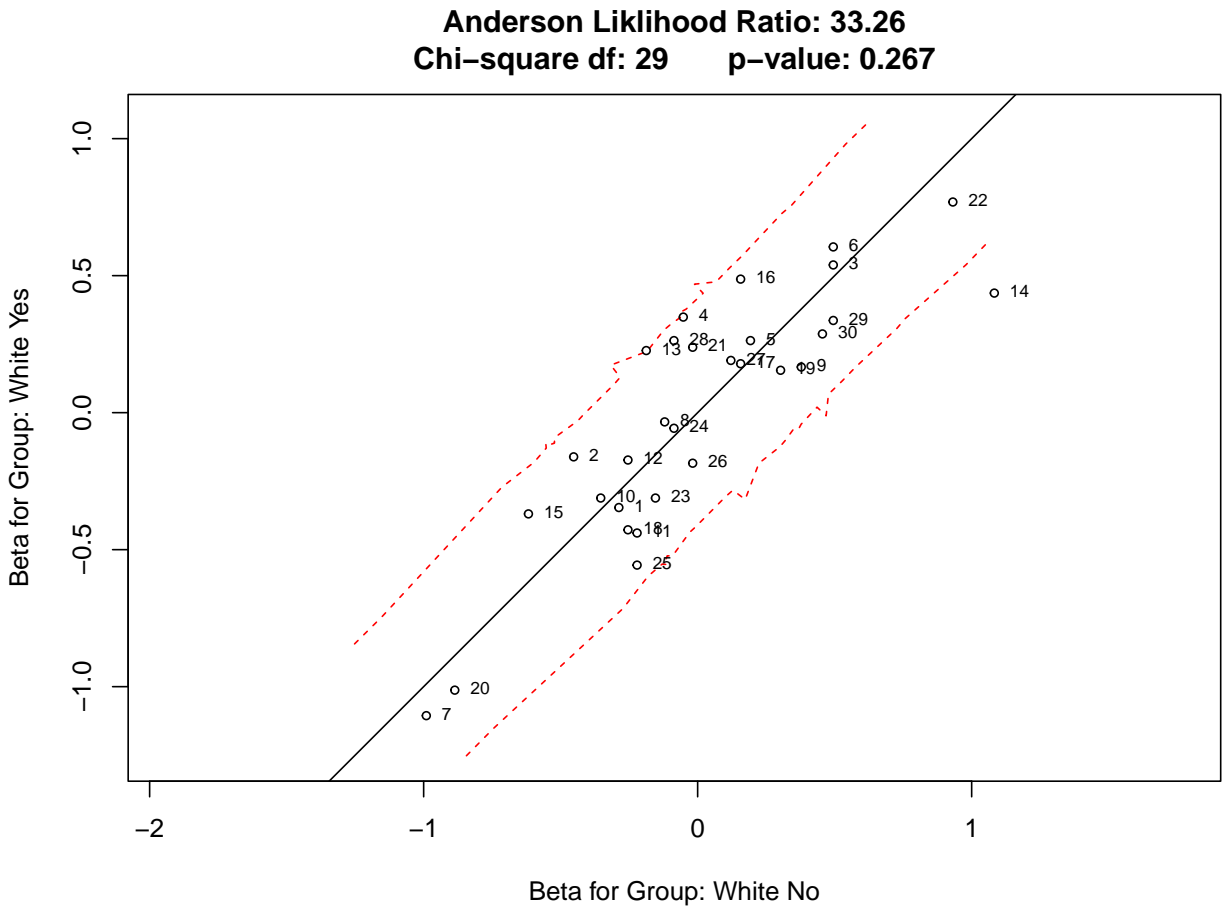


Figure 6: Reading 05 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6463	0.1986	0.8449
False	0.0588	0.0962	0.1551
Total	0.7052	0.2948	1.0000

Accuracy = 0.8449

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5537	0.1515
j	0.0812	0.2137

Proportion of Consistent Classifications = 0.7673
Cohen's Kappa = 0.4768

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0874	0.0540	0.8098	0.0488	0.6415	0.9374	0.8971	0.0712	0.0200	0.0523
Apprentice	0.4563	0.1075	0.2862	0.1501	0.7525	0.7270	0.7425	0.3904	0.3178	0.1064
Proficient	0.1848	0.0968	0.6480	0.0705	0.7239	0.8700	0.8327	0.1655	0.0793	0.0937
Distinguished	0.0016	0.0117	0.9861	0.0007	0.7047	0.9883	0.9876	0.0034	0.0002	0.0032

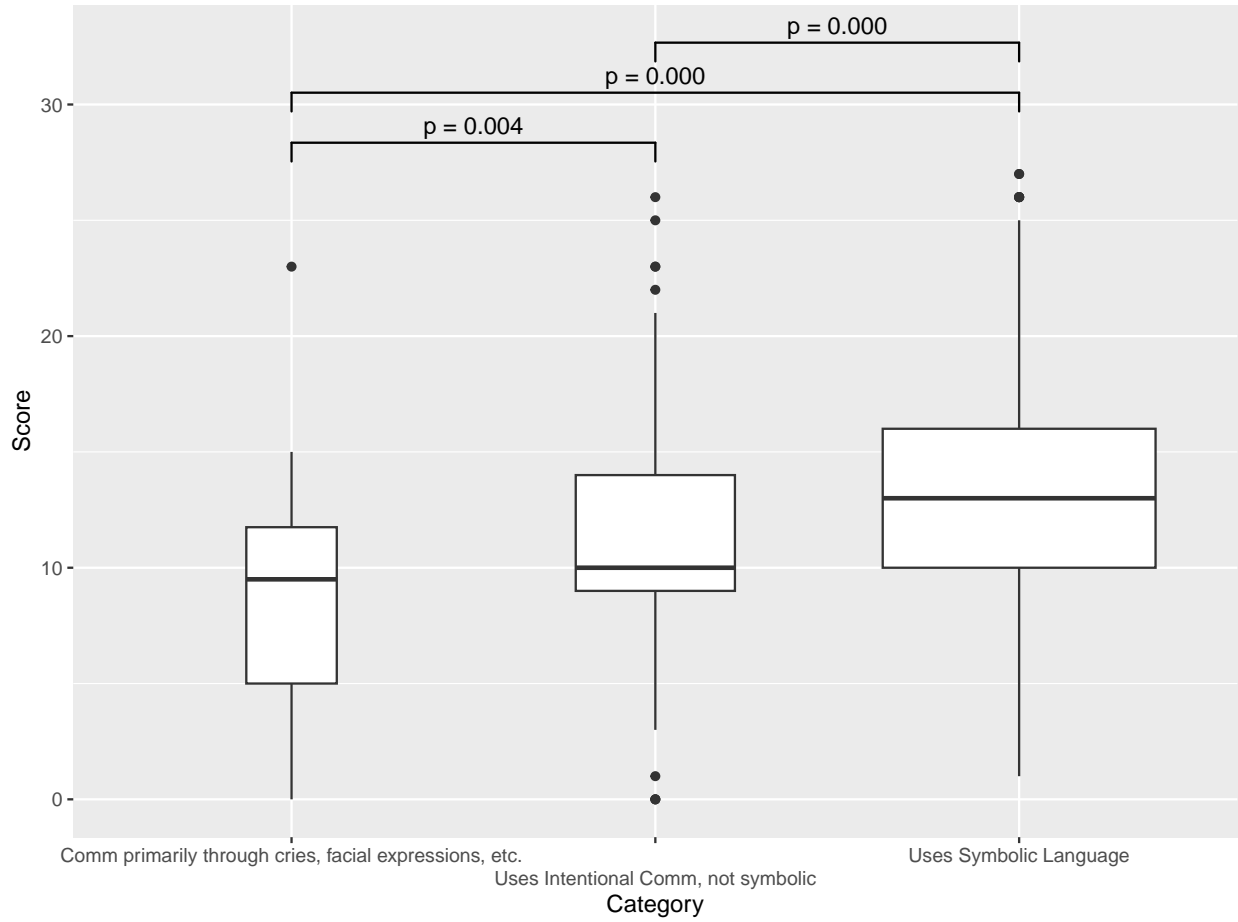


Figure 7: Reading 05 Learner Characteristic: Expressive Communication

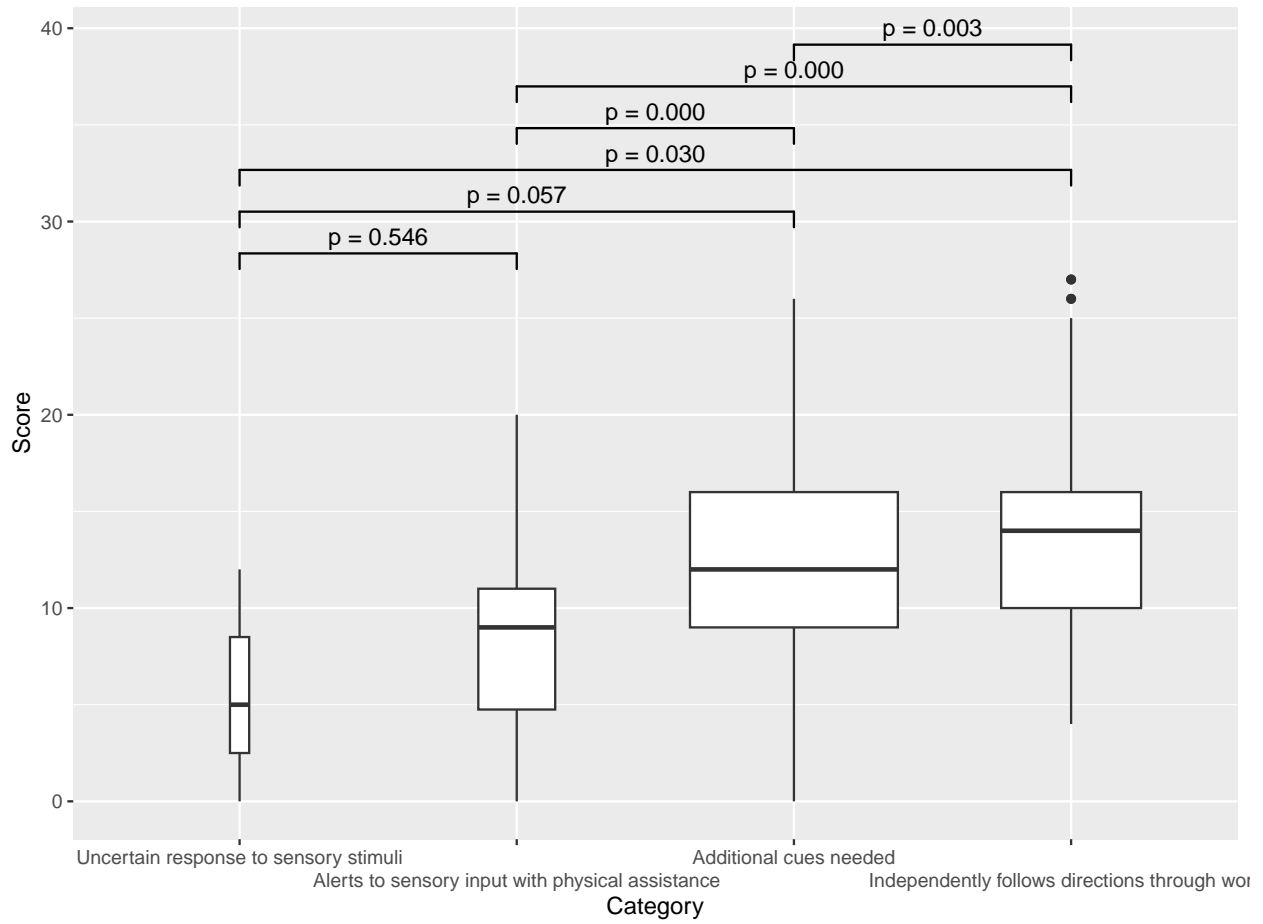


Figure 8: Reading 05 Learner Characteristic: Receptive Language

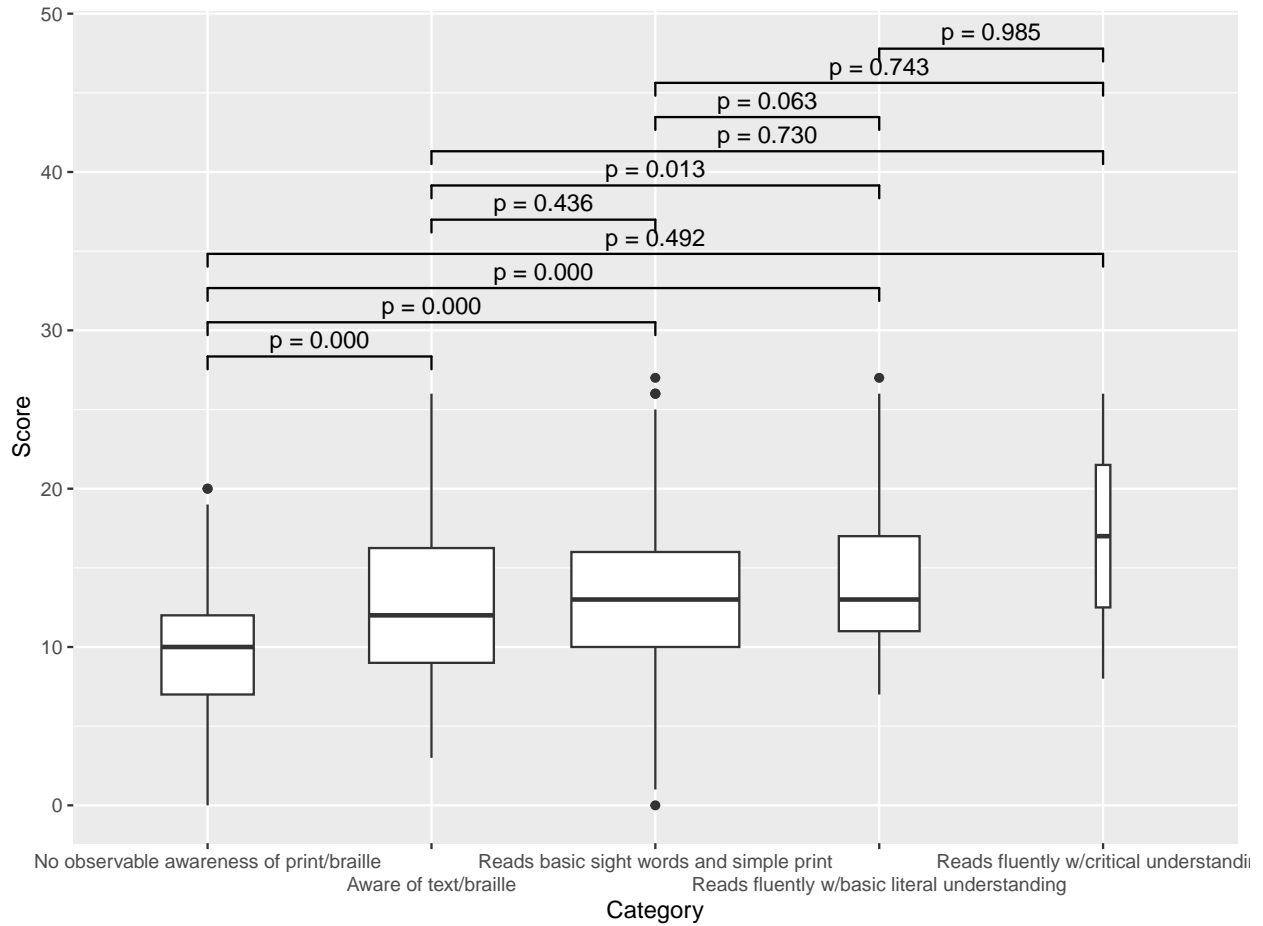


Figure 9: Reading 05 Learner Characteristic: Reading

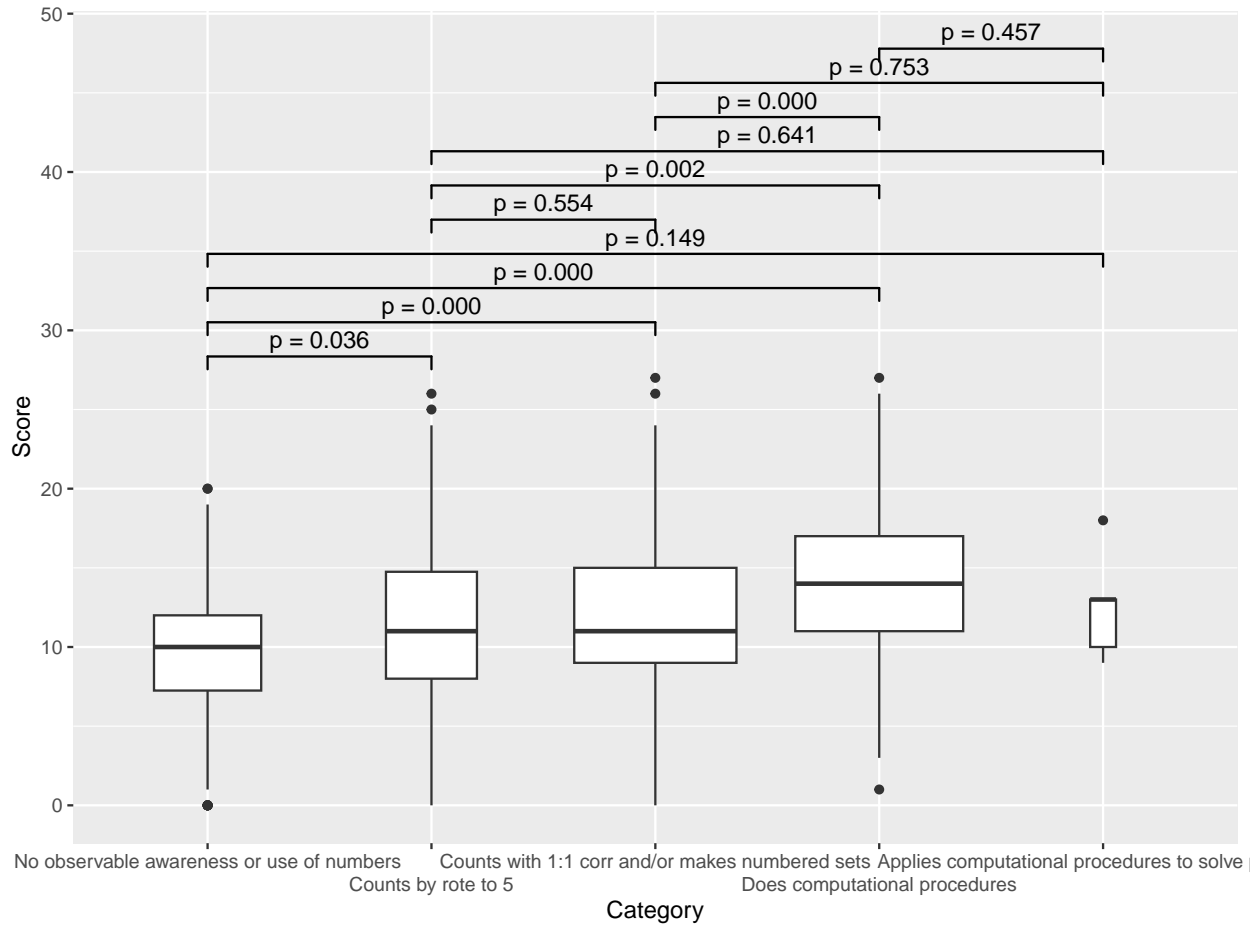


Figure 10: Reading 05 Learner Characteristic: Mathematics

Reading Grade 4

Table 1: Reading 04 Item Statistics

	Item	n	mean	sd	se
	A1	1 474	0.506	0.500	0.023
	A2	2 474	0.506	0.500	0.023
	A3	3 474	0.329	0.470	0.022
	A4	4 474	0.500	0.501	0.023
	A5	5 474	0.534	0.499	0.023
	B1	6 474	0.316	0.466	0.021
	B2	7 474	0.551	0.498	0.023
	B3	8 474	0.430	0.496	0.023
	B4	9 474	0.456	0.499	0.023
	B5	10 474	0.498	0.501	0.023
	C1	11 474	0.468	0.500	0.023
	C2	12 474	0.352	0.478	0.022
	C3	13 474	0.487	0.500	0.023
	C4	14 474	0.354	0.479	0.022
	C5	15 474	0.468	0.500	0.023
	D1	16 474	0.513	0.500	0.023
	D2	17 474	0.426	0.495	0.023
	D3	18 474	0.641	0.480	0.022
	D4	19 474	0.293	0.456	0.021
	D5	20 474	0.466	0.499	0.023
	E1	21 474	0.426	0.495	0.023
	E2	22 474	0.340	0.474	0.022
	E3	23 474	0.589	0.493	0.023
	E4	24 474	0.376	0.485	0.022
	E5	25 474	0.428	0.495	0.023
	F1	26 474	0.500	0.501	0.023
	F2	27 474	0.409	0.492	0.023
	F3	28 474	0.572	0.495	0.023
	F5	29 474	0.451	0.498	0.023

Chronbach's Alpha: 0.6971

Table 2: Reading 04 Raw Score Frequencies

Score	freq	pct	pct_cum
3	2	0.422	0.422
4	1	0.211	0.633
5	6	1.266	1.899
6	10	2.110	4.008
7	29	6.118	10.127
8	28	5.907	16.034
9	39	8.228	24.262
10	36	7.595	31.857
11	36	7.595	39.451
12	38	8.017	47.468
13	44	9.283	56.751
14	43	9.072	65.823
15	23	4.852	70.675
16	30	6.329	77.004
17	22	4.641	81.646
18	13	2.743	84.388
19	21	4.430	88.819
20	16	3.376	92.194
21	11	2.321	94.515
22	13	2.743	97.257
23	5	1.055	98.312
24	2	0.422	98.734
25	4	0.844	99.578
27	1	0.211	99.789
28	1	0.211	100.000

Table 3: Reading 04 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			3	0.006	-0.084	-0.013	0.013	0.008	0.000	0.000
A1		a	119	0.251	-0.177	-0.122	0.278	0.305	0.250	0.156
A1		b	112	0.236	-0.283	-0.234	0.298	0.322	0.229	0.064
A1	*	c	240	0.506	0.148	0.369	0.411	0.364	0.521	0.780
A2			3	0.006	-0.061	-0.013	0.013	0.008	0.000	0.000
A2		a	119	0.251	-0.267	-0.184	0.285	0.390	0.198	0.101
A2	*	b	240	0.506	0.374	0.603	0.232	0.441	0.646	0.835
A2		c	112	0.236	-0.433	-0.406	0.470	0.161	0.156	0.064
A3			2	0.004	-0.024	0.000	0.000	0.017	0.000	0.000
A3	*	a	156	0.329	0.163	0.285	0.238	0.254	0.344	0.523
A3		b	142	0.300	-0.077	0.017	0.258	0.288	0.406	0.275
A3		c	174	0.367	-0.366	-0.301	0.503	0.441	0.250	0.202
A4			3	0.006	-0.084	-0.013	0.013	0.008	0.000	0.000
A4		a	161	0.340	-0.256	-0.214	0.397	0.381	0.375	0.183
A4		b	73	0.154	-0.225	-0.129	0.212	0.169	0.125	0.083
A4	*	c	237	0.500	0.165	0.356	0.377	0.441	0.500	0.734
A5			4	0.008	-0.068	-0.013	0.013	0.008	0.010	0.000
A5	*	a	253	0.534	0.312	0.512	0.305	0.492	0.625	0.817
A5		b	89	0.188	-0.239	-0.153	0.245	0.246	0.135	0.092
A5		c	128	0.270	-0.391	-0.345	0.437	0.254	0.229	0.092
B1			2	0.004	-0.066	-0.013	0.013	0.000	0.000	0.000
B1		a	195	0.411	-0.041	0.116	0.325	0.475	0.438	0.440
B1	*	b	150	0.316	0.137	0.239	0.192	0.280	0.427	0.431
B1		c	127	0.268	-0.394	-0.342	0.470	0.246	0.135	0.128
B2			5	0.011	-0.044	-0.013	0.013	0.017	0.010	0.000
B2	*	a	261	0.551	0.349	0.566	0.278	0.534	0.667	0.844
B2		b	87	0.184	-0.291	-0.185	0.258	0.220	0.146	0.073
B2		c	121	0.255	-0.390	-0.368	0.450	0.229	0.177	0.083
B3			3	0.006	-0.020	0.003	0.007	0.008	0.000	0.009
B3	*	a	204	0.430	0.203	0.343	0.272	0.390	0.521	0.615
B3		b	143	0.302	-0.172	-0.058	0.325	0.297	0.312	0.266
B3		c	124	0.262	-0.350	-0.287	0.397	0.305	0.167	0.110
B4			5	0.011	-0.053	-0.020	0.020	0.000	0.021	0.000
B4		a	155	0.327	-0.126	-0.054	0.311	0.373	0.375	0.257
B4		b	98	0.207	-0.155	-0.085	0.232	0.229	0.208	0.147
B4	*	c	216	0.456	-0.021	0.159	0.437	0.398	0.396	0.596
B5			8	0.017	-0.065	-0.017	0.026	0.017	0.010	0.009
B5	*	a	236	0.498	0.197	0.361	0.318	0.525	0.542	0.679
B5		b	60	0.127	-0.173	-0.088	0.152	0.153	0.125	0.064
B5		c	170	0.359	-0.325	-0.256	0.503	0.305	0.323	0.248
C1			1	0.002	-0.081	-0.007	0.007	0.000	0.000	0.000
C1		a	180	0.380	-0.290	-0.215	0.417	0.517	0.354	0.202
C1		b	71	0.150	-0.210	-0.141	0.205	0.169	0.135	0.064
C1	*	c	222	0.468	0.188	0.363	0.371	0.314	0.510	0.734
C2			1	0.002	-0.061	-0.007	0.007	0.000	0.000	0.000
C2		a	139	0.293	-0.181	-0.105	0.298	0.364	0.312	0.193
C2	*	b	167	0.352	0.082	0.273	0.232	0.390	0.323	0.505
C2		c	167	0.352	-0.198	-0.161	0.464	0.246	0.365	0.303
C3			2	0.004	-0.052	-0.007	0.007	0.008	0.000	0.000
C3		a	166	0.350	-0.128	-0.053	0.338	0.373	0.417	0.284

Table 3: Reading 04 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	75	0.158	-0.282	-0.183	0.238	0.195	0.104	0.055
C3	*	c	231	0.487	0.075	0.243	0.417	0.424	0.479	0.661
C4			1	0.002	-0.052	-0.007	0.007	0.000	0.000	0.000
C4	*	a	168	0.354	0.299	0.468	0.192	0.305	0.323	0.661
C4		b	139	0.293	-0.257	-0.228	0.338	0.347	0.365	0.110
C4		c	166	0.350	-0.326	-0.234	0.464	0.347	0.312	0.229
C5			3	0.006	-0.032	-0.007	0.007	0.000	0.021	0.000
C5		a	135	0.285	-0.275	-0.211	0.358	0.364	0.229	0.147
C5	*	b	222	0.468	0.319	0.564	0.225	0.441	0.521	0.789
C5		c	114	0.241	-0.369	-0.346	0.411	0.195	0.229	0.064
D1			2	0.004	-0.031	-0.007	0.007	0.000	0.010	0.000
D1	*	a	243	0.513	0.391	0.633	0.238	0.449	0.615	0.872
D1		b	89	0.188	-0.250	-0.154	0.219	0.288	0.156	0.064
D1		c	140	0.295	-0.458	-0.472	0.536	0.263	0.219	0.064
D2			1	0.002	0.038	0.009	0.000	0.000	0.000	0.009
D2		a	106	0.224	-0.252	-0.193	0.285	0.271	0.219	0.092
D2	*	b	202	0.426	0.326	0.514	0.192	0.390	0.521	0.706
D2		c	165	0.348	-0.385	-0.331	0.523	0.339	0.260	0.193
D3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D3		a	89	0.188	-0.223	-0.135	0.245	0.212	0.156	0.110
D3		b	81	0.171	-0.286	-0.208	0.245	0.220	0.146	0.037
D3	*	c	304	0.641	0.181	0.343	0.510	0.568	0.698	0.853
D4			3	0.006	0.043	0.009	0.000	0.000	0.021	0.009
D4		a	139	0.293	-0.100	0.050	0.272	0.314	0.271	0.321
D4	*	b	139	0.293	0.115	0.193	0.192	0.322	0.312	0.385
D4		c	193	0.407	-0.302	-0.252	0.536	0.364	0.396	0.284
D5			3	0.006	0.003	0.009	0.000	0.017	0.000	0.009
D5	*	a	221	0.466	0.281	0.411	0.258	0.415	0.625	0.670
D5		b	90	0.190	-0.207	-0.092	0.238	0.212	0.135	0.147
D5		c	160	0.338	-0.388	-0.329	0.503	0.356	0.240	0.174
E1			2	0.004	-0.073	-0.013	0.013	0.000	0.000	0.000
E1		a	119	0.251	-0.283	-0.242	0.325	0.314	0.250	0.083
E1	*	b	202	0.426	0.408	0.658	0.159	0.356	0.490	0.817
E1		c	151	0.319	-0.421	-0.402	0.503	0.331	0.260	0.101
E2			1	0.002	-0.061	-0.007	0.007	0.000	0.000	0.000
E2	*	a	161	0.340	0.192	0.355	0.159	0.398	0.354	0.514
E2		b	92	0.194	-0.279	-0.209	0.291	0.237	0.115	0.083
E2		c	220	0.464	-0.217	-0.139	0.543	0.364	0.531	0.404
E3			1	0.002	-0.071	-0.007	0.007	0.000	0.000	0.000
E3		a	102	0.215	-0.177	-0.082	0.192	0.322	0.240	0.110
E3		b	92	0.194	-0.309	-0.248	0.285	0.254	0.156	0.037
E3	*	c	279	0.589	0.164	0.337	0.517	0.424	0.604	0.853
E4			1	0.002	-0.052	-0.007	0.007	0.000	0.000	0.000
E4		a	130	0.274	-0.091	0.005	0.252	0.271	0.333	0.257
E4	*	b	178	0.376	0.181	0.348	0.212	0.373	0.427	0.560
E4		c	165	0.348	-0.377	-0.346	0.530	0.356	0.240	0.183
E5			5	0.011	-0.084	-0.020	0.020	0.008	0.010	0.000
E5	*	a	203	0.428	0.220	0.399	0.225	0.432	0.521	0.624
E5		b	137	0.289	-0.055	0.051	0.252	0.305	0.312	0.303
E5		c	129	0.272	-0.463	-0.430	0.503	0.254	0.156	0.073

Table 3: Reading 04 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F1	*	a	237	0.500	0.208	0.356	0.305	0.517	0.604	0.661
F1		b	103	0.217	-0.146	-0.080	0.245	0.220	0.229	0.165
F1		c	134	0.283	-0.376	-0.276	0.450	0.263	0.167	0.174
F2			1	0.002	-0.061	-0.007	0.007	0.000	0.000	0.000
F2		a	114	0.241	-0.199	-0.122	0.278	0.263	0.250	0.156
F2	*	b	194	0.409	0.276	0.450	0.192	0.432	0.458	0.642
F2		c	165	0.348	-0.372	-0.321	0.523	0.305	0.292	0.202
F3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F3	*	a	271	0.572	0.312	0.492	0.325	0.576	0.677	0.817
F3		b	100	0.211	-0.243	-0.161	0.272	0.263	0.167	0.110
F3		c	103	0.217	-0.407	-0.331	0.404	0.161	0.156	0.073
F5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F5		a	160	0.338	-0.162	-0.060	0.344	0.390	0.323	0.284
F5	*	b	214	0.451	0.297	0.442	0.219	0.424	0.615	0.661
F5		c	100	0.211	-0.478	-0.382	0.437	0.186	0.062	0.055

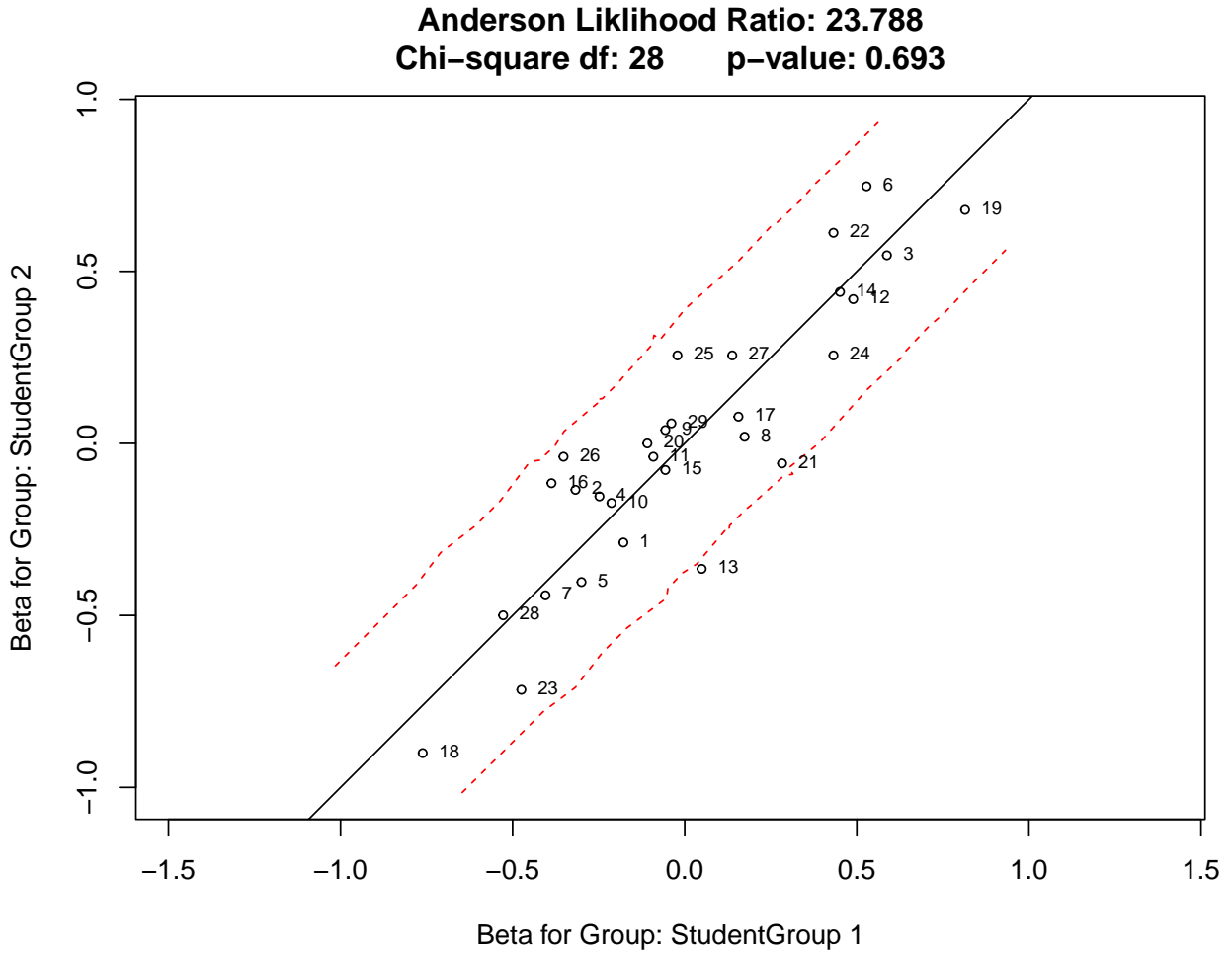


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Reading 04 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	474	1.0509	1.0477
A2	474	0.8714	0.8940
A3	474	1.0552	1.0274
A4	474	1.0266	1.0343
A5	474	0.9154	0.9326
B1	474	1.0574	1.0433
B2	474	0.8908	0.9056
B3	474	1.0040	1.0093
B4	474	1.2061	1.1631
B5	474	1.0033	1.0111
C1	474	1.0285	1.0191
C2	474	1.0975	1.0944
C3	474	1.1102	1.0953
C4	474	0.9239	0.9383
C5	474	0.9222	0.9309
D1	474	0.8790	0.8821
D2	474	0.9093	0.9269
D3	474	0.9766	1.0164
D4	474	1.0562	1.0572
D5	474	0.9369	0.9558
E1	474	0.8531	0.8732
E2	474	0.9908	1.0153
E3	474	1.0055	1.0357
E4	474	1.0457	1.0221
E5	474	0.9873	0.9979
F1	474	0.9951	1.0029
F2	474	0.9414	0.9612
F3	474	0.9093	0.9251
F5	474	0.9247	0.9465

Table 5: Reading 04 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9853	0.0819
Infit	Infit	0.9919	0.0695

Table 6: Reading 04 Raw to Theta Table

Raw Score	theta	SE
3	-1.8833	0.5833
4	-1.5886	0.5252
5	-1.3430	0.4852
6	-1.1294	0.4563
7	-0.9379	0.4345
8	-0.7624	0.4179
9	-0.5987	0.4052
10	-0.4438	0.3954
11	-0.2953	0.3881
12	-0.1516	0.3829
13	-0.0109	0.3795
14	0.1279	0.3779
15	0.2662	0.3779
16	0.4050	0.3796
17	0.5457	0.3830
18	0.6896	0.3882
19	0.8382	0.3955
20	0.9932	0.4053
21	1.1571	0.4181
22	1.3328	0.4347
23	1.5244	0.4565
24	1.7382	0.4855
25	1.9840	0.5254
27	2.6577	0.6767
28	3.2095	0.8567

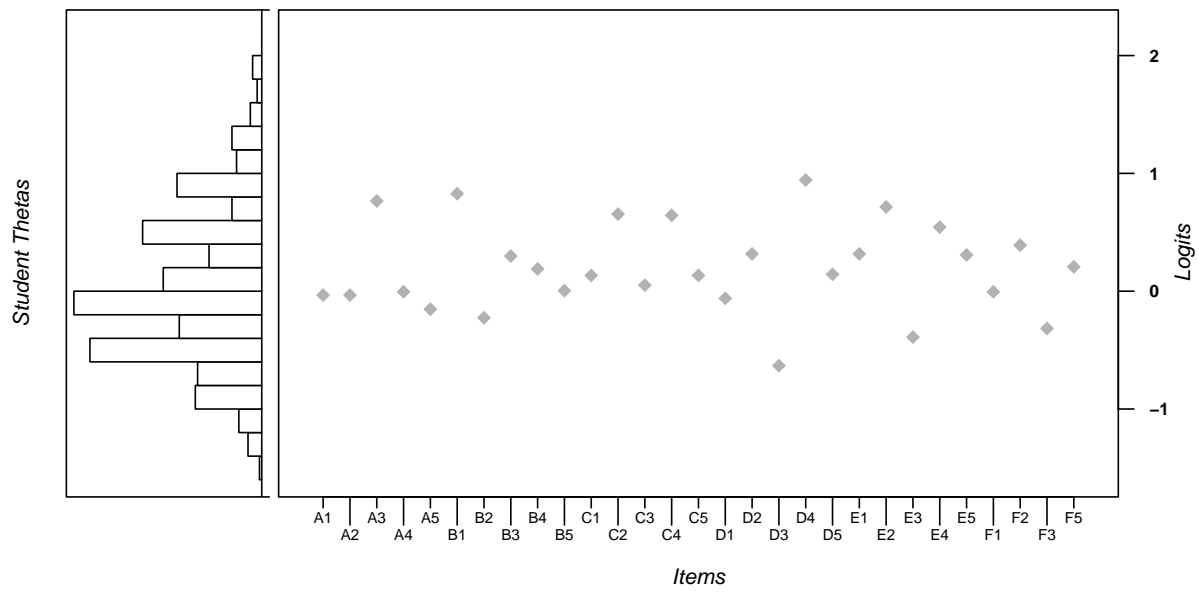


Figure 2: Student Ability - Item Difficulty Wright Map

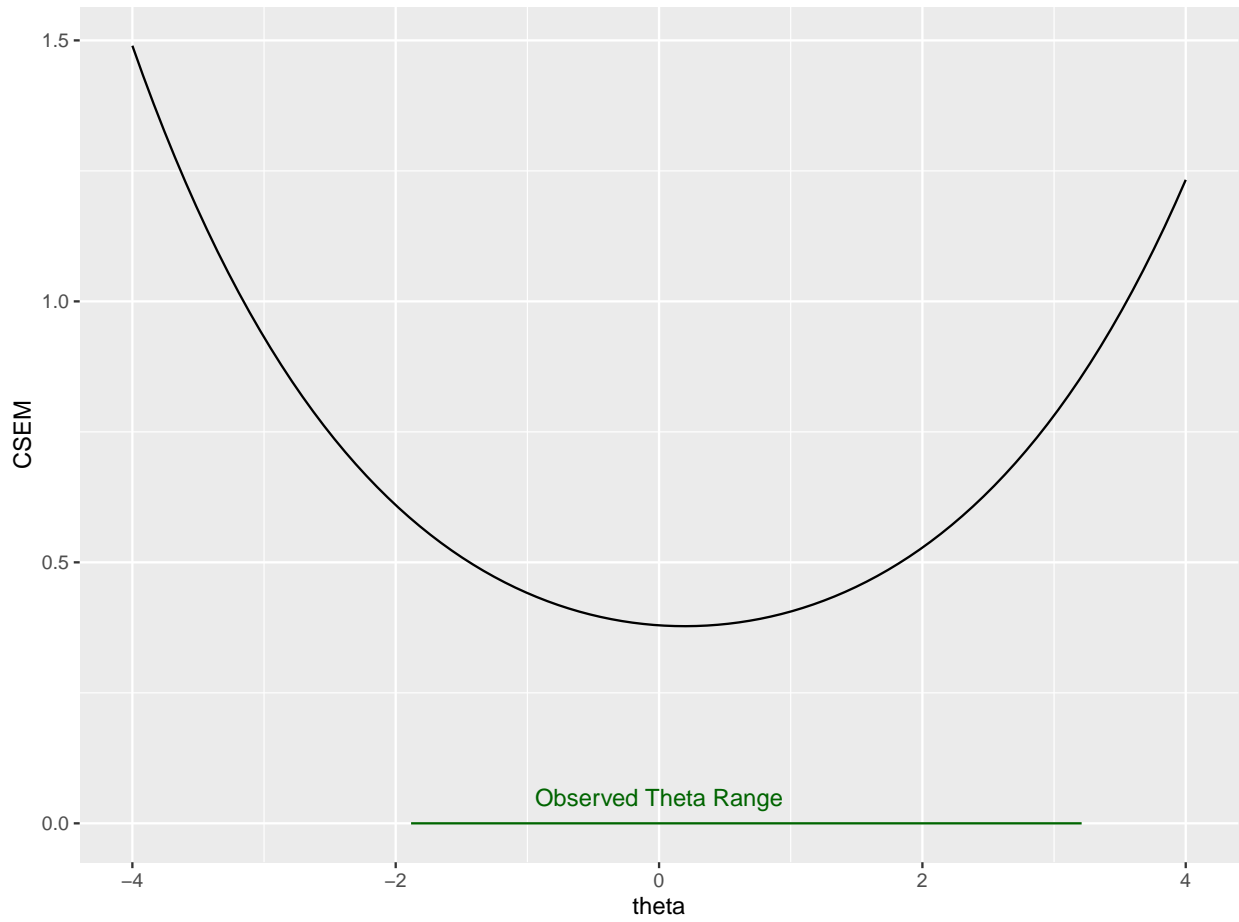


Figure 3: Reading 04 Conditional Standard Error of Measure

Table 7: Reading 04 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		474	0.68
Ethnic		10	0.29
Ethnic	Black	51	0.70
Ethnic	Hispanic	31	0.64
Ethnic	Other	22	0.64
Ethnic	White	359	0.68
Disadvantaged	No	369	0.69
Disadvantaged	Yes	105	0.62
LEP	No	446	0.68
LEP	Yes	28	0.49
Gender	Female	157	0.63
Gender	Male	317	0.70
Homeless	No	461	0.68
Homeless	Yes	13	0.74

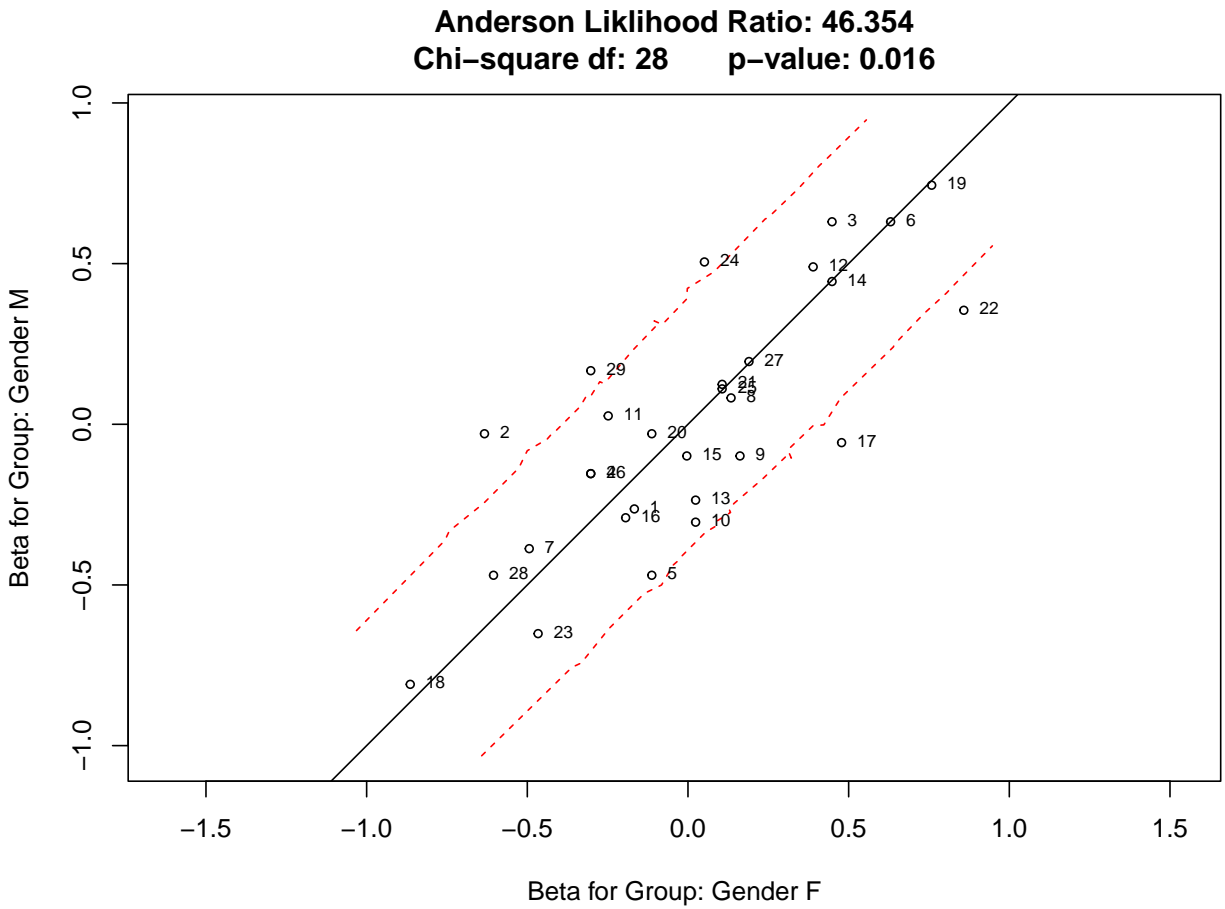


Figure 4: Reading 04 Differential Item (DIF) and Test (DTF) Function for Gender

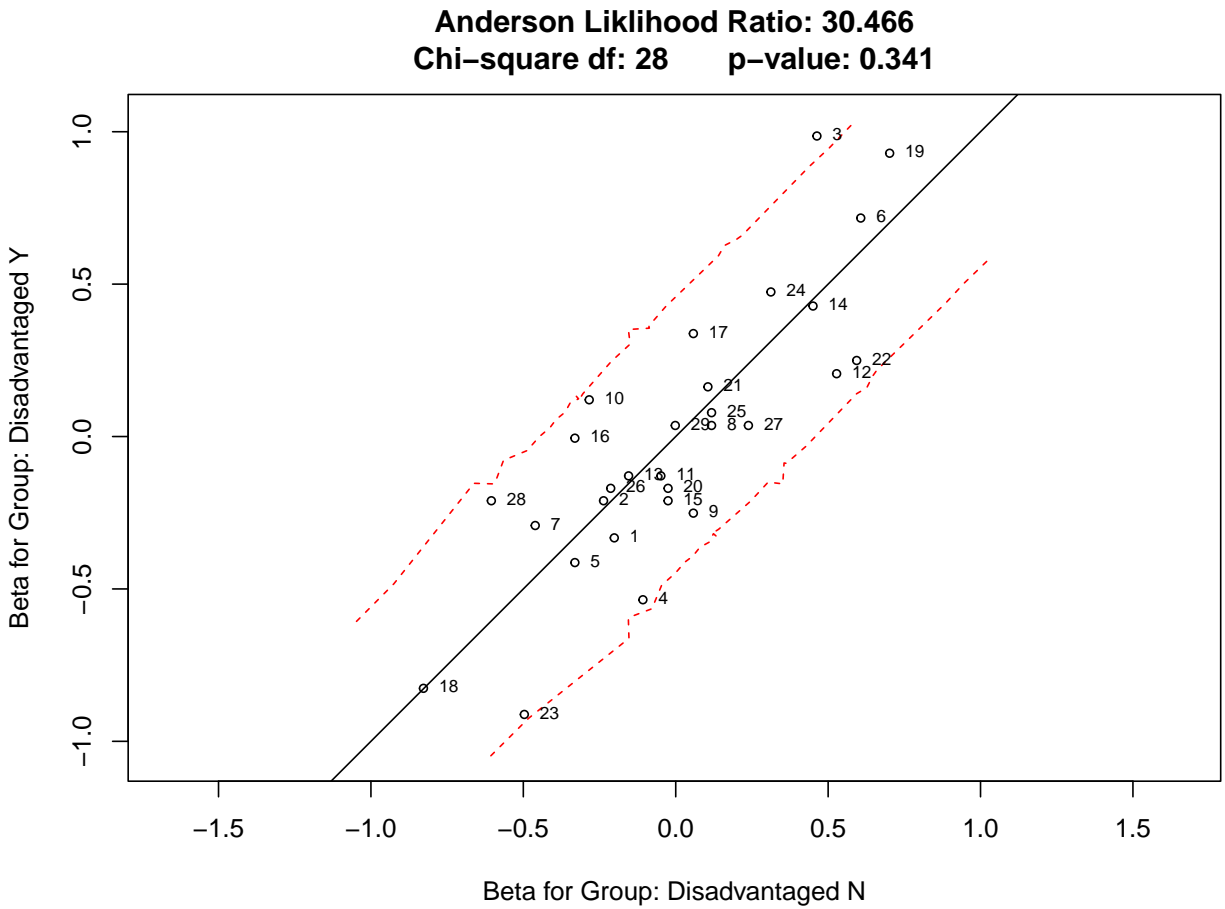


Figure 5: Reading 04 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

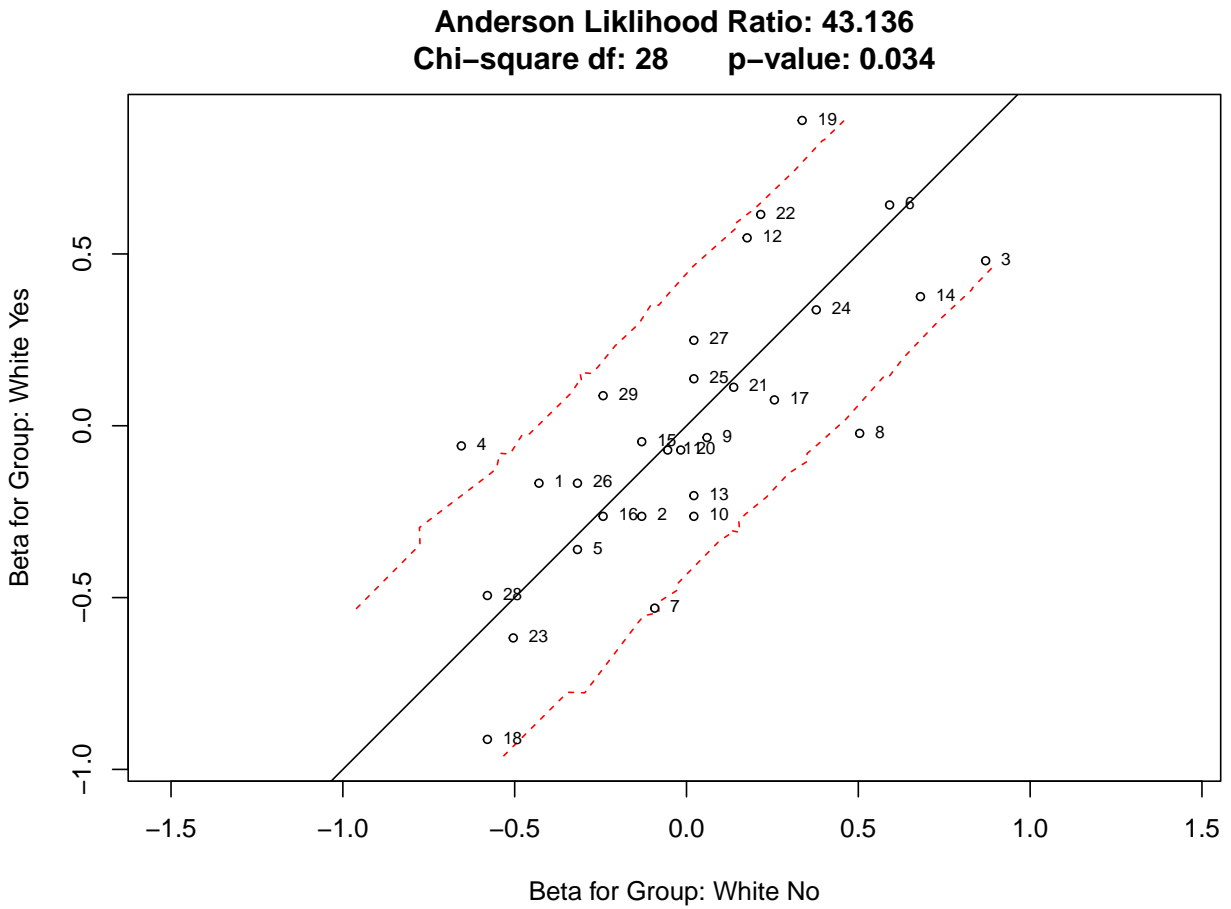


Figure 6: Reading 04 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6428	0.1949	0.8377
False	0.0442	0.1181	0.1623
Total	0.6870	0.3130	1.0000

Accuracy = 0.8377

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.577	0.110
j	0.110	0.203

Proportion of Consistent Classifications = 0.78
Cohen's Kappa = 0.4885

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.1066	0.0805	0.7740	0.0389	0.7327	0.9058	0.8806	0.1030	0.0350	0.0704
Apprentice	0.4171	0.0827	0.3020	0.1982	0.6779	0.7849	0.7191	0.3151	0.2499	0.0870
Proficient	0.1847	0.1186	0.6440	0.0527	0.7779	0.8445	0.8287	0.1865	0.0920	0.1041
Distinguished	0.0012	0.0086	0.9897	0.0006	0.6722	0.9914	0.9909	0.0023	0.0001	0.0022

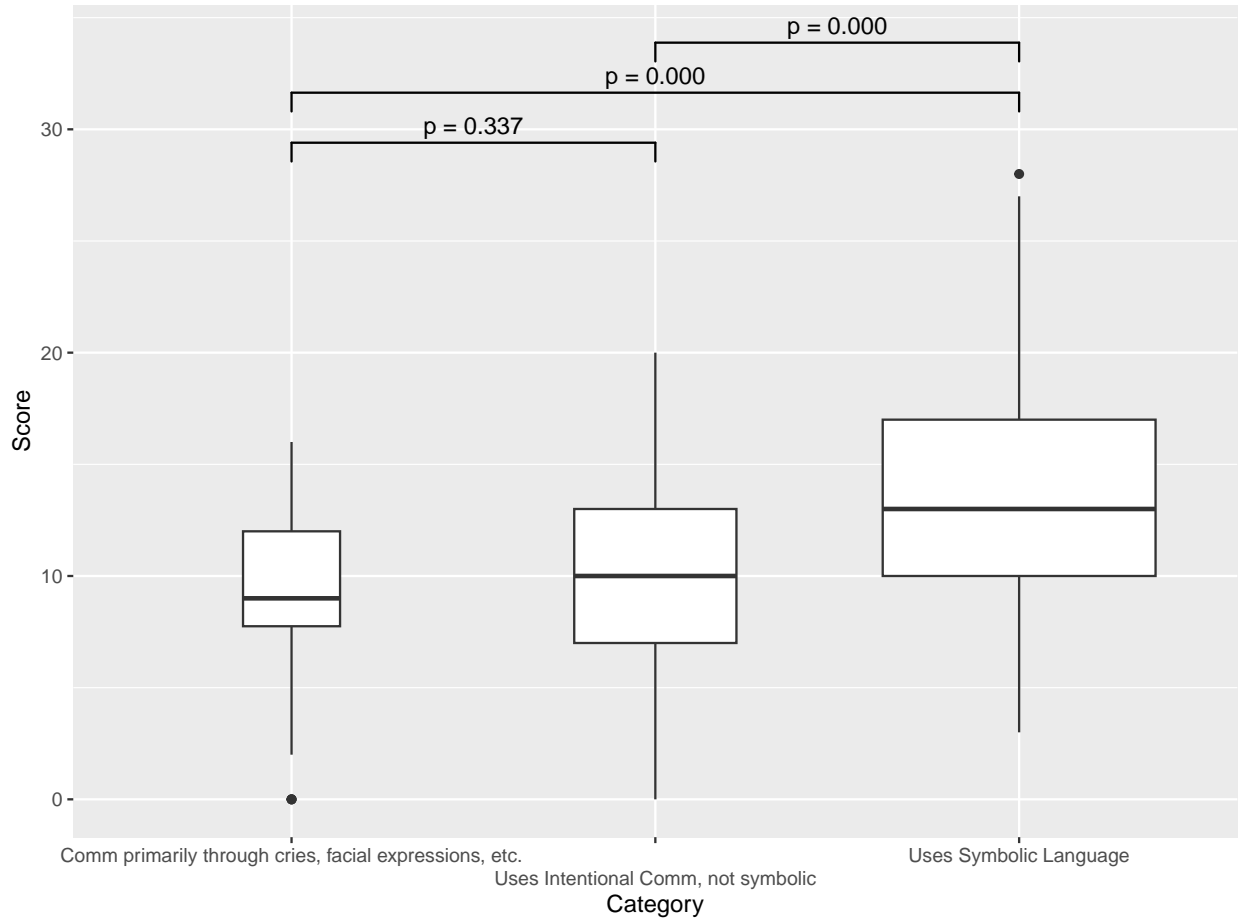


Figure 7: Reading 04 Learner Characteristic: Expressive Communication

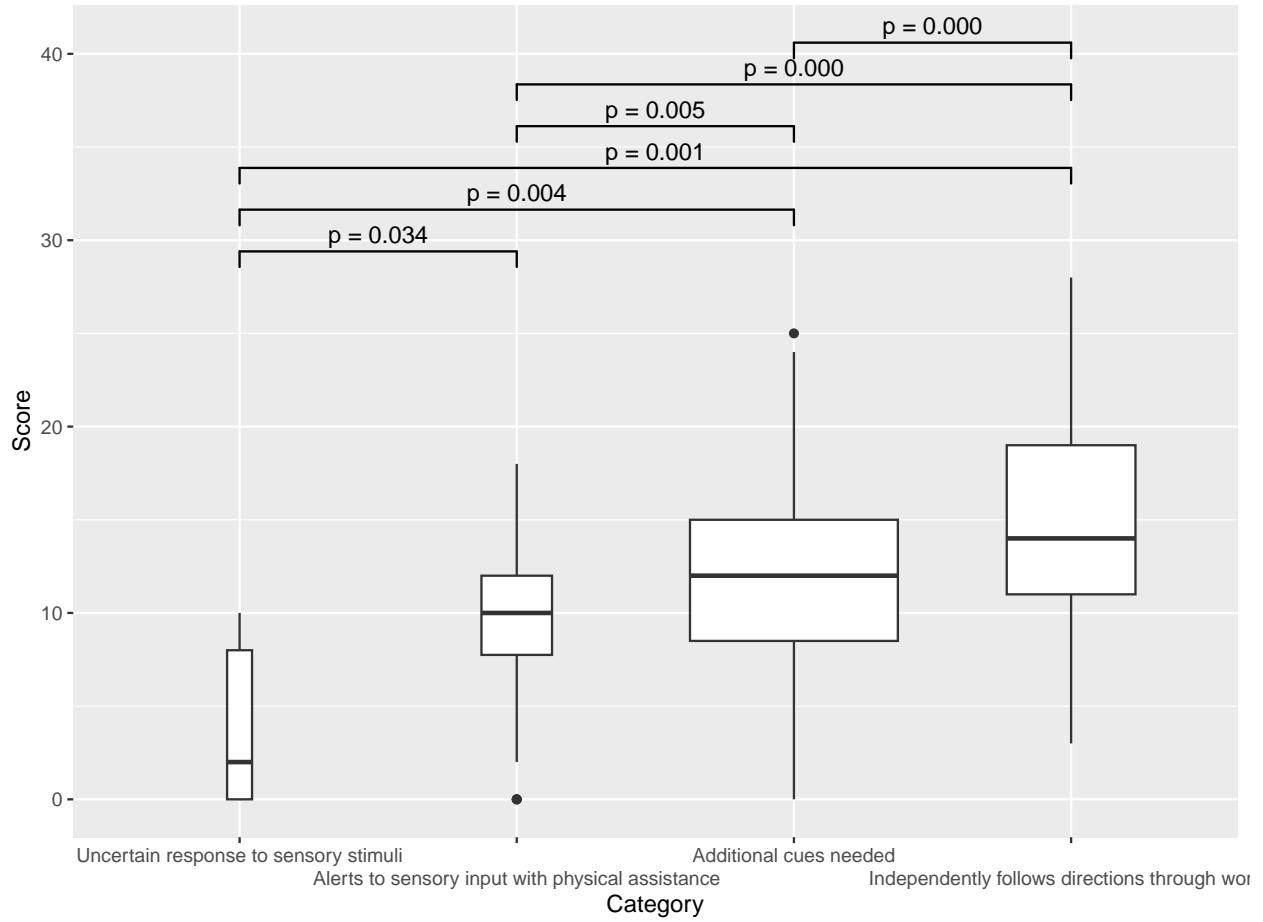


Figure 8: Reading 04 Learner Characteristic: Receptive Language

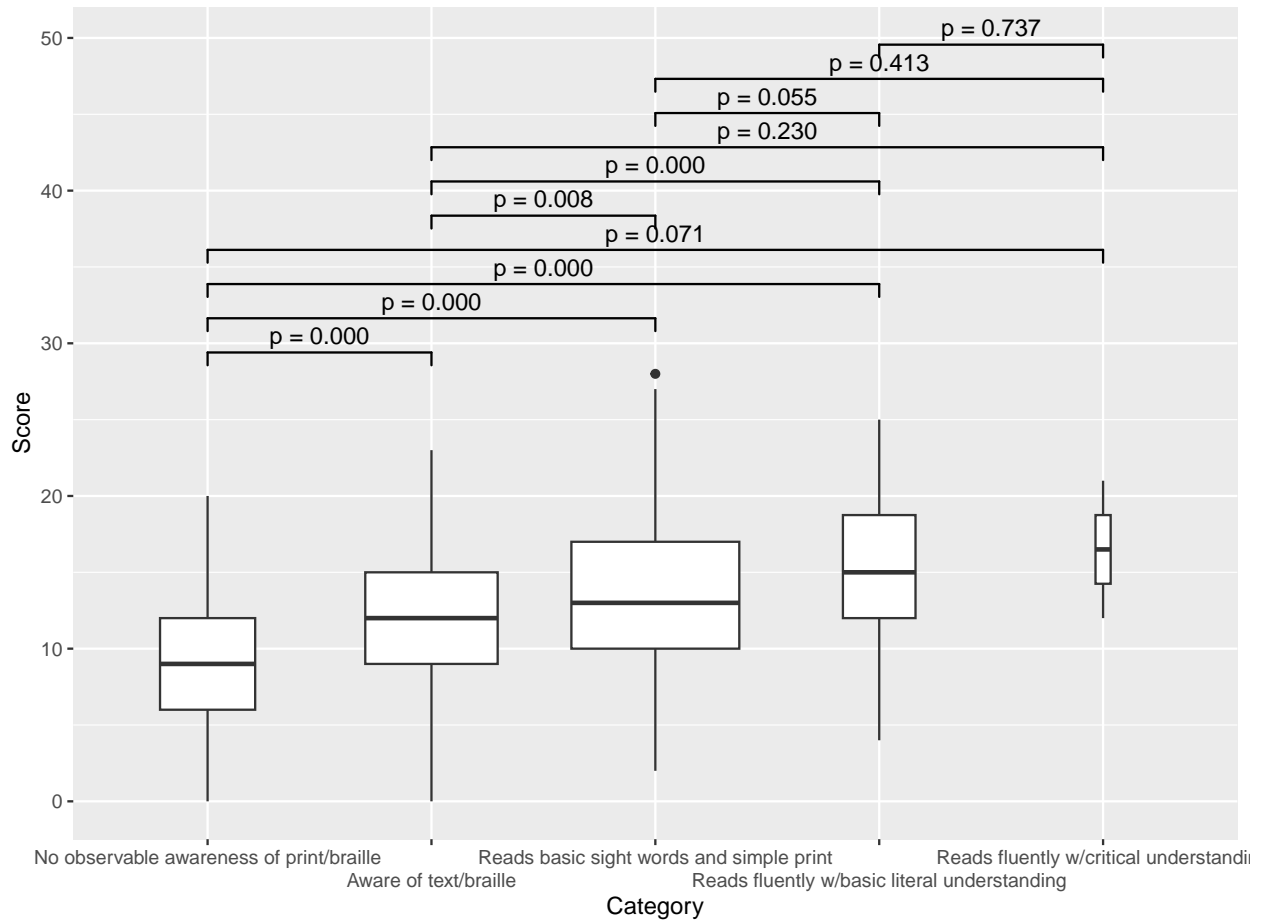


Figure 9: Reading 04 Learner Characteristic: Reading

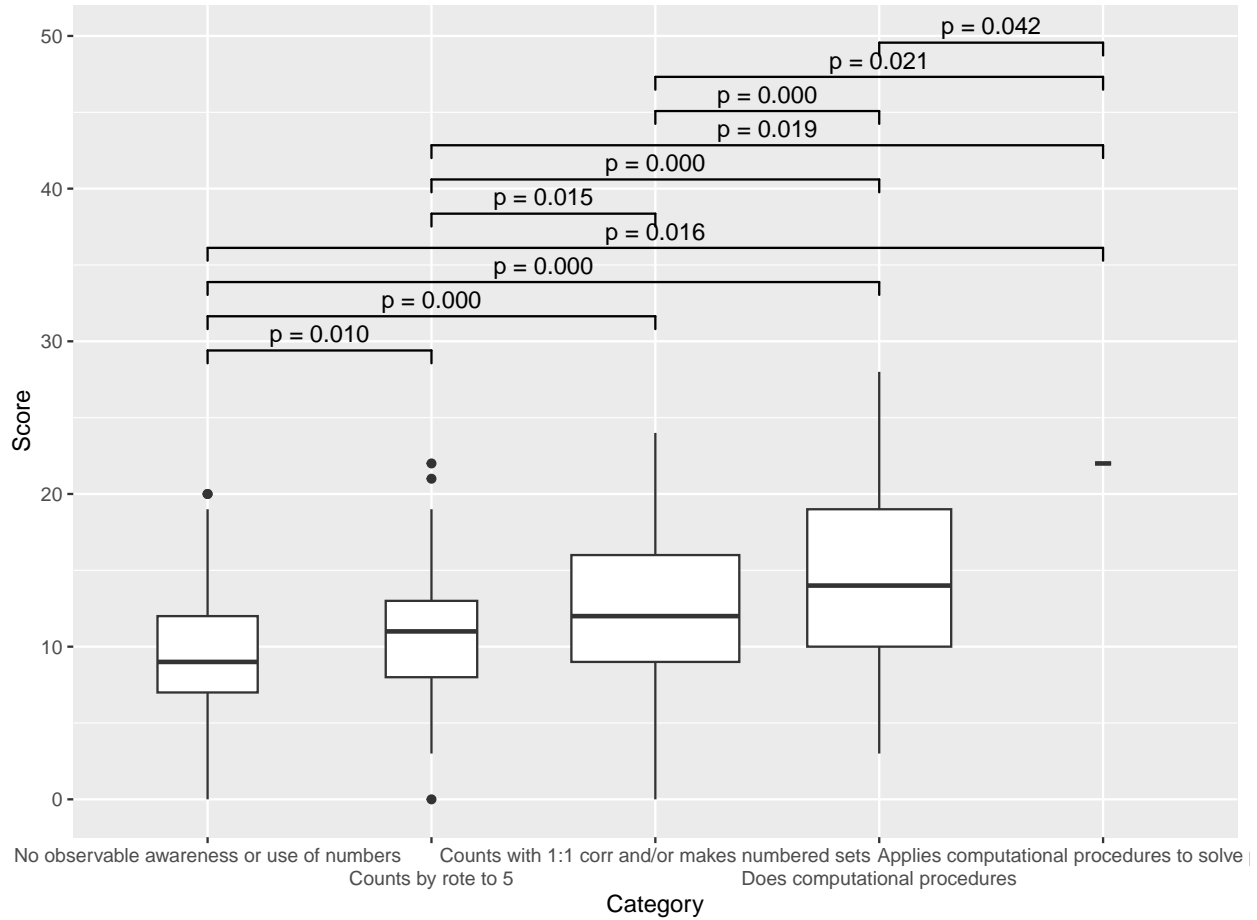


Figure 10: Reading 04 Learner Characteristic: Mathematics

Reading Grade 3

Table 1: Reading 03 Item Statistics

	Item	n	mean	sd	se
	A1	1 473	0.476	0.500	0.023
	A2	2 473	0.315	0.465	0.021
	A3	3 473	0.444	0.497	0.023
	A4	4 473	0.554	0.498	0.023
	A5	5 473	0.507	0.500	0.023
	B1	6 473	0.514	0.500	0.023
	B2	7 473	0.406	0.492	0.023
	B3	8 473	0.600	0.490	0.023
	B4	9 473	0.393	0.489	0.022
	B5	10 473	0.514	0.500	0.023
	C1	11 473	0.423	0.495	0.023
	C2	12 473	0.571	0.495	0.023
	C3	13 473	0.366	0.482	0.022
	C4	14 473	0.357	0.480	0.022
	C5	15 473	0.461	0.499	0.023
	D1	16 473	0.419	0.494	0.023
	D2	17 473	0.594	0.492	0.023
	D3	18 473	0.357	0.480	0.022
	D4	19 473	0.330	0.471	0.022
	D5	20 473	0.476	0.500	0.023
	E1	21 473	0.412	0.493	0.023
	E2	22 473	0.419	0.494	0.023
	E3	23 473	0.480	0.500	0.023
	E4	24 473	0.406	0.492	0.023
	E5	25 473	0.381	0.486	0.022
	F1	26 473	0.416	0.493	0.023
	F2	27 473	0.488	0.500	0.023
	F3	28 473	0.311	0.463	0.021
	F4	29 473	0.541	0.499	0.023
	F5	30 473	0.541	0.499	0.023

Chronbach's Alpha: 0.7252

Table 2: Reading 03 Raw Score Frequencies

Score	freq	pct	pct_cum
3	2	0.423	0.423
4	2	0.423	0.846
5	7	1.480	2.326
6	7	1.480	3.805
7	22	4.651	8.457
8	25	5.285	13.742
9	34	7.188	20.930
10	36	7.611	28.541
11	60	12.685	41.226
12	42	8.879	50.106
13	31	6.554	56.660
14	34	7.188	63.848
15	35	7.400	71.247
16	16	3.383	74.630
17	27	5.708	80.338
18	17	3.594	83.932
19	12	2.537	86.469
20	17	3.594	90.063
21	12	2.537	92.600
22	7	1.480	94.080
23	6	1.268	95.349
24	5	1.057	96.406
25	8	1.691	98.097
26	5	1.057	99.154
27	2	0.423	99.577
28	2	0.423	100.000

Table 3: Reading 03 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.046	-0.007	0.007	0.000	0.007	0.000
A1	*	a	225	0.476	0.284	0.456	0.296	0.343	0.559	0.753
A1		b	87	0.184	-0.240	-0.121	0.207	0.265	0.168	0.086
A1		c	159	0.336	-0.344	-0.328	0.489	0.392	0.266	0.161
A2			5	0.011	-0.073	-0.015	0.015	0.000	0.021	0.000
A2		a	108	0.228	-0.196	-0.141	0.259	0.235	0.266	0.118
A2	*	b	149	0.315	0.305	0.472	0.141	0.225	0.350	0.613
A2		c	211	0.446	-0.348	-0.316	0.585	0.539	0.364	0.269
A3			4	0.008	-0.074	-0.007	0.007	0.020	0.007	0.000
A3		a	106	0.224	-0.263	-0.211	0.319	0.235	0.203	0.108
A3	*	b	210	0.444	0.351	0.592	0.215	0.324	0.510	0.806
A3		c	153	0.323	-0.374	-0.373	0.459	0.422	0.280	0.086
A4			2	0.004	-0.079	-0.007	0.007	0.010	0.000	0.000
A4	*	a	262	0.554	0.249	0.447	0.370	0.441	0.636	0.817
A4		b	86	0.182	-0.267	-0.210	0.296	0.176	0.140	0.086
A4		c	123	0.260	-0.291	-0.229	0.326	0.373	0.224	0.097
A5			2	0.004	-0.046	-0.007	0.007	0.000	0.007	0.000
A5		a	118	0.249	-0.136	-0.017	0.296	0.225	0.203	0.280
A5		b	113	0.239	-0.198	-0.161	0.311	0.196	0.259	0.151
A5	*	c	240	0.507	0.043	0.185	0.385	0.578	0.531	0.570
B1			3	0.006	-0.029	-0.007	0.007	0.000	0.014	0.000
B1		a	129	0.273	-0.331	-0.278	0.385	0.353	0.217	0.108
B1		b	98	0.207	-0.197	-0.166	0.252	0.196	0.252	0.086
B1	*	c	243	0.514	0.223	0.451	0.356	0.451	0.517	0.806
B2			2	0.004	-0.099	-0.015	0.015	0.000	0.000	0.000
B2		a	152	0.321	-0.308	-0.237	0.452	0.363	0.238	0.215
B2	*	b	192	0.406	0.282	0.433	0.244	0.255	0.490	0.677
B2		c	127	0.268	-0.253	-0.181	0.289	0.382	0.273	0.108
B3			1	0.002	-0.023	0.000	0.000	0.010	0.000	0.000
B3		a	115	0.243	-0.378	-0.358	0.422	0.265	0.175	0.065
B3		b	73	0.154	-0.241	-0.143	0.207	0.176	0.147	0.065
B3	*	c	284	0.600	0.302	0.501	0.370	0.549	0.678	0.871
B4			1	0.002	-0.051	-0.007	0.007	0.000	0.000	0.000
B4		a	121	0.256	-0.335	-0.310	0.385	0.235	0.266	0.075
B4	*	b	186	0.393	0.333	0.542	0.200	0.333	0.392	0.742
B4		c	165	0.349	-0.283	-0.225	0.407	0.431	0.343	0.183
B5			2	0.004	-0.086	-0.015	0.015	0.000	0.000	0.000
B5	*	a	243	0.514	0.250	0.481	0.326	0.461	0.538	0.806
B5		b	70	0.148	-0.262	-0.164	0.207	0.216	0.112	0.043
B5		c	158	0.334	-0.298	-0.301	0.452	0.324	0.350	0.151
C1			1	0.002	-0.032	0.000	0.000	0.010	0.000	0.000
C1		a	112	0.237	-0.355	-0.317	0.370	0.333	0.161	0.054
C1	*	b	200	0.423	0.362	0.581	0.215	0.265	0.490	0.796
C1		c	160	0.338	-0.304	-0.264	0.415	0.392	0.350	0.151
C2			2	0.004	-0.125	-0.015	0.015	0.000	0.000	0.000
C2		a	77	0.163	-0.341	-0.256	0.267	0.225	0.119	0.011
C2		b	124	0.262	-0.307	-0.271	0.400	0.294	0.196	0.129
C2	*	c	270	0.571	0.330	0.542	0.319	0.480	0.685	0.860
C3			6	0.013	-0.030	-0.007	0.007	0.000	0.035	0.000
C3	*	a	173	0.366	0.323	0.502	0.207	0.255	0.371	0.710

Table 3: Reading 03 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	87	0.184	-0.251	-0.180	0.244	0.206	0.189	0.065
C3		c	207	0.438	-0.348	-0.315	0.541	0.539	0.406	0.226
C4			5	0.011	-0.010	0.003	0.007	0.010	0.014	0.011
C4	*	a	149	0.315	-0.179	-0.123	0.370	0.324	0.301	0.247
C4		b	169	0.357	0.169	0.303	0.267	0.245	0.385	0.570
C4		c	150	0.317	-0.275	-0.184	0.356	0.422	0.301	0.172
C5			6	0.013	-0.053	-0.004	0.015	0.000	0.021	0.011
C5		a	139	0.294	-0.211	-0.116	0.385	0.265	0.245	0.269
C5		b	110	0.233	-0.173	-0.095	0.267	0.284	0.203	0.172
C5	*	c	218	0.461	0.093	0.215	0.333	0.451	0.531	0.548
D1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D1		a	77	0.163	-0.300	-0.260	0.281	0.147	0.154	0.022
D1	*	b	198	0.419	0.373	0.631	0.207	0.333	0.406	0.839
D1		c	198	0.419	-0.372	-0.371	0.511	0.520	0.441	0.140
D2			3	0.006	-0.040	-0.007	0.007	0.010	0.007	0.000
D2		a	82	0.173	-0.297	-0.214	0.289	0.186	0.119	0.075
D2		b	107	0.226	-0.278	-0.251	0.326	0.245	0.217	0.075
D2	*	c	281	0.594	0.255	0.472	0.378	0.559	0.657	0.849
D3			2	0.004	-0.066	-0.007	0.007	0.000	0.007	0.000
D3	*	a	169	0.357	0.282	0.420	0.193	0.245	0.427	0.613
D3		b	125	0.264	-0.125	-0.003	0.304	0.235	0.224	0.301
D3		c	177	0.374	-0.411	-0.410	0.496	0.520	0.343	0.086
D4			2	0.004	-0.059	-0.007	0.007	0.010	0.000	0.000
D4		a	86	0.182	-0.322	-0.297	0.319	0.176	0.161	0.022
D4	*	b	156	0.330	0.164	0.302	0.193	0.284	0.385	0.495
D4		c	229	0.484	-0.142	0.002	0.481	0.529	0.455	0.484
D5			2	0.004	-0.086	-0.015	0.015	0.000	0.000	0.000
D5		a	108	0.228	-0.180	-0.122	0.326	0.216	0.161	0.204
D5		b	138	0.292	-0.225	-0.155	0.348	0.304	0.294	0.194
D5	*	c	225	0.476	0.116	0.291	0.311	0.480	0.545	0.602
E1			1	0.002	0.024	0.000	0.000	0.000	0.007	0.000
E1		a	94	0.199	-0.235	-0.225	0.311	0.176	0.182	0.086
E1	*	b	195	0.412	0.251	0.487	0.222	0.353	0.441	0.710
E1		c	183	0.387	-0.312	-0.262	0.467	0.471	0.371	0.204
E2			4	0.008	-0.060	-0.015	0.015	0.010	0.007	0.000
E2	*	a	198	0.419	0.307	0.465	0.244	0.235	0.524	0.710
E2		b	116	0.245	-0.272	-0.216	0.356	0.255	0.203	0.140
E2		c	155	0.328	-0.322	-0.235	0.385	0.500	0.266	0.151
E3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E3		a	129	0.273	-0.228	-0.195	0.378	0.255	0.245	0.183
E3		b	117	0.247	-0.238	-0.189	0.319	0.275	0.238	0.129
E3	*	c	227	0.480	0.161	0.384	0.304	0.471	0.517	0.688
E4			1	0.002	-0.079	-0.007	0.007	0.000	0.000	0.000
E4		a	89	0.188	-0.319	-0.287	0.341	0.206	0.119	0.054
E4	*	b	192	0.406	0.219	0.487	0.222	0.392	0.392	0.710
E4		c	191	0.404	-0.207	-0.193	0.430	0.402	0.490	0.237
E5			3	0.006	-0.051	-0.004	0.015	0.000	0.000	0.011
E5	*	a	180	0.381	0.292	0.479	0.252	0.225	0.385	0.731
E5		b	140	0.296	-0.300	-0.270	0.356	0.412	0.294	0.086
E5		c	150	0.317	-0.270	-0.206	0.378	0.363	0.322	0.172

Table 3: Reading 03 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			2	0.004	-0.072	-0.015	0.015	0.000	0.000	0.000
F1		a	92	0.195	-0.295	-0.214	0.311	0.206	0.140	0.097
F1	*	b	197	0.416	0.183	0.324	0.289	0.324	0.476	0.613
F1		c	182	0.385	-0.192	-0.095	0.385	0.471	0.385	0.290
F2			2	0.004	-0.066	-0.007	0.007	0.000	0.007	0.000
F2		a	130	0.275	-0.139	-0.076	0.356	0.176	0.266	0.280
F2		b	110	0.233	-0.261	-0.222	0.319	0.265	0.217	0.097
F2	*	c	231	0.488	0.103	0.305	0.319	0.559	0.510	0.624
F3			3	0.006	-0.094	-0.015	0.015	0.000	0.007	0.000
F3	*	a	147	0.311	0.228	0.410	0.193	0.275	0.259	0.602
F3		b	125	0.264	-0.269	-0.226	0.333	0.275	0.294	0.108
F3		c	198	0.419	-0.216	-0.169	0.459	0.451	0.441	0.290
F4			5	0.011	-0.094	-0.015	0.015	0.020	0.007	0.000
F4		a	98	0.207	-0.216	-0.174	0.281	0.235	0.182	0.108
F4		b	114	0.241	-0.272	-0.219	0.348	0.255	0.203	0.129
F4	*	c	256	0.541	0.194	0.408	0.356	0.490	0.608	0.763
F5			3	0.006	-0.040	-0.007	0.007	0.010	0.007	0.000
F5		a	112	0.237	-0.288	-0.259	0.378	0.245	0.175	0.118
F5		b	102	0.216	-0.256	-0.204	0.311	0.216	0.196	0.108
F5	*	c	256	0.541	0.233	0.470	0.304	0.529	0.622	0.774

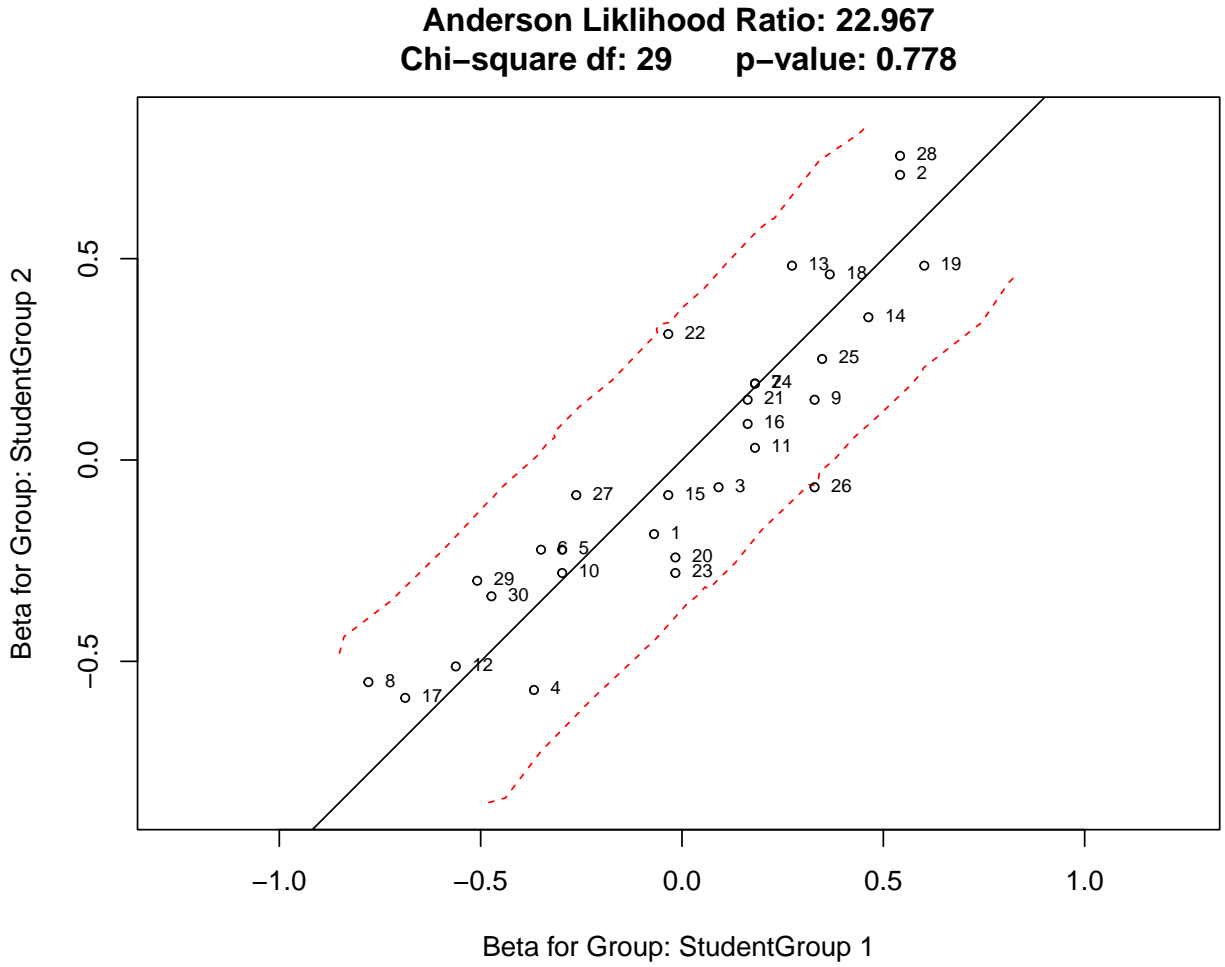


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Reading 03 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	473	0.9461	0.9628
A2	473	0.9203	0.9482
A3	473	0.8995	0.9179
A4	473	0.9760	0.9816
A5	473	1.1744	1.1234
B1	473	0.9877	1.0032
B2	473	0.9604	0.9659
B3	473	0.8993	0.9385
B4	473	0.9105	0.9283
B5	473	0.9666	0.9839
C1	473	0.8994	0.9098
C2	473	0.9266	0.9175
C3	473	0.9553	0.9296
C4	473	1.0472	1.0449
C5	473	1.1134	1.0956
D1	473	0.8761	0.9033
D2	473	0.9506	0.9735
D3	473	0.9425	0.9647
D4	473	1.0577	1.0461
D5	473	1.1182	1.0782
E1	473	0.9850	0.9871
E2	473	0.9399	0.9477
E3	473	1.0767	1.0457
E4	473	1.0200	1.0098
E5	473	0.9552	0.9549
F1	473	1.0470	1.0350
F2	473	1.0983	1.0843
F3	473	1.0000	0.9920
F4	473	1.0202	1.0167
F5	473	0.9904	0.9893

Table 5: Reading 03 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9887	0.0750
Infit	Infit	0.9893	0.0587

Table 6: Reading 03 Raw to Theta Table

Raw Score	theta	SE
3	-1.8921	0.5814
4	-1.5992	0.5230
5	-1.3555	0.4829
6	-1.1439	0.4536
7	-0.9547	0.4316
8	-0.7815	0.4147
9	-0.6204	0.4016
10	-0.4682	0.3914
11	-0.3228	0.3837
12	-0.1823	0.3779
13	-0.0454	0.3740
14	0.0893	0.3717
15	0.2229	0.3709
16	0.3565	0.3717
17	0.4912	0.3740
18	0.6281	0.3779
19	0.7685	0.3836
20	0.9138	0.3913
21	1.0659	0.4014
22	1.2269	0.4145
23	1.3999	0.4315
24	1.5890	0.4535
25	1.8004	0.4827
26	2.0438	0.5228
27	2.3365	0.5812
28	2.7130	0.6746

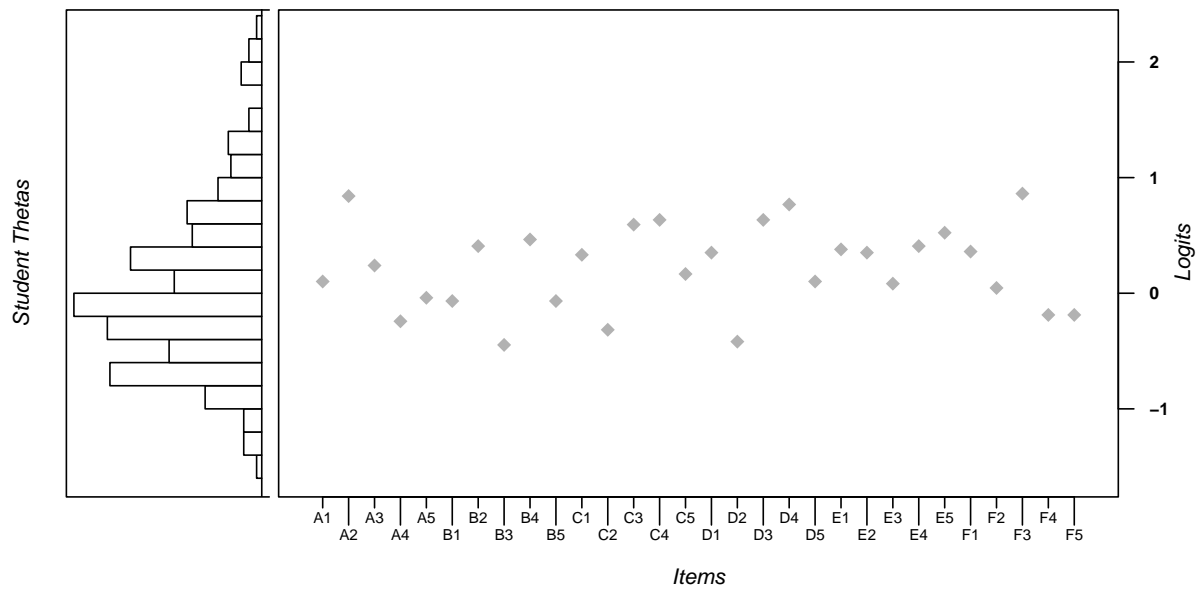


Figure 2: Student Ability - Item Difficulty Wright Map

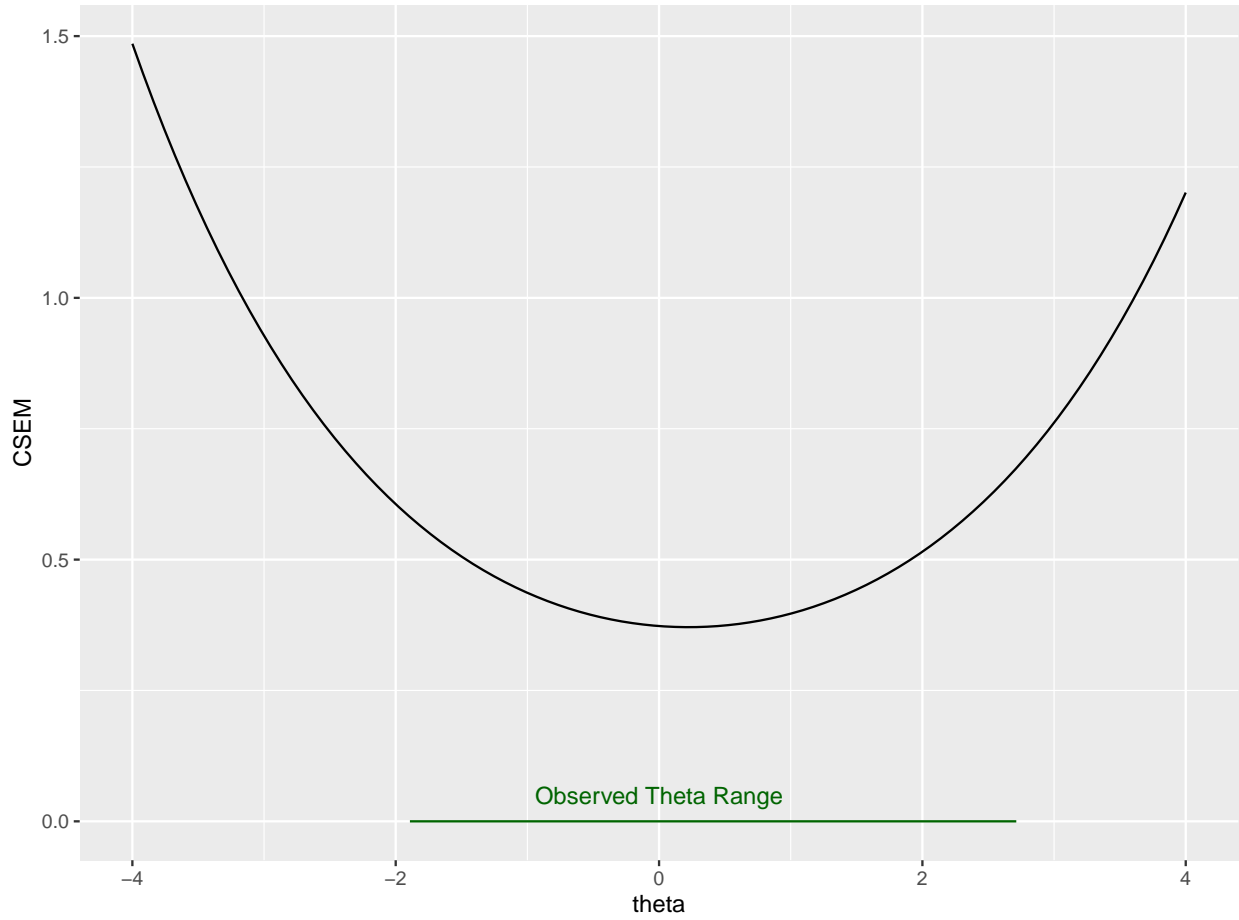


Figure 3: Reading 03 Conditional Standard Error of Measure

Table 7: Reading 03 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		473	0.71
Ethnic	Black	57	0.67
Ethnic	Hispanic	39	0.54
Ethnic	Other	26	0.71
Ethnic	White	346	0.72
Disadvantaged	No	339	0.73
Disadvantaged	Yes	134	0.57
LEP	No	448	0.72
LEP	Yes	25	0.41
Gender	Female	161	0.72
Gender	Male	312	0.70
Homeless	No	455	0.70
Homeless	Yes	18	0.79

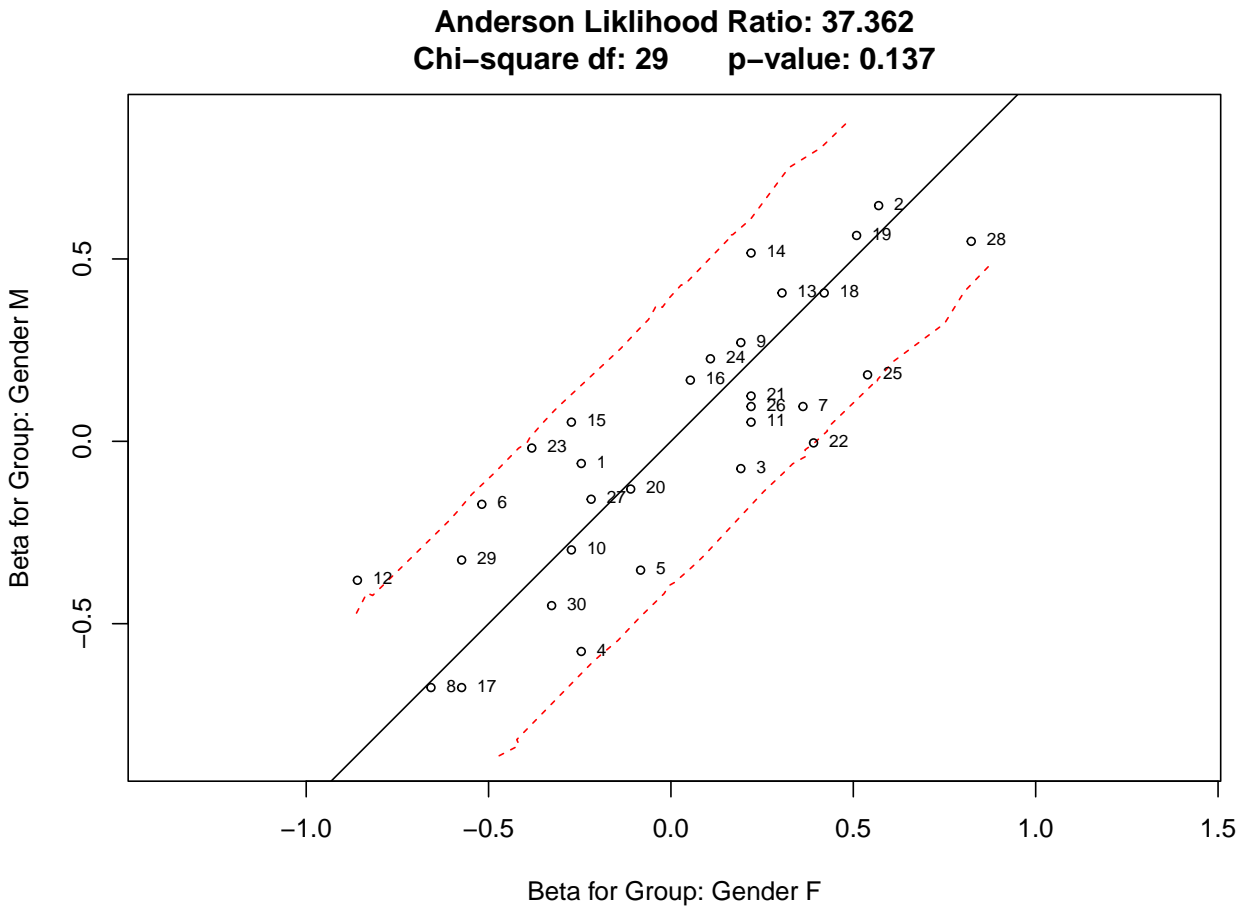


Figure 4: Reading 03 Differential Item (DIF) and Test (DTF) Function for Gender

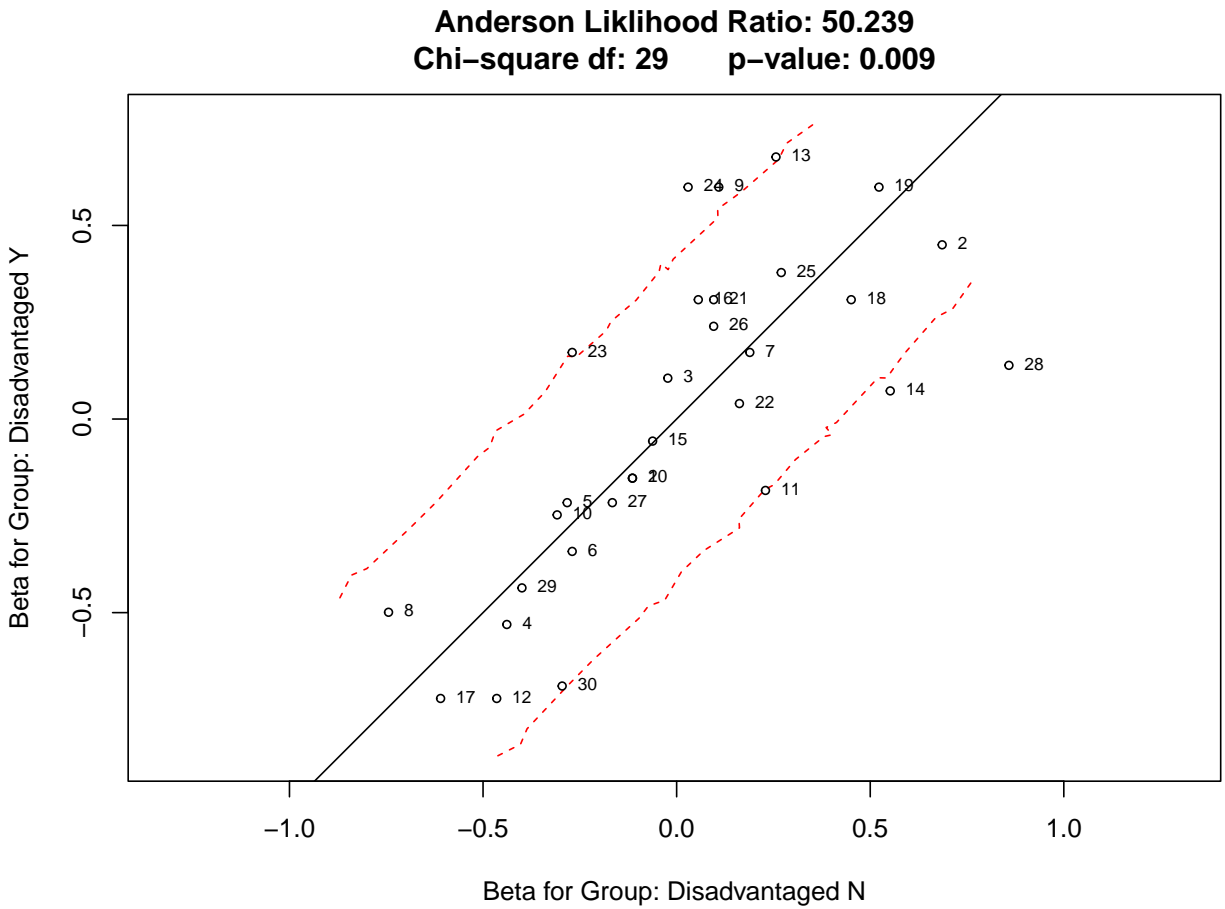


Figure 5: Reading 03 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

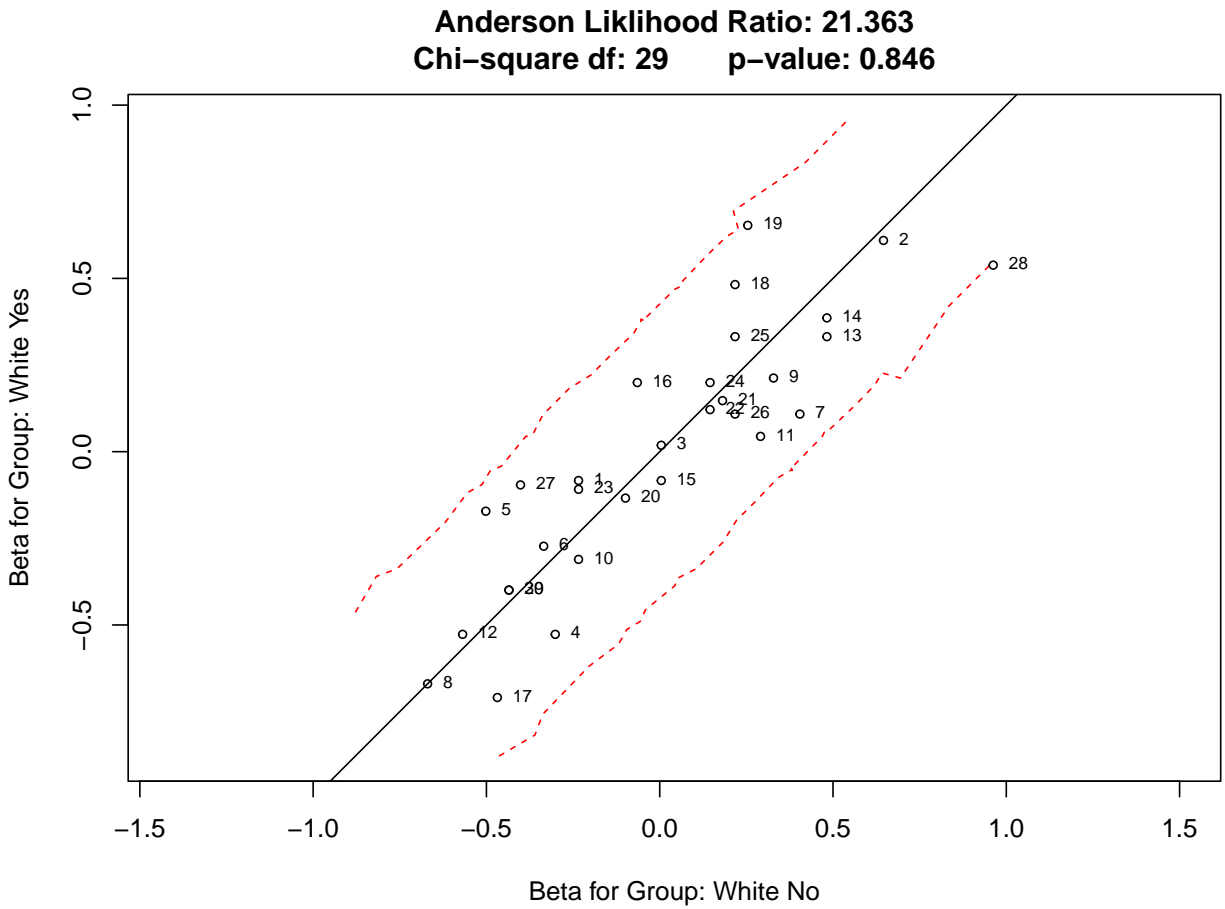


Figure 6: Reading 03 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.7049	0.1620	0.8669
False	0.0468	0.0863	0.1331
Total	0.7518	0.2482	1.0000

Accuracy = 0.8669

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.6192	0.1326
j	0.0707	0.1776

Proportion of Consistent Classifications = 0.7967
Cohen's Kappa = 0.4974

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.1475	0.0571	0.7263	0.0691	0.6811	0.9271	0.8738	0.1202	0.0419	0.0818
Apprentice	0.4315	0.1156	0.3098	0.1431	0.7509	0.7282	0.7412	0.3742	0.2993	0.1069
Proficient	0.1426	0.0872	0.7085	0.0617	0.6978	0.8904	0.8510	0.1267	0.0528	0.0780
Distinguished	0.0032	0.0152	0.9803	0.0013	0.7200	0.9847	0.9835	0.0057	0.0003	0.0054

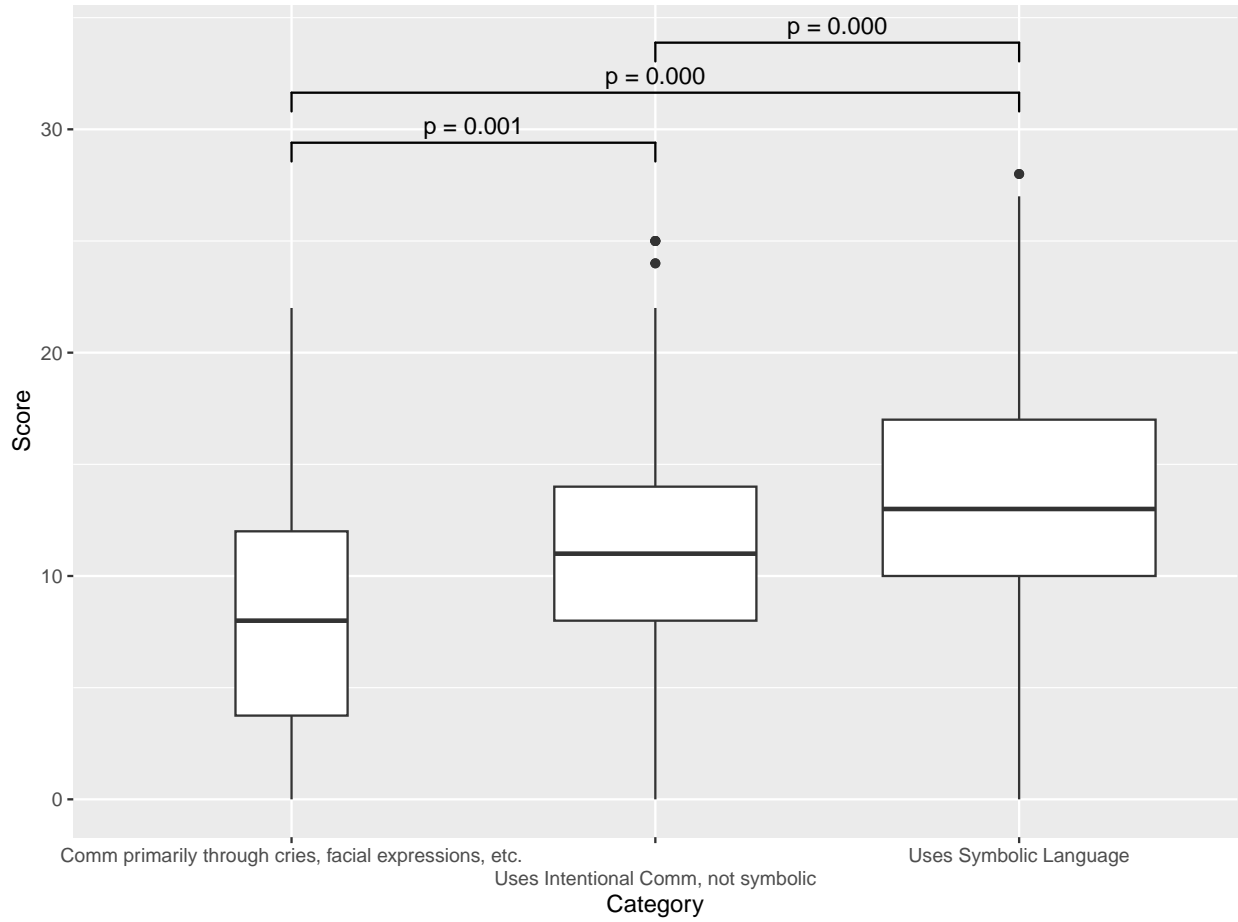


Figure 7: Reading 03 Learner Characteristic: Expressive Communication

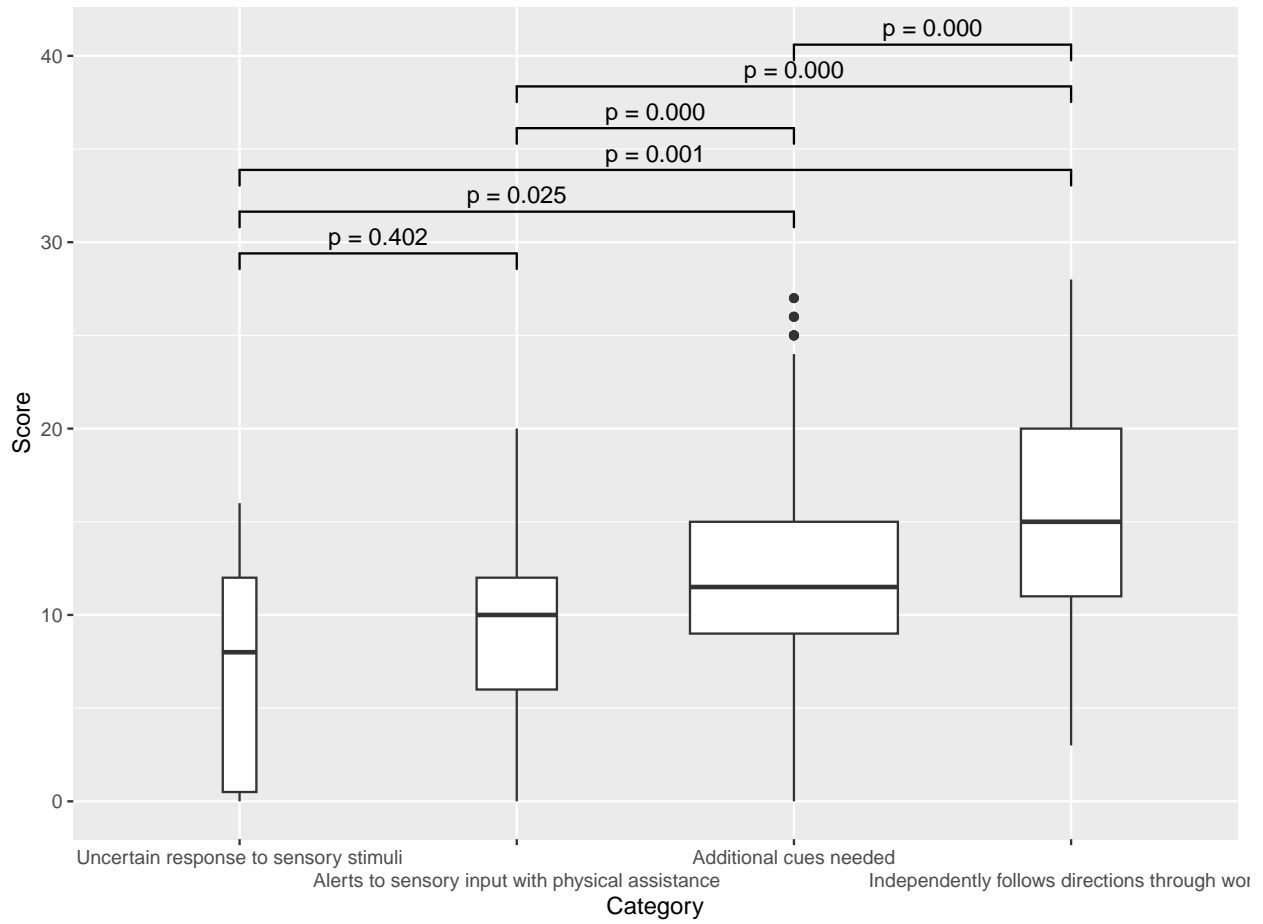


Figure 8: Reading 03 Learner Characteristic: Receptive Language

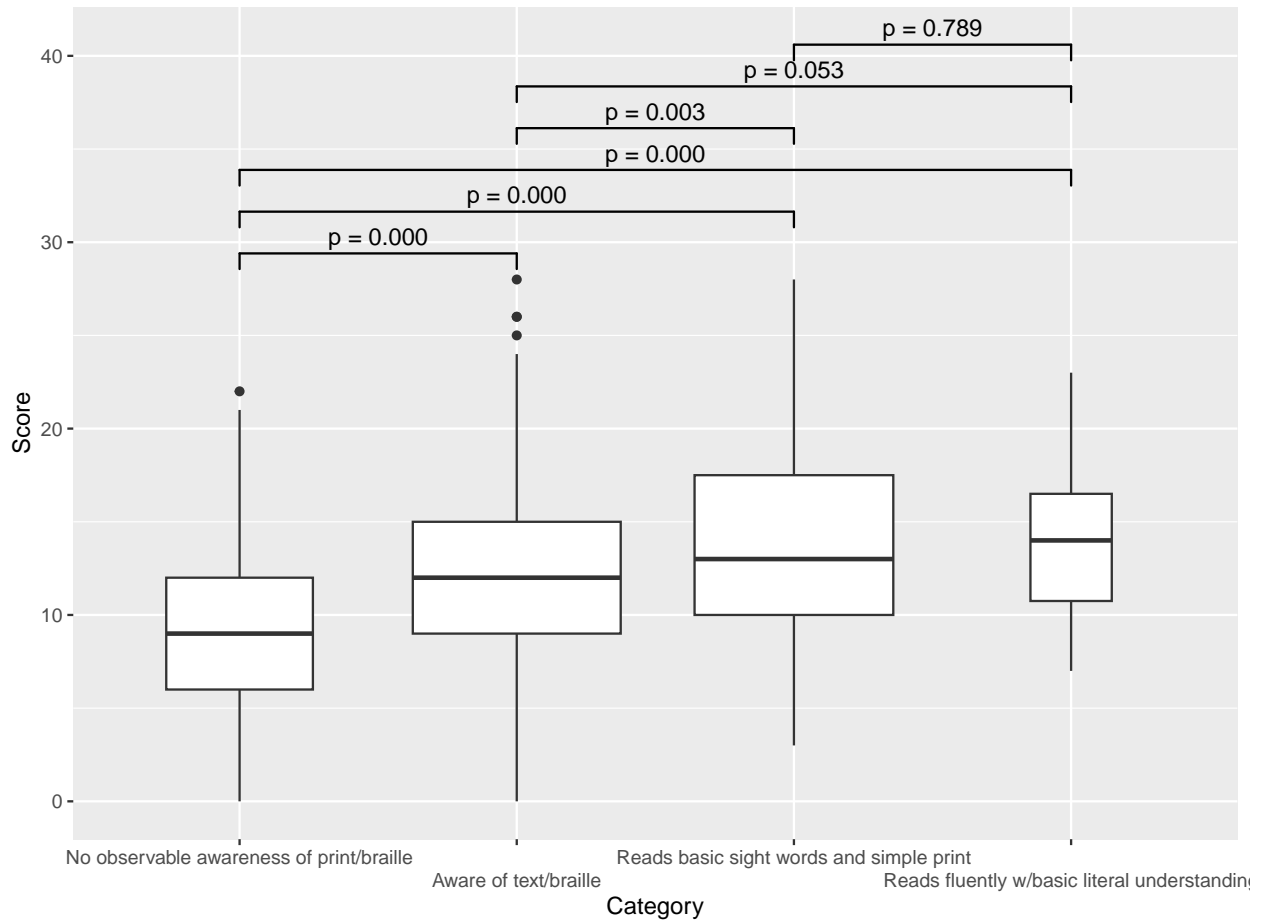


Figure 9: Reading 03 Learner Characteristic: Reading

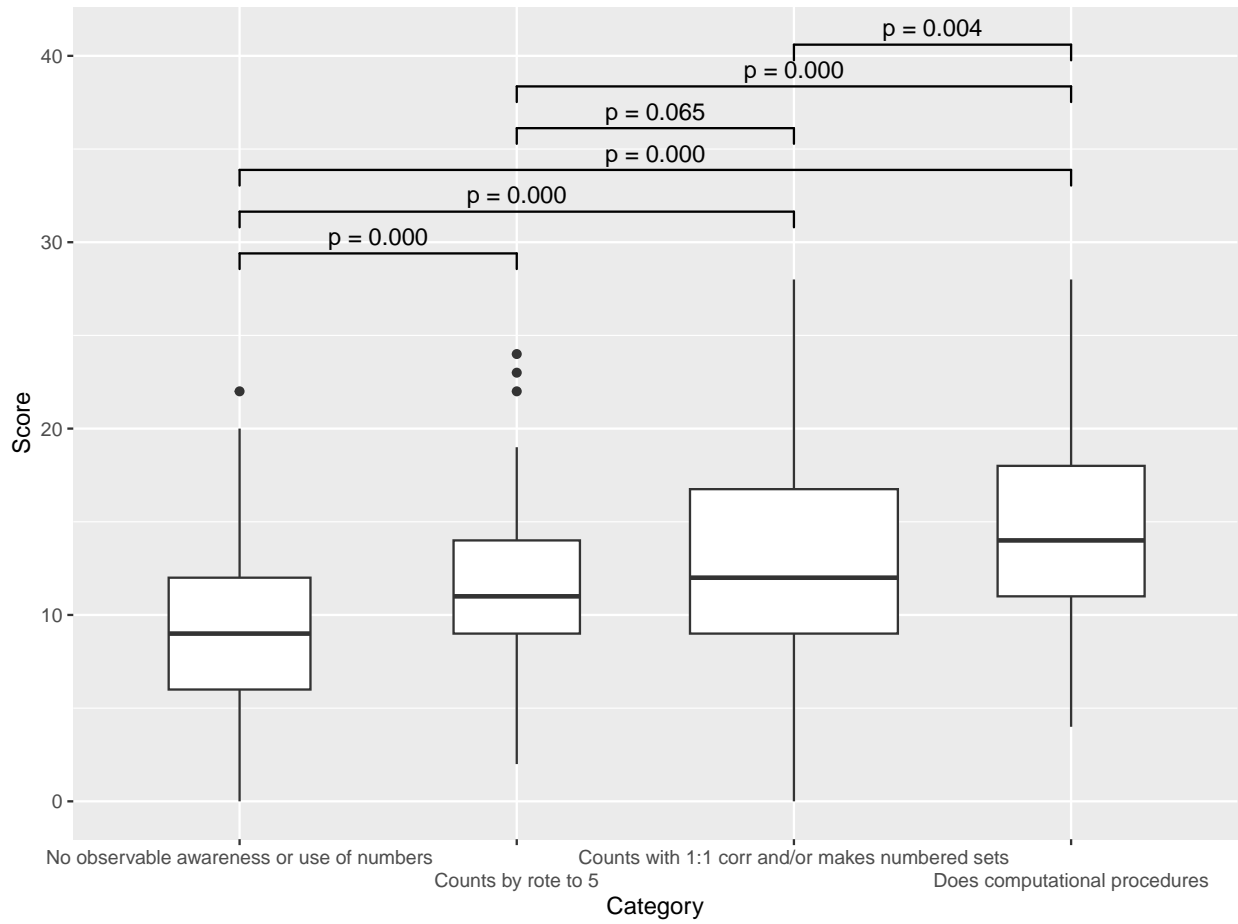


Figure 10: Reading 03 Learner Characteristic: Mathematics

Math Grade 10

Table 1: Math 10 Item Statistics

	Item	n	mean	sd	se	
	A1	1	523	0.598	0.491	0.021
	A2	2	523	0.356	0.479	0.021
	A3	3	523	0.530	0.500	0.022
	A4	4	523	0.340	0.474	0.021
	A5	5	523	0.476	0.500	0.022
	B1	6	523	0.511	0.500	0.022
	B2	7	523	0.532	0.499	0.022
	B3	8	523	0.455	0.498	0.022
	B4	9	523	0.277	0.448	0.020
	B5	10	523	0.403	0.491	0.021
	C1	11	523	0.337	0.473	0.021
	C2	12	523	0.319	0.467	0.020
	C3	13	523	0.642	0.480	0.021
	C4	14	523	0.340	0.474	0.021
	C5	15	523	0.325	0.469	0.021
	D1	16	523	0.327	0.470	0.021
	D2	17	523	0.426	0.495	0.022
	D3	18	523	0.526	0.500	0.022
	D4	19	523	0.606	0.489	0.021
	D5	20	523	0.405	0.491	0.021
	E1	21	523	0.415	0.493	0.022
	E2	22	523	0.323	0.468	0.020
	E3	23	523	0.505	0.500	0.022
	E4	24	523	0.323	0.468	0.020
	E5	25	523	0.375	0.485	0.021
	F1	26	523	0.302	0.460	0.020
	F2	27	523	0.331	0.471	0.021
	F3	28	523	0.356	0.479	0.021
	F4	29	523	0.577	0.494	0.022
	F5	30	523	0.293	0.455	0.020

Chronbach's Alpha: 0.5151

Table 2: Math 10 Raw Score Frequencies

Score	freq	pct	pct_cum
4	1	0.191	0.191
5	3	0.574	0.765
6	13	2.486	3.250
7	16	3.059	6.310
8	33	6.310	12.620
9	47	8.987	21.606
10	62	11.855	33.461
11	47	8.987	42.447
12	51	9.751	52.199
13	64	12.237	64.436
14	47	8.987	73.423
15	35	6.692	80.115
16	24	4.589	84.704
17	30	5.736	90.440
18	14	2.677	93.117
19	9	1.721	94.837
20	11	2.103	96.941
21	5	0.956	97.897
22	5	0.956	98.853
23	4	0.765	99.618
24	1	0.191	99.809
26	1	0.191	100.000

Table 3: Math 10 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.075	-0.011	0.011	0.000	0.000	0.000
A1		a	106	0.203	-0.211	-0.115	0.211	0.255	0.233	0.096
A1	*	b	313	0.598	0.225	0.454	0.411	0.541	0.671	0.865
A1		c	102	0.195	-0.405	-0.327	0.366	0.204	0.096	0.038
A2			1	0.002	-0.041	-0.006	0.006	0.000	0.000	0.000
A2		a	147	0.281	-0.244	-0.170	0.314	0.296	0.329	0.144
A2	*	b	186	0.356	0.102	0.312	0.246	0.327	0.363	0.558
A2		c	189	0.361	-0.228	-0.136	0.434	0.378	0.308	0.298
A3			4	0.008	-0.083	-0.011	0.011	0.010	0.007	0.000
A3		a	108	0.207	-0.239	-0.128	0.263	0.245	0.164	0.135
A3		b	134	0.256	-0.300	-0.197	0.331	0.276	0.240	0.135
A3	*	c	277	0.530	0.158	0.336	0.394	0.469	0.589	0.731
A4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A4	*	a	178	0.340	0.222	0.404	0.183	0.296	0.384	0.587
A4		b	147	0.281	-0.220	-0.108	0.349	0.204	0.281	0.240
A4		c	198	0.379	-0.354	-0.295	0.469	0.500	0.336	0.173
A5			1	0.002	-0.041	-0.006	0.006	0.000	0.000	0.000
A5		a	136	0.260	-0.275	-0.157	0.320	0.347	0.199	0.163
A5		b	137	0.262	-0.205	-0.111	0.303	0.224	0.288	0.192
A5	*	c	249	0.476	0.095	0.273	0.371	0.429	0.514	0.644
B1			1	0.002	-0.065	-0.006	0.006	0.000	0.000	0.000
B1	*	a	267	0.511	0.249	0.505	0.274	0.510	0.603	0.779
B1		b	104	0.199	-0.342	-0.255	0.331	0.194	0.130	0.077
B1		c	151	0.289	-0.302	-0.244	0.389	0.296	0.267	0.144
B2			1	0.002	-0.065	-0.006	0.006	0.000	0.000	0.000
B2		a	79	0.151	-0.260	-0.137	0.194	0.204	0.130	0.058
B2	*	b	278	0.532	0.202	0.415	0.383	0.398	0.610	0.798
B2		c	165	0.315	-0.331	-0.273	0.417	0.398	0.260	0.144
B3			2	0.004	-0.075	-0.011	0.011	0.000	0.000	0.000
B3		a	161	0.308	-0.226	-0.114	0.297	0.347	0.384	0.183
B3		b	122	0.233	-0.314	-0.226	0.331	0.224	0.212	0.106
B3	*	c	238	0.455	0.155	0.352	0.360	0.429	0.404	0.712
B4			1	0.002	-0.088	-0.006	0.006	0.000	0.000	0.000
B4	*	a	145	0.277	0.045	0.164	0.211	0.276	0.288	0.375
B4		b	146	0.279	-0.222	-0.116	0.309	0.286	0.301	0.192
B4		c	231	0.442	-0.177	-0.042	0.474	0.439	0.411	0.433
B5			3	0.006	-0.140	-0.017	0.017	0.000	0.000	0.000
B5		a	146	0.279	-0.191	-0.072	0.303	0.327	0.253	0.231
B5		b	163	0.312	-0.203	-0.070	0.349	0.337	0.274	0.279
B5	*	c	211	0.403	0.033	0.159	0.331	0.337	0.473	0.490
C1			1	0.002	-0.030	0.000	0.000	0.010	0.000	0.000
C1		a	148	0.283	-0.082	0.074	0.263	0.276	0.274	0.337
C1		b	198	0.379	-0.289	-0.220	0.509	0.296	0.342	0.288
C1	*	c	176	0.337	0.010	0.146	0.229	0.418	0.384	0.375
C2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C2	*	a	167	0.319	0.199	0.423	0.183	0.286	0.301	0.606
C2		b	173	0.331	-0.230	-0.129	0.360	0.347	0.356	0.231
C2		c	183	0.350	-0.320	-0.294	0.457	0.367	0.342	0.163
C3			1	0.002	-0.077	-0.006	0.006	0.000	0.000	0.000
C3		a	77	0.147	-0.243	-0.119	0.206	0.133	0.130	0.087

Table 3: Math 10 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	109	0.208	-0.272	-0.163	0.297	0.204	0.158	0.135
C3	*	c	336	0.642	0.137	0.287	0.491	0.663	0.712	0.779
C4			2	0.004	-0.059	-0.006	0.006	0.000	0.007	0.000
C4		a	133	0.254	-0.226	-0.088	0.280	0.337	0.212	0.192
C4	*	b	178	0.340	0.055	0.214	0.229	0.306	0.425	0.442
C4		c	210	0.402	-0.197	-0.120	0.486	0.357	0.356	0.365
C5			1	0.002	0.006	0.000	0.000	0.000	0.007	0.000
C5	*	a	170	0.325	0.132	0.296	0.194	0.337	0.356	0.490
C5		b	151	0.289	-0.284	-0.183	0.366	0.286	0.274	0.183
C5		c	201	0.384	-0.215	-0.113	0.440	0.378	0.363	0.327
D1			1	0.002	-0.088	-0.006	0.006	0.000	0.000	0.000
D1		a	126	0.241	-0.166	-0.094	0.257	0.286	0.247	0.163
D1		b	225	0.430	-0.123	0.052	0.457	0.398	0.363	0.510
D1	*	c	171	0.327	-0.080	0.047	0.280	0.316	0.390	0.327
D2			4	0.008	-0.095	-0.017	0.017	0.000	0.007	0.000
D2	*	a	223	0.426	0.222	0.452	0.240	0.357	0.507	0.692
D2		b	175	0.335	-0.224	-0.150	0.400	0.306	0.336	0.250
D2		c	121	0.231	-0.376	-0.285	0.343	0.337	0.151	0.058
D3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D3		a	87	0.166	-0.293	-0.186	0.234	0.173	0.164	0.048
D3	*	b	275	0.526	0.296	0.568	0.297	0.449	0.610	0.865
D3		c	161	0.308	-0.396	-0.382	0.469	0.378	0.226	0.087
D4			1	0.002	-0.088	-0.006	0.006	0.000	0.000	0.000
D4		a	101	0.193	-0.287	-0.186	0.263	0.255	0.151	0.077
D4		b	104	0.199	-0.324	-0.220	0.297	0.245	0.137	0.077
D4	*	c	317	0.606	0.221	0.412	0.434	0.500	0.712	0.846
D5			1	0.002	-0.041	-0.006	0.006	0.000	0.000	0.000
D5		a	109	0.208	-0.232	-0.113	0.229	0.235	0.233	0.115
D5	*	b	212	0.405	0.177	0.401	0.263	0.378	0.411	0.663
D5		c	201	0.384	-0.317	-0.282	0.503	0.388	0.356	0.221
E1			3	0.006	-0.038	-0.002	0.011	0.000	0.000	0.010
E1		a	157	0.300	-0.155	-0.042	0.263	0.408	0.329	0.221
E1	*	b	217	0.415	0.141	0.372	0.291	0.316	0.452	0.663
E1		c	146	0.279	-0.365	-0.329	0.434	0.276	0.219	0.106
E2			2	0.004	-0.042	-0.006	0.006	0.010	0.000	0.000
E2	*	a	169	0.323	0.176	0.394	0.183	0.296	0.329	0.577
E2		b	159	0.304	-0.242	-0.177	0.360	0.296	0.329	0.183
E2		c	193	0.369	-0.287	-0.211	0.451	0.398	0.342	0.240
E3			1	0.002	-0.088	-0.006	0.006	0.000	0.000	0.000
E3		a	108	0.207	-0.240	-0.109	0.234	0.276	0.185	0.125
E3		b	150	0.287	-0.245	-0.170	0.343	0.276	0.308	0.173
E3	*	c	264	0.505	0.102	0.285	0.417	0.449	0.507	0.702
E4			1	0.002	-0.065	-0.006	0.006	0.000	0.000	0.000
E4	*	a	169	0.323	0.115	0.300	0.200	0.296	0.363	0.500
E4		b	155	0.296	-0.090	0.035	0.291	0.245	0.315	0.327
E4		c	198	0.379	-0.370	-0.330	0.503	0.459	0.322	0.173
E5			2	0.004	-0.059	-0.006	0.006	0.010	0.000	0.000
E5	*	a	196	0.375	0.149	0.339	0.229	0.337	0.438	0.567
E5		b	154	0.294	-0.178	-0.018	0.297	0.306	0.295	0.279
E5		c	171	0.327	-0.335	-0.315	0.469	0.347	0.267	0.154

Table 3: Math 10 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F1	*	a	158	0.302	0.105	0.267	0.166	0.306	0.370	0.433
F1		b	196	0.375	-0.294	-0.211	0.480	0.316	0.363	0.269
F1		c	169	0.323	-0.166	-0.056	0.354	0.378	0.267	0.298
F2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F2		a	154	0.294	-0.018	0.150	0.206	0.367	0.308	0.356
F2	*	b	173	0.331	0.008	0.143	0.280	0.286	0.356	0.423
F2		c	196	0.375	-0.346	-0.293	0.514	0.347	0.336	0.221
F3			3	0.006	-0.106	-0.017	0.017	0.000	0.000	0.000
F3		a	132	0.252	-0.140	-0.023	0.234	0.245	0.308	0.212
F3	*	b	186	0.356	0.087	0.262	0.257	0.347	0.363	0.519
F3		c	202	0.386	-0.296	-0.222	0.491	0.408	0.329	0.269
F4			1	0.002	-0.053	-0.006	0.006	0.000	0.000	0.000
F4		a	97	0.185	-0.210	-0.085	0.200	0.245	0.178	0.115
F4		b	123	0.235	-0.334	-0.251	0.337	0.235	0.219	0.087
F4	*	c	302	0.577	0.159	0.341	0.457	0.520	0.603	0.798
F5			1	0.002	-0.018	0.000	0.000	0.010	0.000	0.000
F5	*	a	153	0.293	0.044	0.227	0.177	0.347	0.315	0.404
F5		b	260	0.497	-0.108	0.001	0.480	0.469	0.548	0.481
F5		c	109	0.208	-0.316	-0.227	0.343	0.173	0.137	0.115

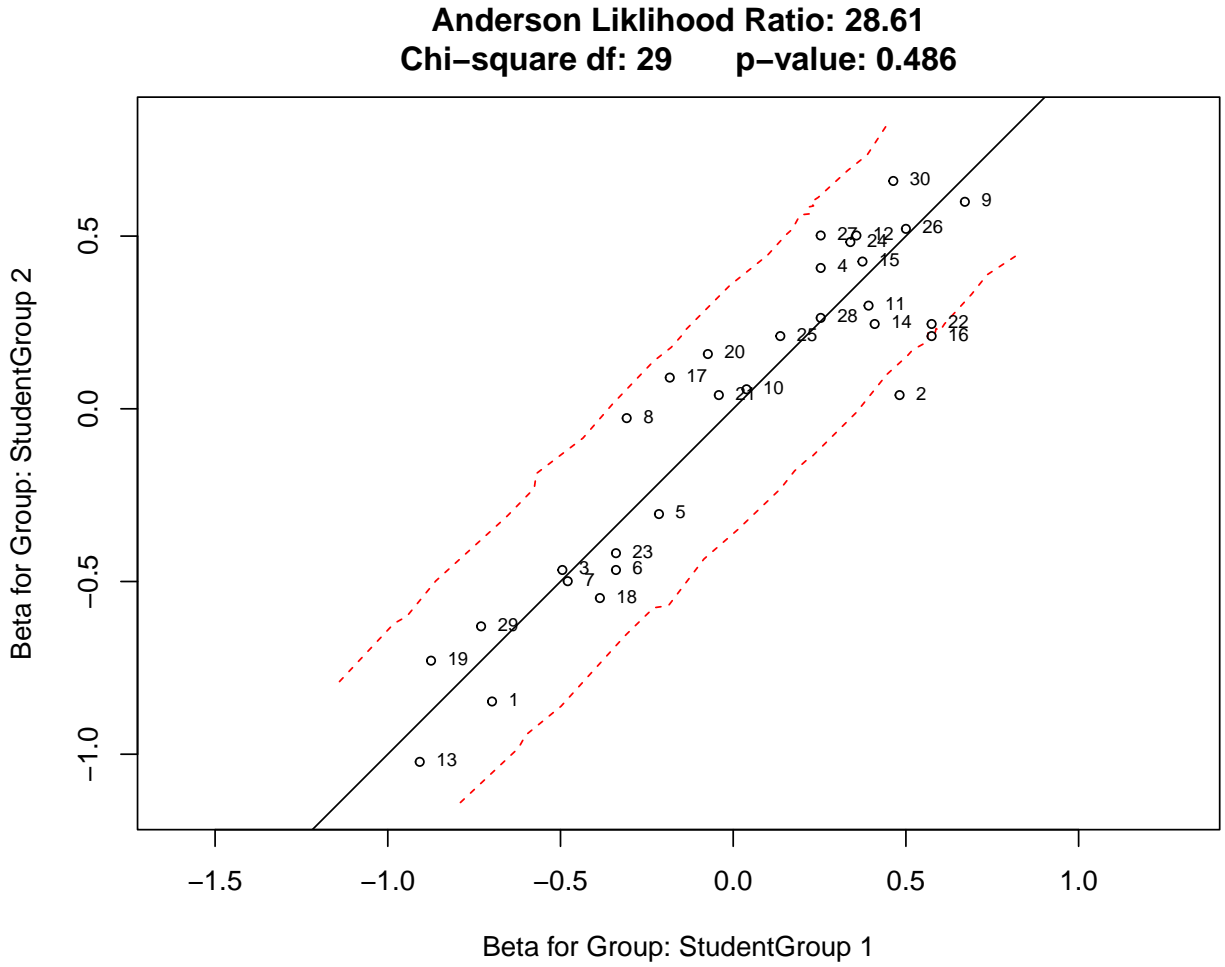


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Math 10 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	523	0.9296	0.9444
A2	523	1.0184	1.0054
A3	523	0.9710	0.9811
A4	523	0.9290	0.9440
A5	523	1.0176	1.0163
B1	523	0.9299	0.9336
B2	523	0.9531	0.9598
B3	523	0.9788	0.9852
B4	523	1.0279	1.0279
B5	523	1.0496	1.0466
C1	523	1.0536	1.0571
C2	523	0.9490	0.9528
C3	523	0.9810	0.9756
C4	523	1.0357	1.0321
C5	523	0.9891	0.9877
D1	523	1.1220	1.1029
D2	523	0.9477	0.9485
D3	523	0.8992	0.9115
D4	523	0.9245	0.9454
D5	523	0.9679	0.9707
E1	523	0.9990	0.9897
E2	523	0.9567	0.9668
E3	523	1.0045	1.0117
E4	523	0.9877	0.9998
E5	523	0.9790	0.9849
F1	523	0.9903	1.0044
F2	523	1.0768	1.0520
F3	523	1.0151	1.0149
F4	523	0.9624	0.9784
F5	523	1.0275	1.0347

Table 5: Math 10 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9891	0.0496
Infit	Infit	0.9922	0.0426

Table 6: Math 10 Raw to Theta Table

Raw Score	theta	SE
4	-1.4946	0.5268
5	-1.2473	0.4867
6	-1.0322	0.4575
7	-0.8395	0.4355
8	-0.6630	0.4185
9	-0.4986	0.4054
10	-0.3433	0.3952
11	-0.1949	0.3874
12	-0.0515	0.3816
13	0.0882	0.3775
14	0.2256	0.3751
15	0.3618	0.3742
16	0.4979	0.3748
17	0.6349	0.3770
18	0.7741	0.3807
19	0.9166	0.3863
20	1.0639	0.3938
21	1.2179	0.4038
22	1.3807	0.4167
23	1.5554	0.4335
24	1.7461	0.4553
26	2.2038	0.5243

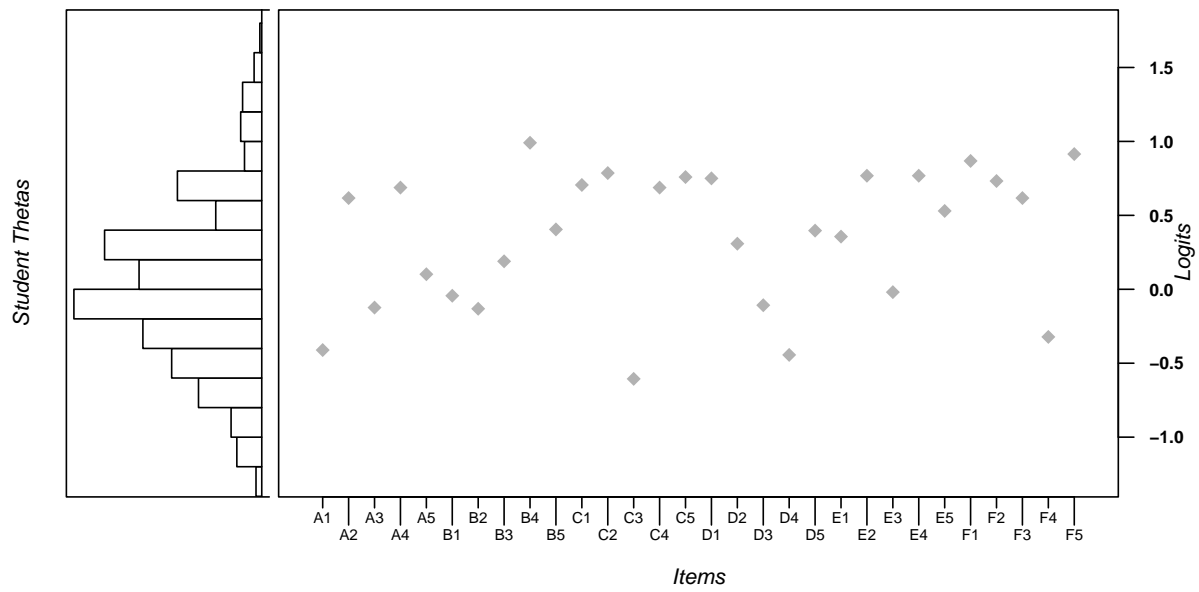


Figure 2: Student Ability - Item Difficulty Wright Map

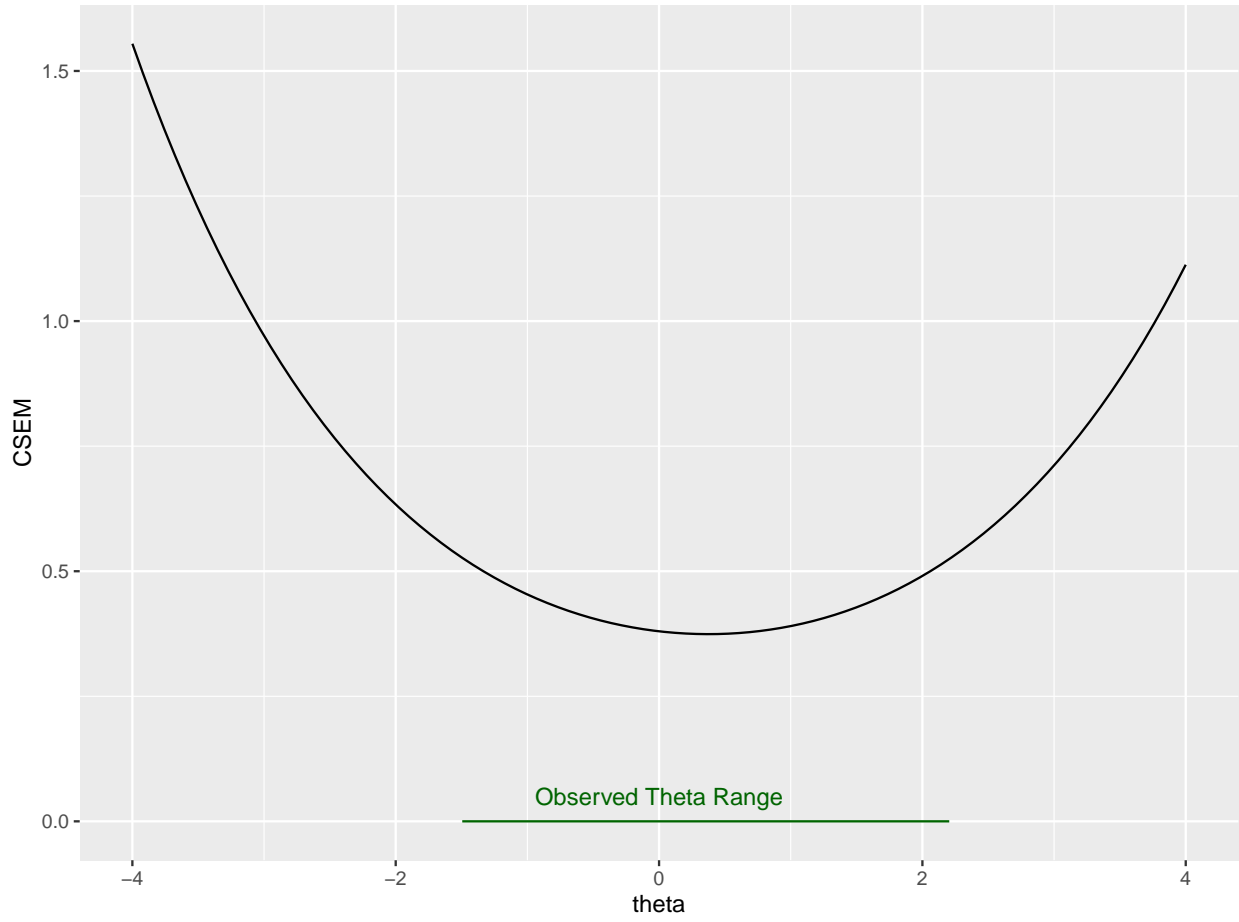


Figure 3: Math 10 Conditional Standard Error of Measure

Table 7: Math 10 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		523	0.48
Ethnic		12	-0.14
Ethnic	Black	68	0.52
Ethnic	Hispanic	34	0.60
Ethnic	Other	11	0.00
Ethnic	White	393	0.48
Disadvantaged	No	390	0.48
Disadvantaged	Yes	133	0.49
LEP	No	497	0.47
LEP	Yes	26	0.64
Gender	Female	185	0.41
Gender	Male	338	0.51
Homeless	No	509	0.48
Homeless	Yes	14	0.44

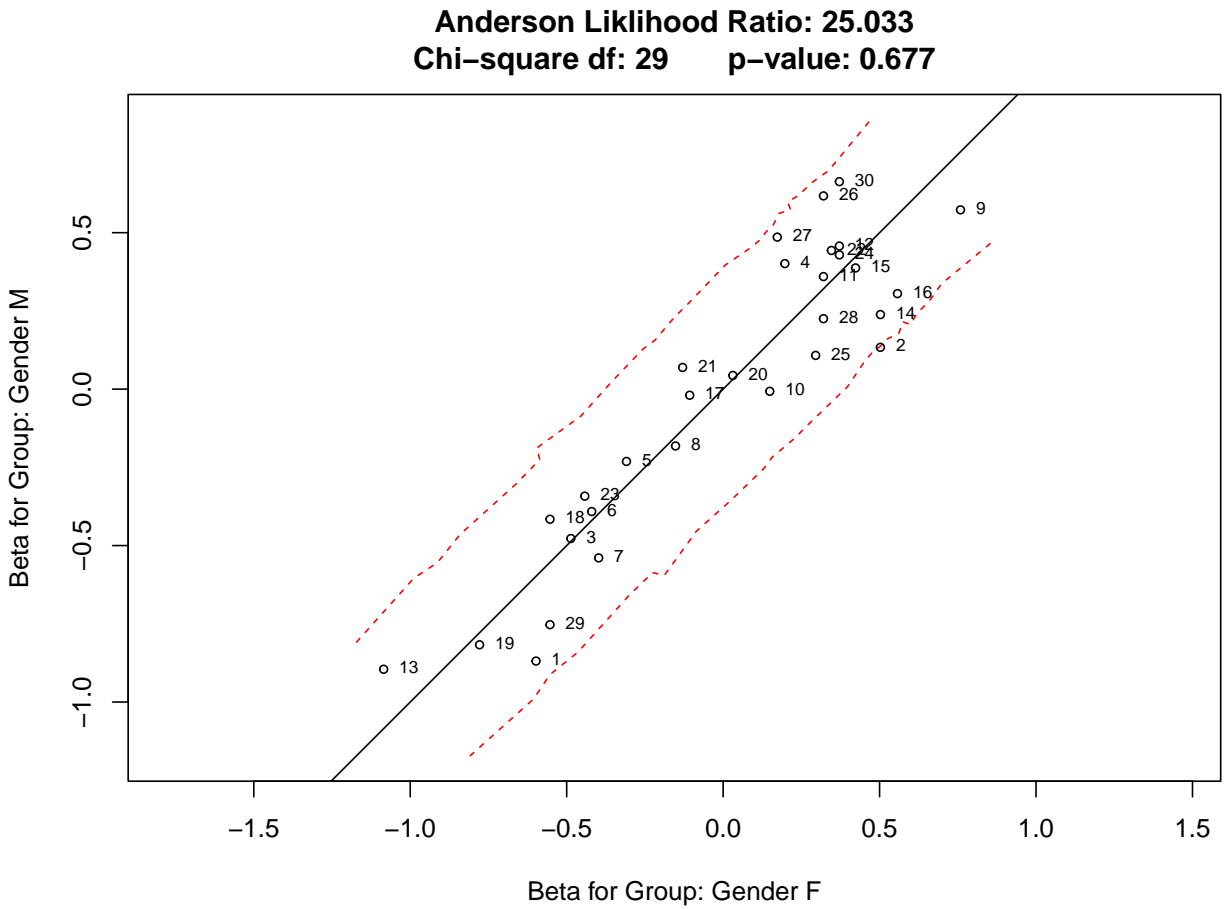


Figure 4: Math 10 Differential Item (DIF) and Test (DTF) Function for Gender

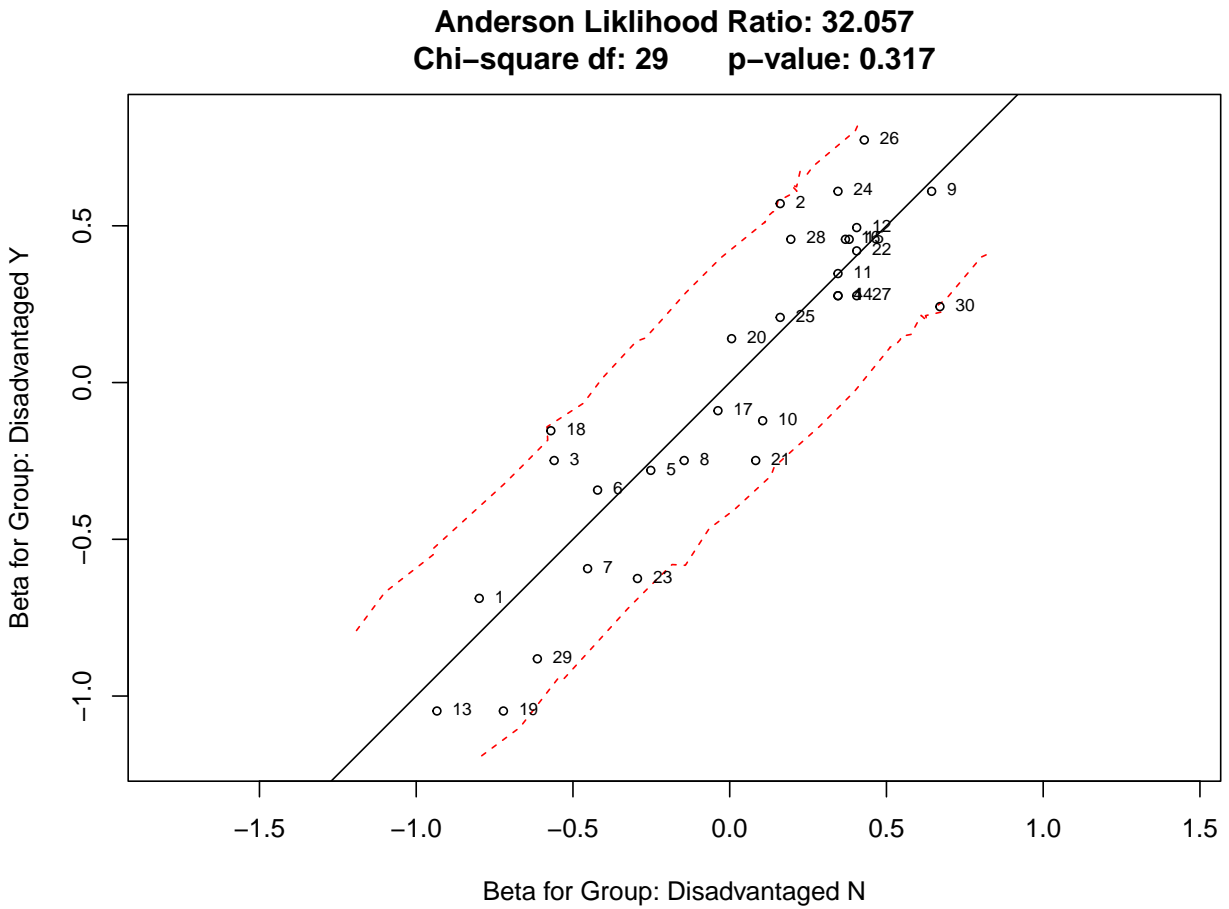


Figure 5: Math 10 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

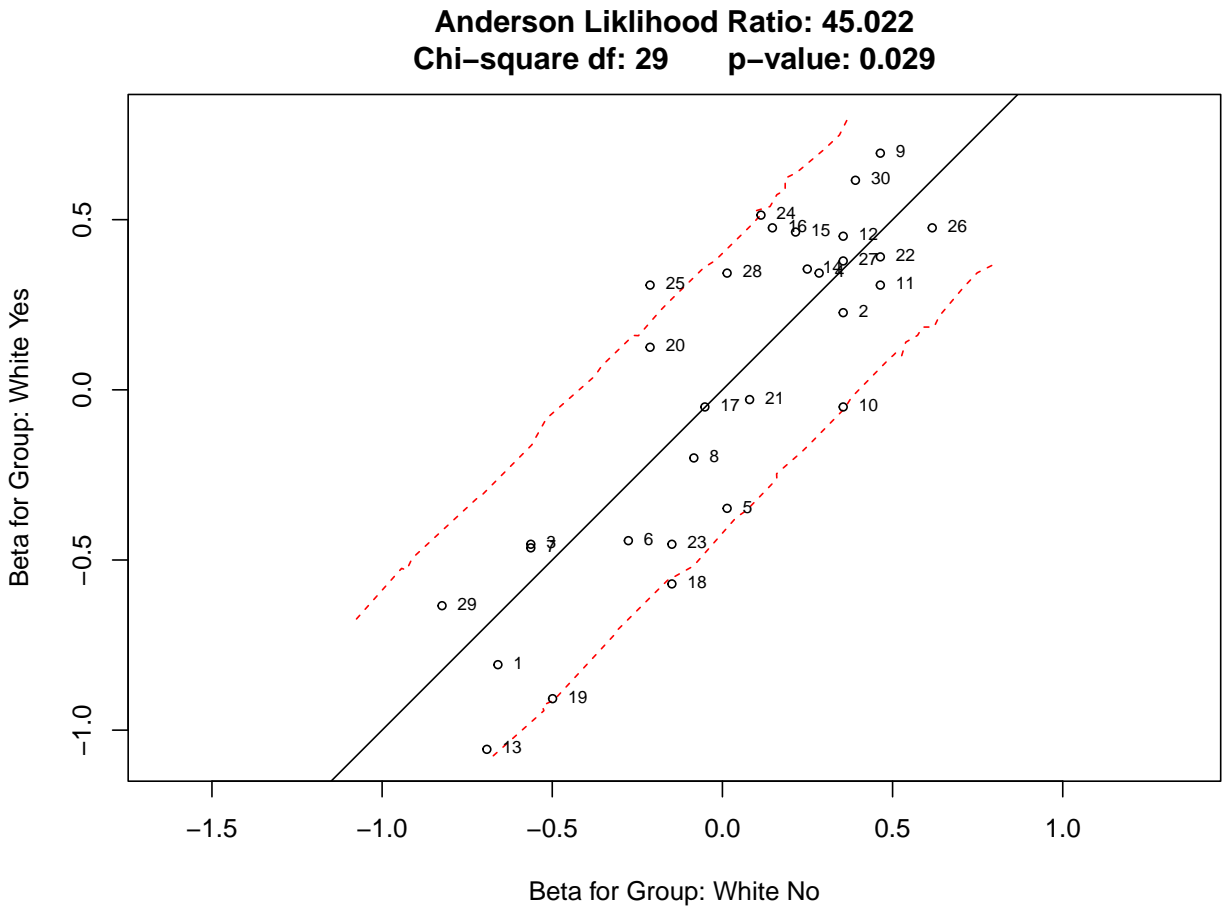


Figure 6: Math 10 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6892	0.1252	0.8143
False	0.0558	0.1298	0.1857
Total	0.7450	0.2550	1.0000

Accuracy = 0.8143

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5590	0.1860
j	0.1002	0.1548

Proportion of Consistent Classifications = 0.7138
Cohen's Kappa = 0.3218

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0220	0.0548	0.9044	0.0188	0.5400	0.9428	0.9264	0.0221	0.0059	0.0163
Apprentice	0.5937	0.0744	0.1474	0.1845	0.7629	0.6644	0.7410	0.4902	0.4464	0.0791
Proficient	0.1221	0.1297	0.6893	0.0589	0.6745	0.8416	0.8114	0.1215	0.0634	0.0620
Distinguished	0.0000	0.0032	0.9967	0.0000	0.6376	0.9968	0.9967	0.0003	0.0000	0.0003

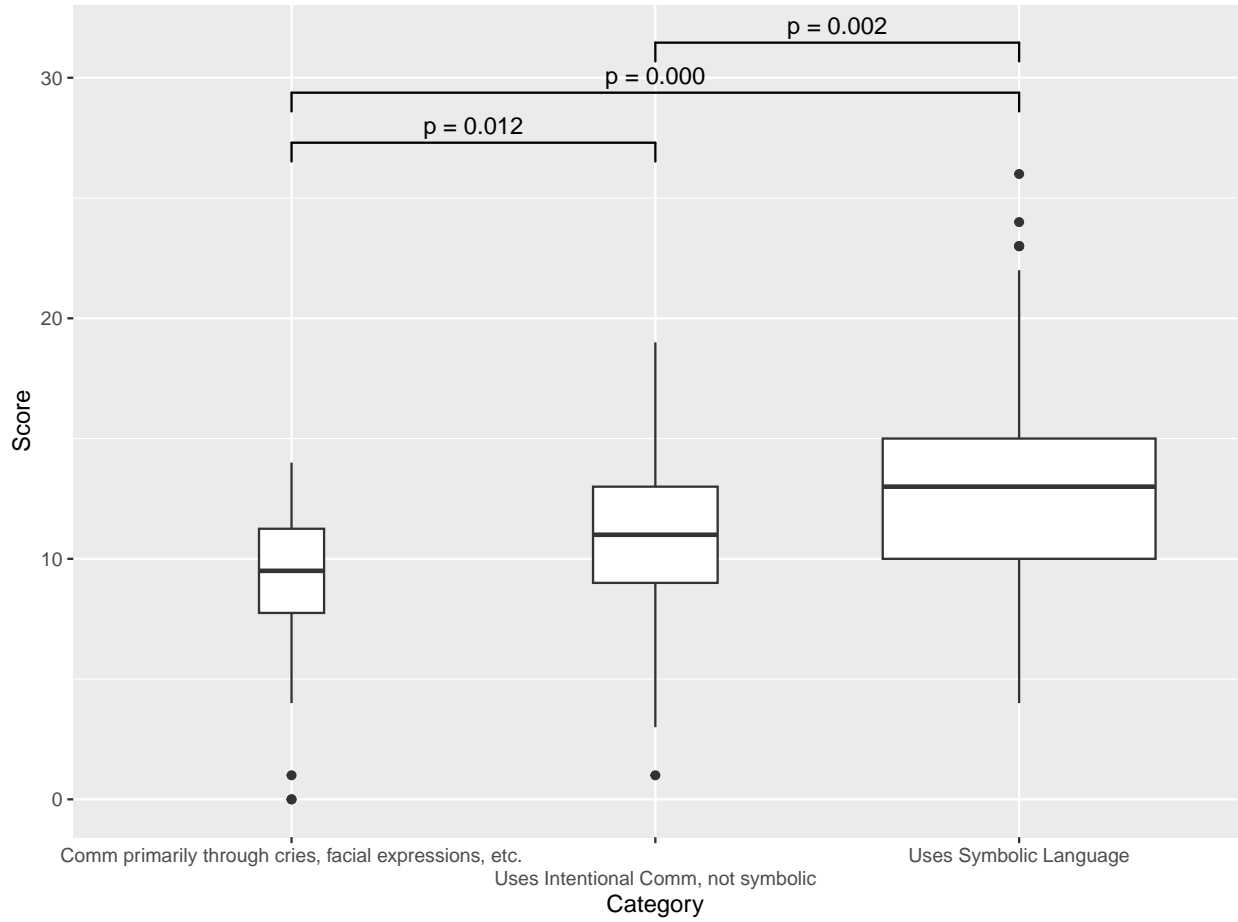


Figure 7: Math 10 Learner Characteristic: Expressive Communication

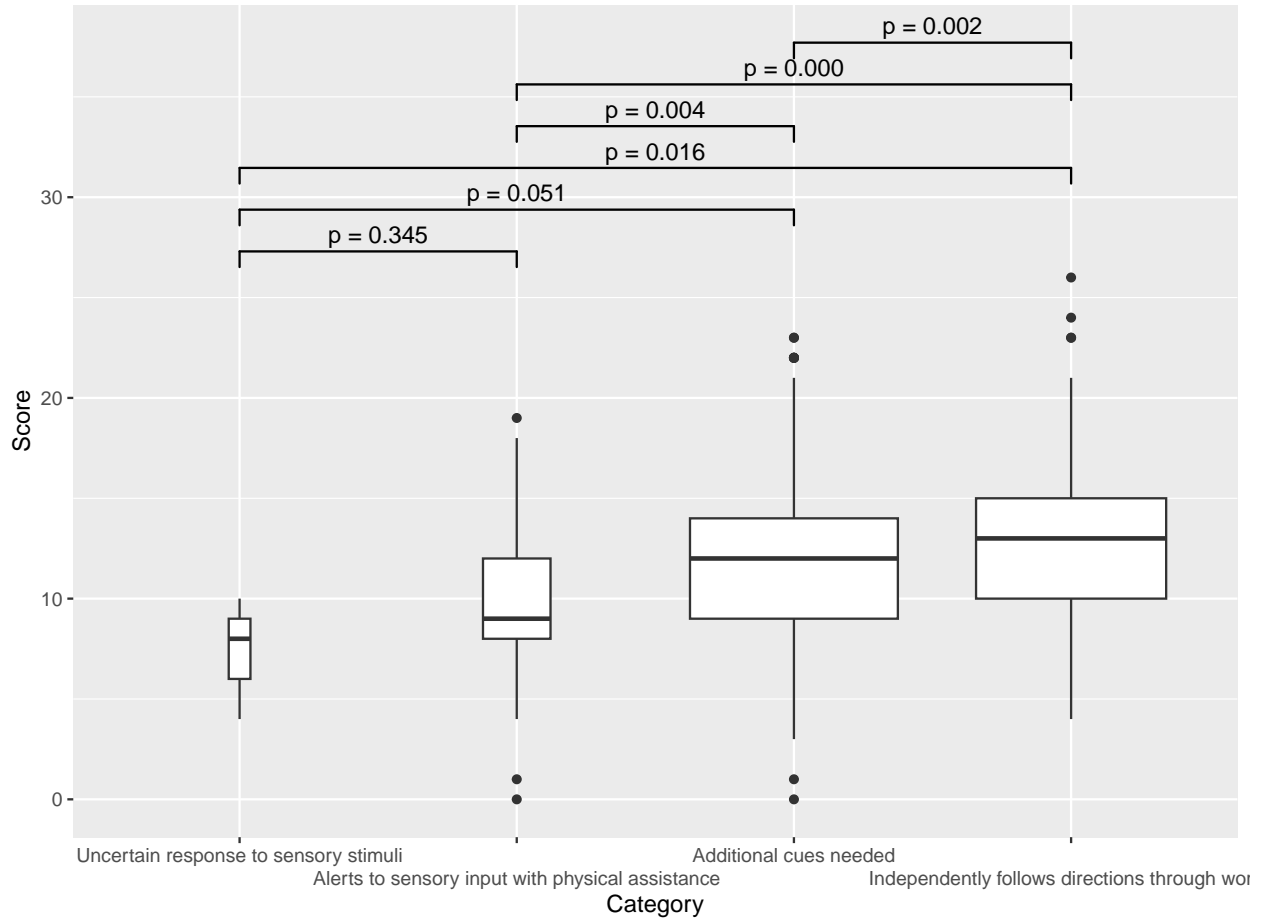


Figure 8: Math 10 Learner Characteristic: Receptive Language

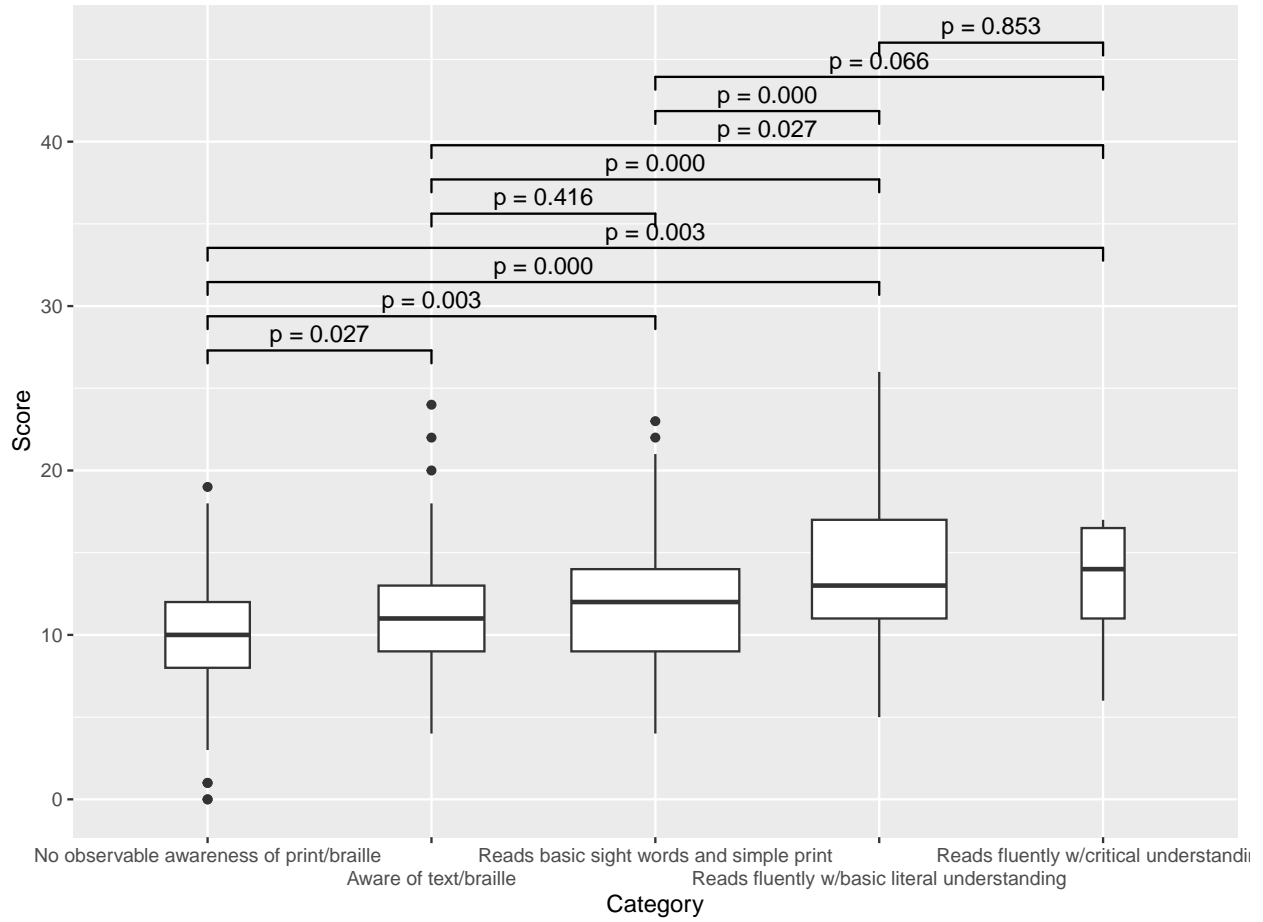


Figure 9: Math 10 Learner Characteristic: Reading

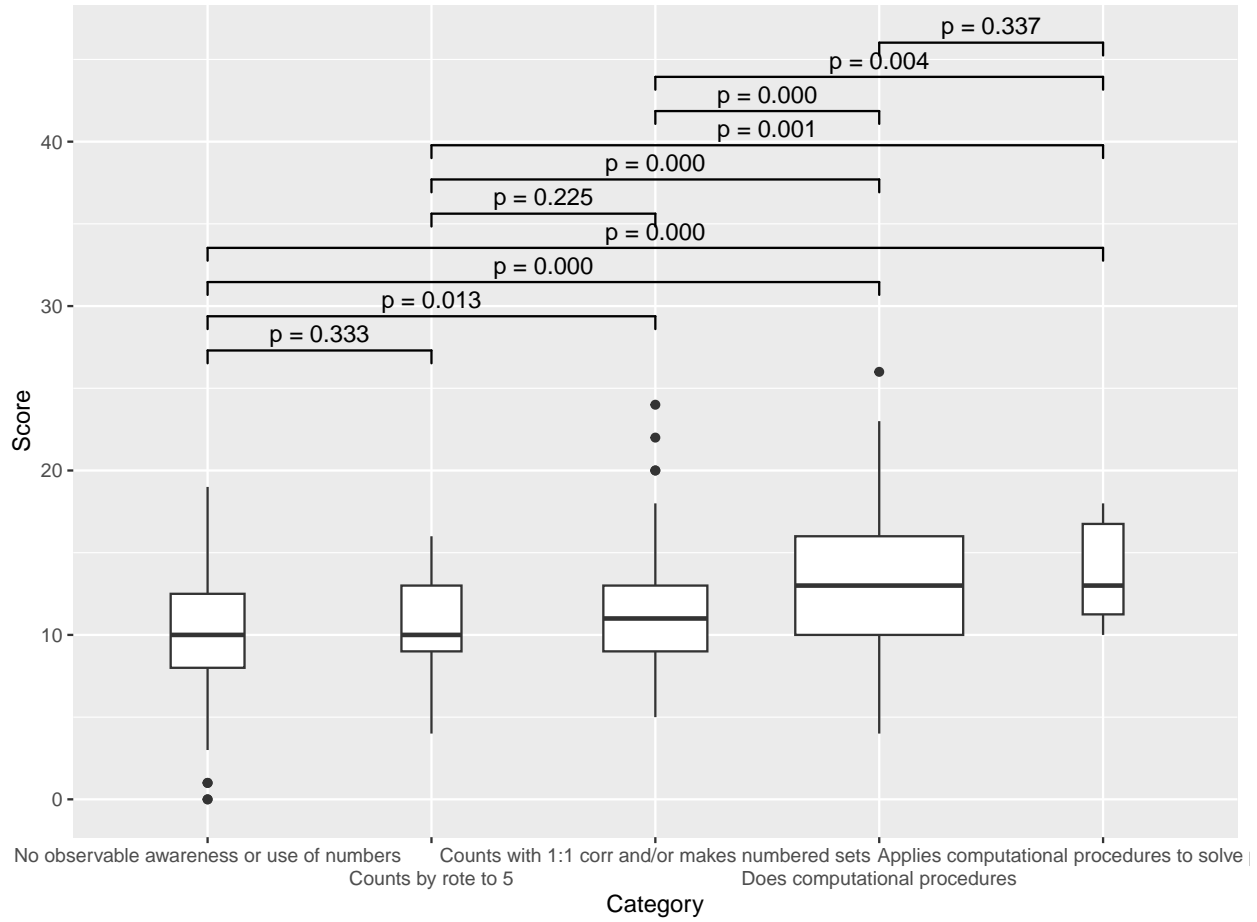


Figure 10: Math 10 Learner Characteristic: Mathematics

Math Grade 8

Table 1: Math 08 Item Statistics

	Item	n	mean	sd	se	
	A1	1	545	0.328	0.470	0.020
	A2	2	545	0.433	0.496	0.021
	A3	3	545	0.394	0.489	0.021
	A4	4	545	0.308	0.462	0.020
	A5	5	545	0.281	0.450	0.019
	B1	6	545	0.327	0.469	0.020
	B2	7	545	0.349	0.477	0.020
	B3	8	545	0.288	0.453	0.019
	B4	9	545	0.428	0.495	0.021
	B5	10	545	0.363	0.481	0.021
	C1	11	545	0.481	0.500	0.021
	C2	12	545	0.517	0.500	0.021
	C3	13	545	0.361	0.481	0.021
	C4	14	545	0.508	0.500	0.021
	C5	15	545	0.281	0.450	0.019
	D1	16	545	0.279	0.449	0.019
	D2	17	545	0.332	0.471	0.020
	D3	18	545	0.451	0.498	0.021
	D4	19	545	0.286	0.452	0.019
	D5	20	545	0.400	0.490	0.021
	E1	21	545	0.347	0.476	0.020
	E2	22	545	0.314	0.464	0.020
	E3	23	545	0.350	0.478	0.020
	E4	24	545	0.350	0.478	0.020
	E5	25	545	0.433	0.496	0.021
	F1	26	545	0.536	0.499	0.021
	F2	27	545	0.462	0.499	0.021
	F3	28	545	0.367	0.482	0.021
	F4	29	545	0.371	0.483	0.021
	F5	30	545	0.492	0.500	0.021

Chronbach's Alpha: 0.2935

Table 2: Math 08 Raw Score Frequencies

Score	freq	pct	pct_cum
4	2	0.367	0.367
5	6	1.101	1.468
6	12	2.202	3.670
7	17	3.119	6.789
8	46	8.440	15.229
9	66	12.110	27.339
10	86	15.780	43.119
11	67	12.294	55.413
12	66	12.110	67.523
13	64	11.743	79.266
14	36	6.606	85.872
15	21	3.853	89.725
16	17	3.119	92.844
17	16	2.936	95.780
18	8	1.468	97.248
19	6	1.101	98.349
20	4	0.734	99.083
21	3	0.550	99.633
23	1	0.183	99.817
24	1	0.183	100.000

Table 3: Math 08 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A1	*	a	179	0.328	0.189	0.439	0.128	0.294	0.392	0.566
A1		b	184	0.338	-0.258	-0.162	0.436	0.314	0.308	0.274
A1		c	182	0.334	-0.355	-0.277	0.436	0.392	0.300	0.159
A2			2	0.004	-0.115	-0.013	0.013	0.000	0.000	0.000
A2		a	106	0.194	-0.256	-0.131	0.228	0.281	0.138	0.097
A2	*	b	236	0.433	0.032	0.248	0.362	0.340	0.469	0.611
A2		c	201	0.369	-0.224	-0.104	0.396	0.379	0.392	0.292
A3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A3		a	146	0.268	-0.139	-0.016	0.255	0.288	0.285	0.239
A3		b	184	0.338	-0.255	-0.124	0.443	0.307	0.269	0.319
A3	*	c	215	0.394	-0.054	0.140	0.302	0.405	0.446	0.442
A4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A4	*	a	168	0.308	0.058	0.292	0.195	0.281	0.315	0.487
A4		b	175	0.321	-0.171	-0.075	0.349	0.294	0.362	0.274
A4		c	202	0.371	-0.318	-0.217	0.456	0.425	0.323	0.239
A5			4	0.007	0.002	0.009	0.000	0.013	0.008	0.009
A5	*	a	153	0.281	0.165	0.386	0.128	0.261	0.277	0.513
A5		b	174	0.319	-0.231	-0.123	0.362	0.294	0.369	0.239
A5		c	214	0.393	-0.345	-0.271	0.510	0.431	0.346	0.239
B1			3	0.006	-0.106	-0.013	0.013	0.000	0.008	0.000
B1		a	150	0.275	-0.175	-0.059	0.289	0.268	0.308	0.230
B1	*	b	178	0.327	0.010	0.200	0.295	0.281	0.269	0.496
B1		c	214	0.393	-0.260	-0.128	0.403	0.451	0.415	0.274
B2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B2		a	145	0.266	-0.223	-0.078	0.282	0.307	0.254	0.204
B2		b	210	0.385	-0.206	-0.067	0.430	0.379	0.362	0.363
B2	*	c	190	0.349	-0.020	0.145	0.289	0.314	0.385	0.434
B3			1	0.002	-0.061	-0.007	0.007	0.000	0.000	0.000
B3	*	a	157	0.288	0.111	0.297	0.181	0.229	0.315	0.478
B3		b	215	0.394	-0.271	-0.140	0.450	0.418	0.377	0.310
B3		c	172	0.316	-0.257	-0.150	0.362	0.353	0.308	0.212
B4			2	0.004	-0.037	0.000	0.000	0.013	0.000	0.000
B4		a	140	0.257	-0.144	0.017	0.248	0.268	0.246	0.265
B4	*	b	233	0.428	-0.002	0.144	0.342	0.366	0.546	0.487
B4		c	170	0.312	-0.300	-0.162	0.409	0.353	0.208	0.248
B5			2	0.004	-0.076	-0.007	0.007	0.000	0.008	0.000
B5	*	a	198	0.363	0.171	0.402	0.235	0.268	0.385	0.637
B5		b	137	0.251	-0.308	-0.194	0.309	0.320	0.223	0.115
B5		c	208	0.382	-0.296	-0.202	0.450	0.412	0.385	0.248
C1			2	0.004	-0.106	-0.007	0.007	0.007	0.000	0.000
C1		a	126	0.231	-0.250	-0.145	0.268	0.255	0.254	0.124
C1		b	155	0.284	-0.165	-0.017	0.309	0.242	0.300	0.292
C1	*	c	262	0.481	-0.029	0.168	0.416	0.497	0.446	0.584
C2			1	0.002	-0.102	-0.007	0.007	0.000	0.000	0.000
C2		a	103	0.189	-0.143	-0.017	0.168	0.196	0.238	0.150
C2	*	b	282	0.517	0.070	0.336	0.416	0.471	0.485	0.752
C2		c	159	0.292	-0.359	-0.312	0.409	0.333	0.277	0.097
C3			3	0.006	-0.090	-0.007	0.007	0.013	0.000	0.000
C3	*	a	197	0.361	0.144	0.353	0.248	0.268	0.392	0.602

Table 3: Math 08 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	206	0.378	-0.313	-0.202	0.450	0.438	0.338	0.248
C3		c	139	0.255	-0.258	-0.145	0.295	0.281	0.269	0.150
C4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C4		a	126	0.231	-0.211	-0.074	0.295	0.190	0.215	0.221
C4		b	142	0.261	-0.309	-0.196	0.356	0.294	0.200	0.159
C4	*	c	277	0.508	0.064	0.270	0.349	0.516	0.585	0.619
C5			1	0.002	-0.020	0.000	0.000	0.007	0.000	0.000
C5	*	a	153	0.281	0.041	0.244	0.154	0.288	0.315	0.398
C5		b	192	0.352	-0.203	-0.042	0.369	0.373	0.331	0.327
C5		c	199	0.365	-0.267	-0.202	0.477	0.333	0.354	0.274
D1			2	0.004	-0.096	-0.013	0.013	0.000	0.000	0.000
D1	*	a	152	0.279	0.067	0.302	0.141	0.268	0.308	0.442
D1		b	269	0.494	-0.275	-0.193	0.617	0.451	0.462	0.425
D1		c	122	0.224	-0.199	-0.095	0.228	0.281	0.231	0.133
D2			3	0.006	-0.042	0.002	0.007	0.007	0.000	0.009
D2		a	196	0.360	-0.249	-0.075	0.403	0.405	0.285	0.327
D2	*	b	181	0.332	0.065	0.219	0.215	0.261	0.462	0.434
D2		c	165	0.303	-0.253	-0.146	0.376	0.327	0.254	0.230
D3			1	0.002	-0.033	0.000	0.000	0.007	0.000	0.000
D3	*	a	246	0.451	0.098	0.326	0.302	0.431	0.492	0.628
D3		b	118	0.217	-0.272	-0.145	0.295	0.216	0.185	0.150
D3		c	180	0.330	-0.282	-0.181	0.403	0.346	0.323	0.221
D4			1	0.002	0.008	0.000	0.000	0.000	0.008	0.000
D4		a	171	0.314	-0.217	-0.077	0.342	0.340	0.292	0.265
D4	*	b	156	0.286	0.093	0.252	0.208	0.222	0.300	0.460
D4		c	217	0.398	-0.299	-0.175	0.450	0.438	0.400	0.274
D5			4	0.007	-0.156	-0.020	0.020	0.007	0.000	0.000
D5		a	136	0.250	-0.286	-0.163	0.295	0.314	0.223	0.133
D5		b	187	0.343	-0.208	-0.093	0.430	0.242	0.369	0.336
D5	*	c	218	0.400	0.060	0.276	0.255	0.438	0.408	0.531
E1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E1		a	217	0.398	-0.228	-0.071	0.443	0.346	0.431	0.372
E1		b	139	0.255	-0.257	-0.147	0.315	0.333	0.169	0.168
E1	*	c	189	0.347	0.039	0.219	0.242	0.320	0.400	0.460
E2			1	0.002	-0.075	-0.007	0.007	0.000	0.000	0.000
E2	*	a	171	0.314	-0.002	0.185	0.248	0.307	0.292	0.434
E2		b	167	0.306	-0.189	-0.037	0.356	0.248	0.308	0.319
E2		c	206	0.378	-0.244	-0.141	0.389	0.444	0.400	0.248
E3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E3		a	149	0.273	-0.216	-0.097	0.336	0.248	0.262	0.239
E3	*	b	191	0.350	0.021	0.208	0.235	0.320	0.438	0.442
E3		c	205	0.376	-0.250	-0.111	0.430	0.431	0.300	0.319
E4			1	0.002	-0.033	0.000	0.000	0.007	0.000	0.000
E4		a	150	0.275	-0.188	-0.014	0.289	0.268	0.269	0.274
E4	*	b	191	0.350	0.040	0.201	0.268	0.320	0.377	0.469
E4		c	203	0.372	-0.291	-0.186	0.443	0.405	0.354	0.257
E5			2	0.004	-0.057	-0.007	0.007	0.007	0.000	0.000
E5		a	143	0.262	-0.318	-0.185	0.336	0.314	0.215	0.150
E5		b	164	0.301	-0.230	-0.110	0.376	0.275	0.277	0.265
E5	*	c	236	0.433	0.095	0.302	0.282	0.405	0.508	0.584

Table 3: Math 08 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			2	0.004	-0.067	-0.007	0.007	0.007	0.000	0.000
F1		a	142	0.261	-0.293	-0.183	0.342	0.275	0.238	0.159
F1		b	109	0.200	-0.235	-0.082	0.242	0.209	0.177	0.159
F1	*	c	292	0.536	0.078	0.272	0.409	0.510	0.585	0.681
F2			1	0.002	-0.033	0.000	0.000	0.007	0.000	0.000
F2		a	136	0.250	-0.277	-0.138	0.315	0.288	0.192	0.177
F2	*	b	252	0.462	0.077	0.288	0.349	0.373	0.546	0.637
F2		c	156	0.286	-0.257	-0.150	0.336	0.333	0.262	0.186
F3			3	0.006	-0.074	-0.007	0.007	0.007	0.008	0.000
F3		a	116	0.213	-0.257	-0.142	0.248	0.255	0.215	0.106
F3		b	226	0.415	-0.169	-0.076	0.510	0.333	0.385	0.434
F3	*	c	200	0.367	-0.023	0.225	0.235	0.405	0.392	0.460
F4			3	0.006	-0.082	-0.013	0.013	0.007	0.000	0.000
F4	*	a	202	0.371	0.048	0.251	0.289	0.333	0.362	0.540
F4		b	142	0.261	-0.227	-0.090	0.329	0.209	0.262	0.239
F4		c	198	0.363	-0.259	-0.148	0.369	0.451	0.377	0.221
F5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F5		a	148	0.272	-0.379	-0.239	0.416	0.301	0.154	0.177
F5		b	129	0.237	-0.278	-0.203	0.309	0.255	0.246	0.106
F5	*	c	268	0.492	0.199	0.442	0.275	0.444	0.600	0.717

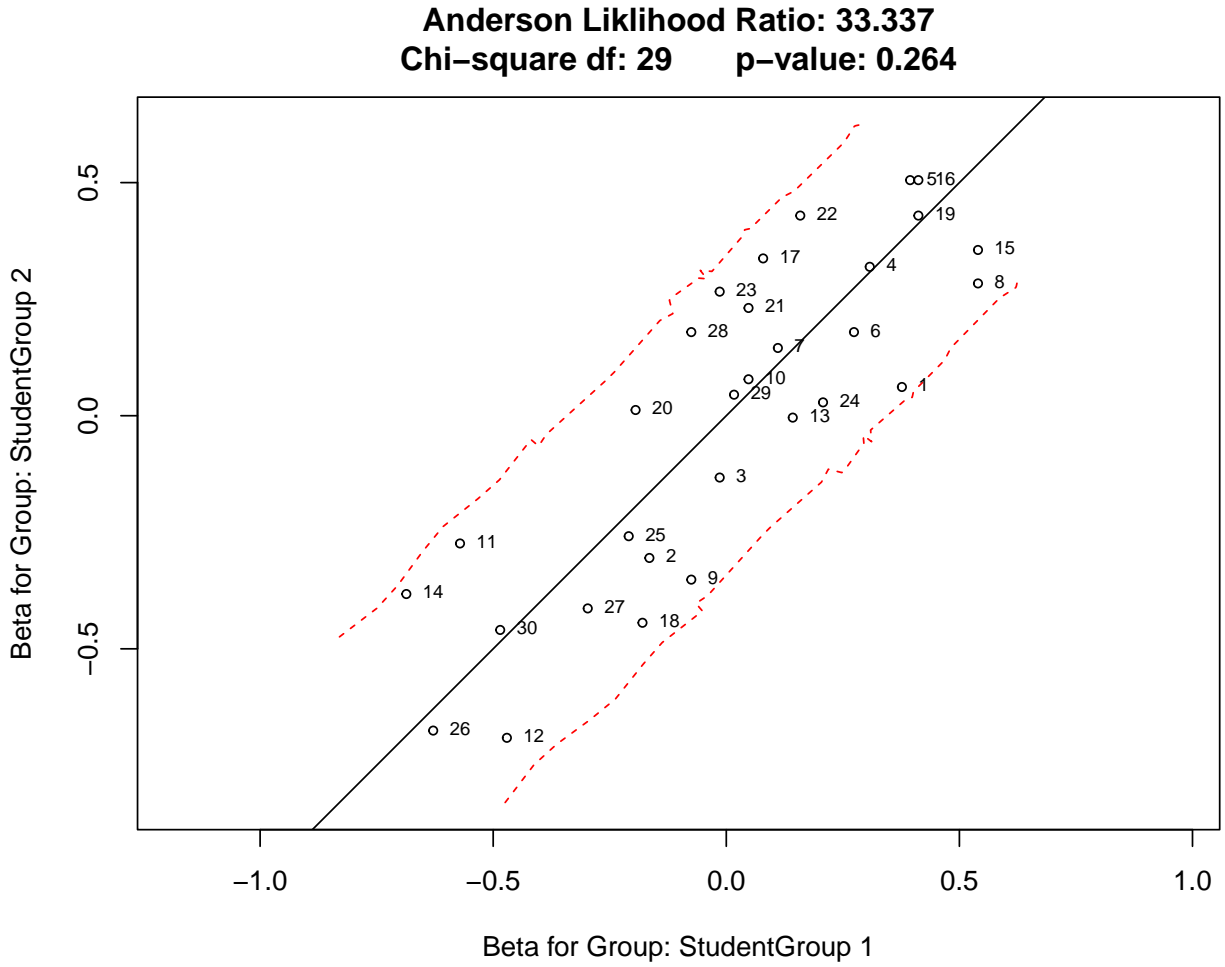


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Math 08 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	545	0.9186	0.9381
A2	545	1.0127	1.0085
A3	545	1.0421	1.0443
A4	545	0.9948	0.9888
A5	545	0.9333	0.9404
B1	545	1.0241	1.0096
B2	545	1.0380	1.0257
B3	545	0.9555	0.9645
B4	545	1.0301	1.0233
B5	545	0.9400	0.9463
C1	545	1.0399	1.0356
C2	545	0.9893	0.9952
C3	545	0.9567	0.9575
C4	545	0.9914	0.9935
C5	545	0.9816	0.9939
D1	545	0.9673	0.9830
D2	545	0.9854	0.9889
D3	545	0.9787	0.9808
D4	545	0.9673	0.9704
D5	545	0.9900	0.9951
E1	545	0.9929	1.0013
E2	545	1.0143	1.0150
E3	545	1.0046	1.0091
E4	545	1.0010	1.0002
E5	545	0.9752	0.9816
F1	545	0.9816	0.9872
F2	545	0.9885	0.9899
F3	545	1.0273	1.0293
F4	545	1.0048	0.9986
F5	545	0.9298	0.9381

Table 5: Math 08 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9886	0.0330
Infit	Infit	0.9911	0.0282

Table 6: Math 08 Raw to Theta Table

Raw Score	theta	SE
4	-1.3142	0.5223
5	-1.0712	0.4821
6	-0.8603	0.4528
7	-0.6718	0.4307
8	-0.4994	0.4138
9	-0.3390	0.4006
10	-0.1876	0.3904
11	-0.0429	0.3826
12	0.0967	0.3769
13	0.2329	0.3729
14	0.3667	0.3706
15	0.4995	0.3698
16	0.6322	0.3705
17	0.7660	0.3728
18	0.9019	0.3767
19	1.0414	0.3824
20	1.1858	0.3901
21	1.3368	0.4002
23	1.6688	0.4302
24	1.8568	0.4523

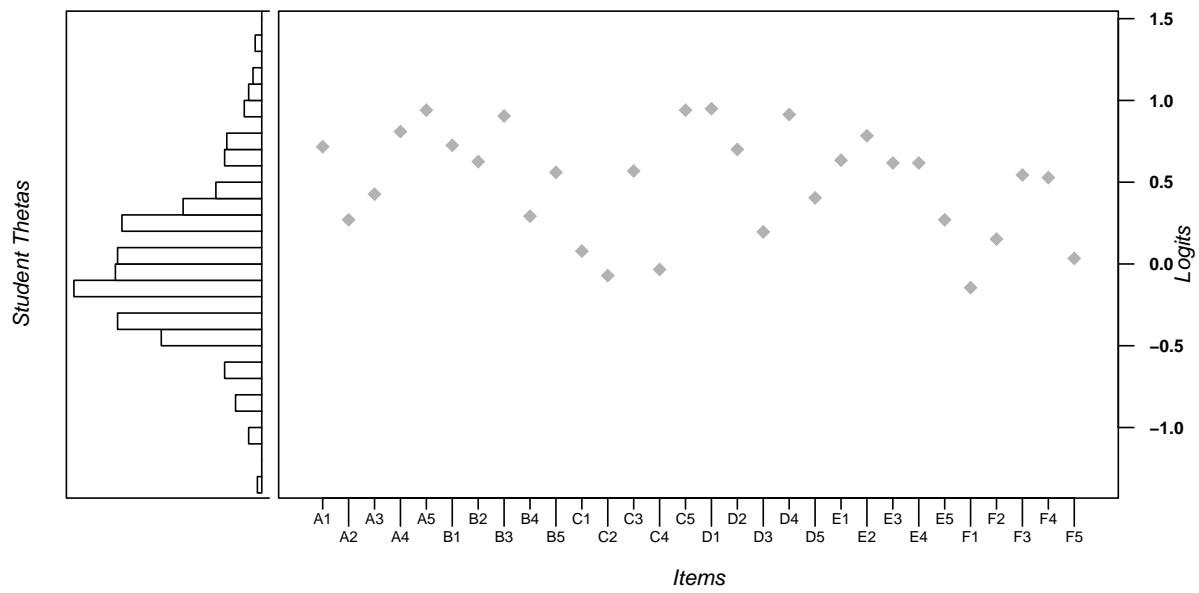


Figure 2: Student Ability - Item Difficulty Wright Map

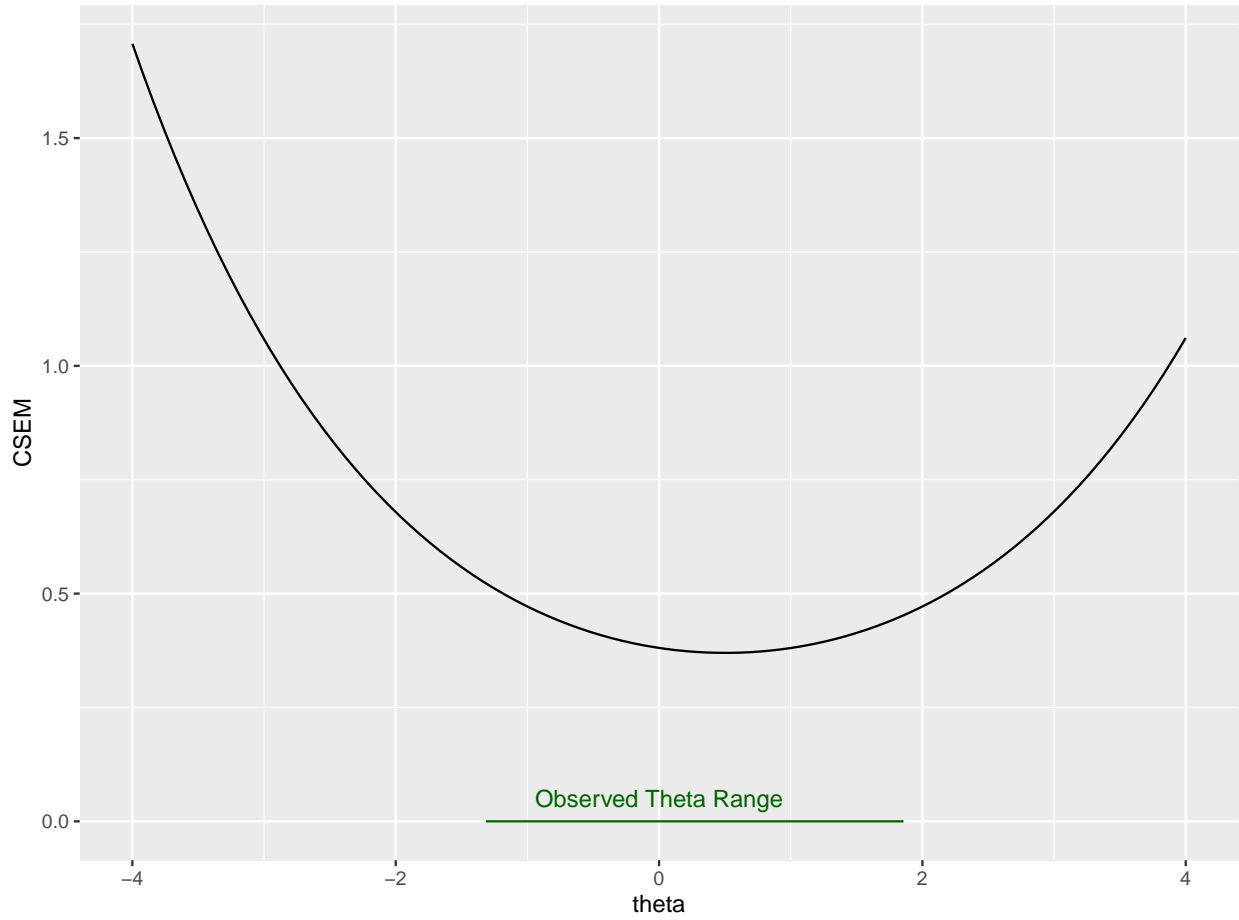


Figure 3: Math 08 Conditional Standard Error of Measure

Table 7: Math 08 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		545	0.24
Ethnic		10	0.21
Ethnic	Black	74	0.37
Ethnic	Hispanic	37	-0.71
Ethnic	Other	28	0.30
Ethnic	White	395	0.25
Disadvantaged	No	406	0.27
Disadvantaged	Yes	139	0.18
LEP	No	520	0.25
LEP	Yes	25	-0.03
Gender	Female	175	0.18
Gender	Male	370	0.26
Homeless	No	531	0.24
Homeless	Yes	14	0.38

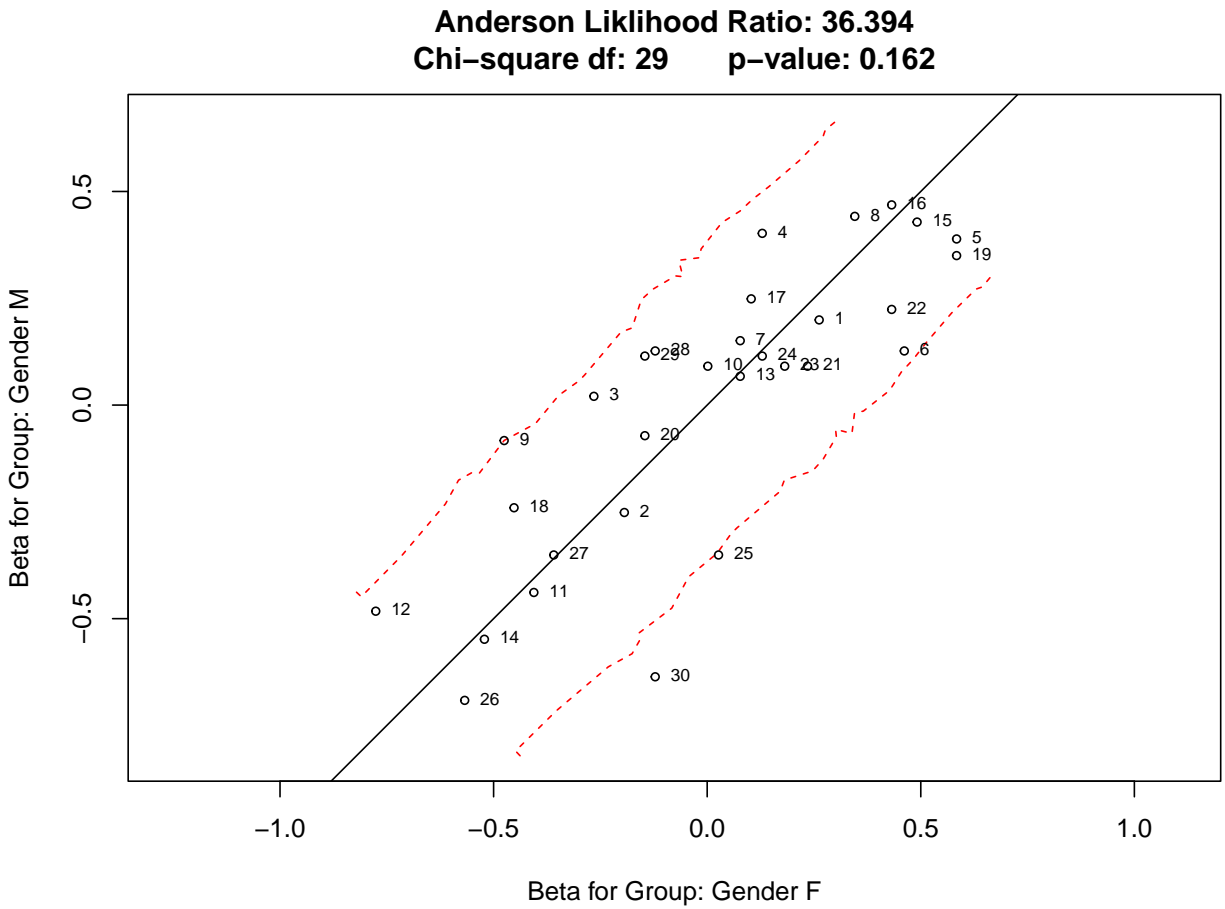


Figure 4: Math 08 Differential Item (DIF) and Test (DTF) Function for Gender

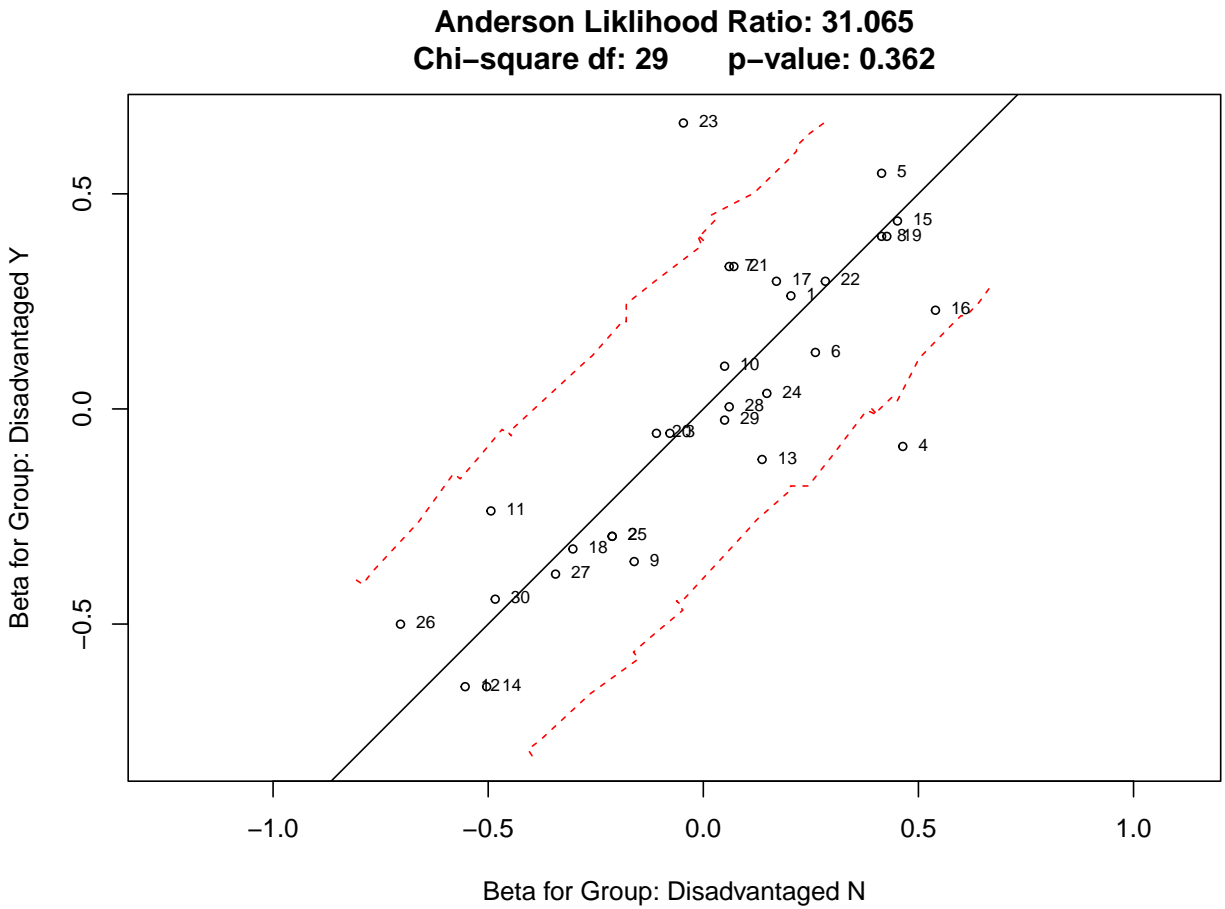


Figure 5: Math 08 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

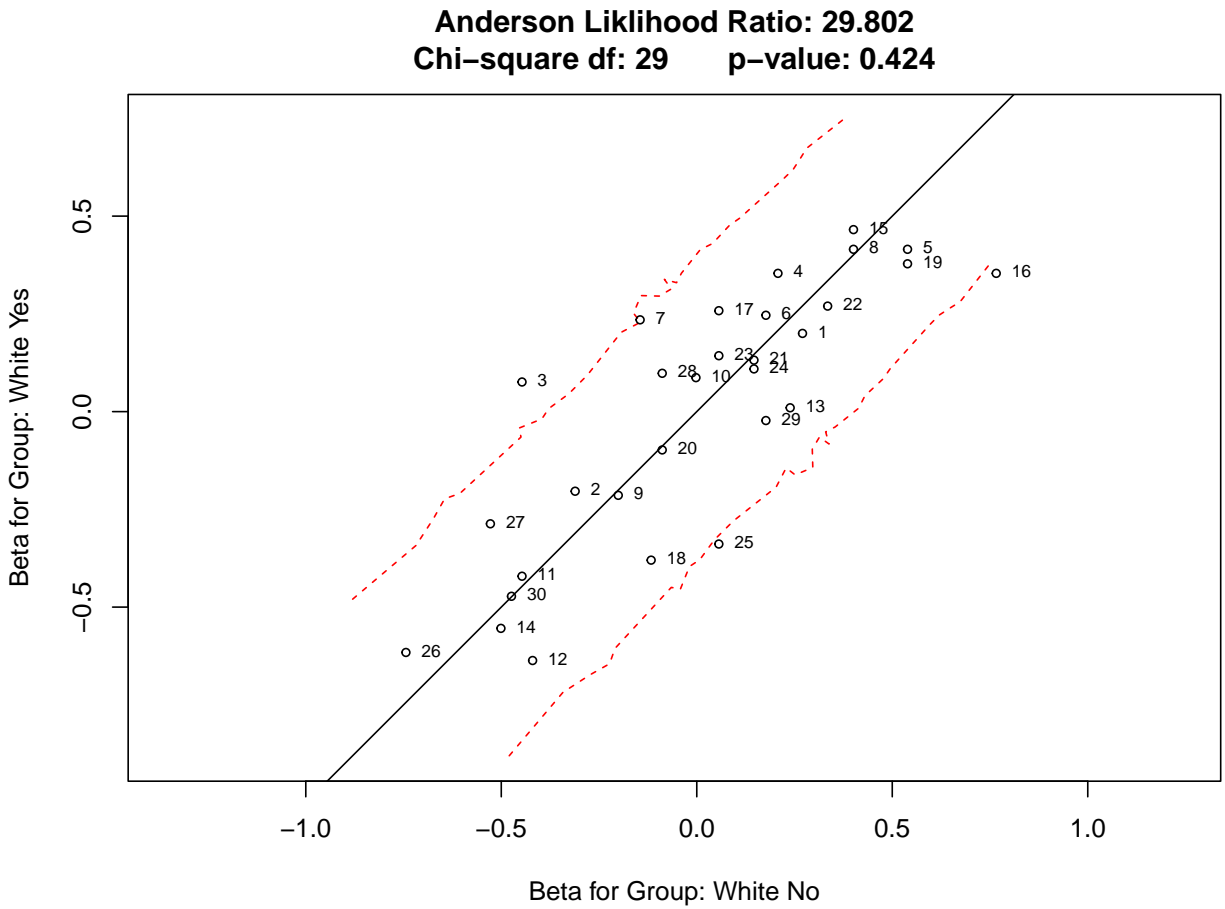


Figure 6: Math 08 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6888	0.0477	0.7364
False	0.0177	0.2458	0.2636
Total	0.7065	0.2935	1.0000

Accuracy = 0.7364

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5369	0.1696
j	0.1696	0.1239

Proportion of Consistent Classifications = 0.6608
Cohen's Kappa = 0.1821

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0082	0.0782	0.9045	0.0090	0.4770	0.9204	0.9128	0.0165	0.0075	0.0091
Apprentice	0.5937	0.0263	0.0563	0.3237	0.6472	0.6811	0.6500	0.4032	0.3845	0.0305
Proficient	0.0475	0.2458	0.6888	0.0178	0.7270	0.7370	0.7363	0.1237	0.0860	0.0412
Distinguished	0.0000	0.0002	0.9998	0.0000	0.5911	0.9998	0.9998	0.0000	0.0000	0.0000

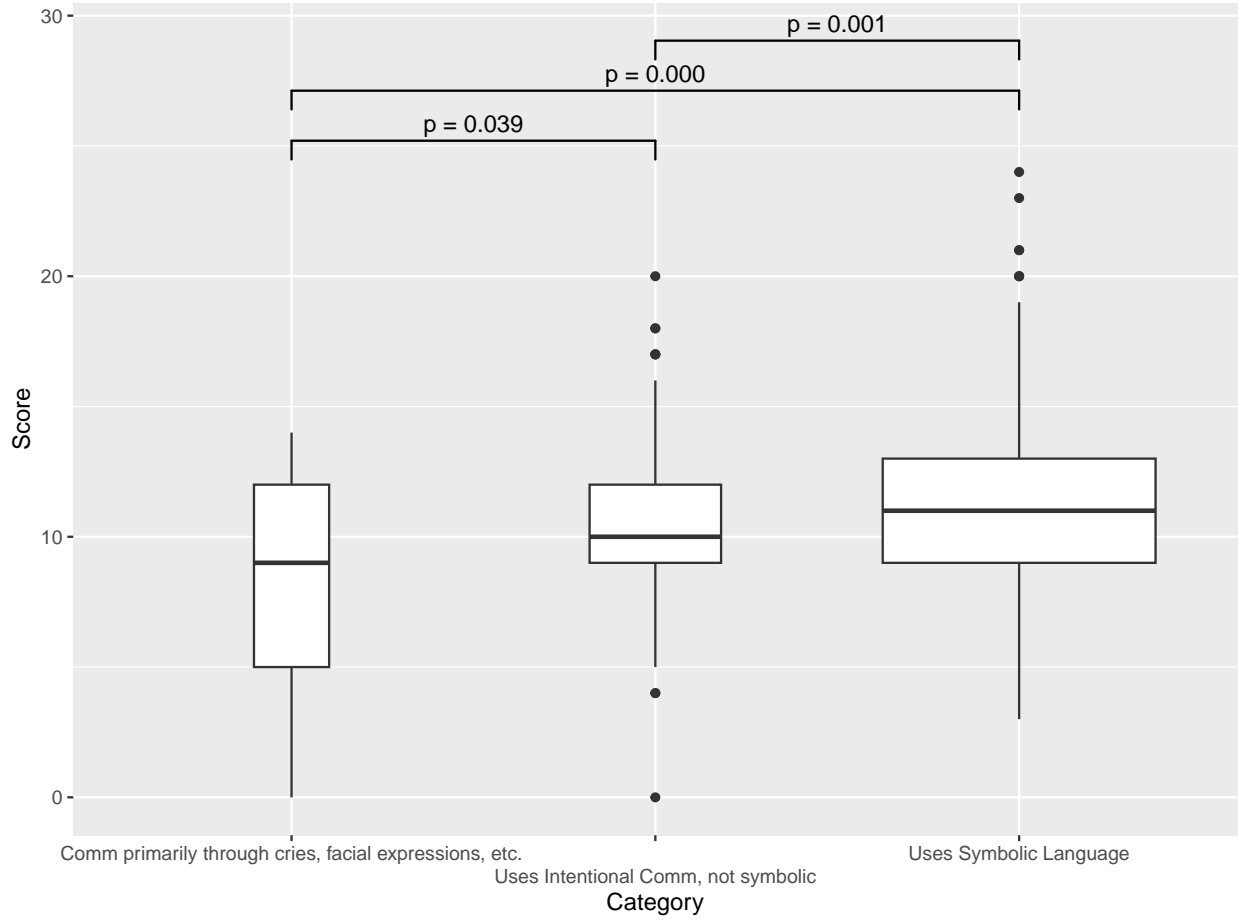


Figure 7: Math 08 Learner Characteristic: Expressive Communication

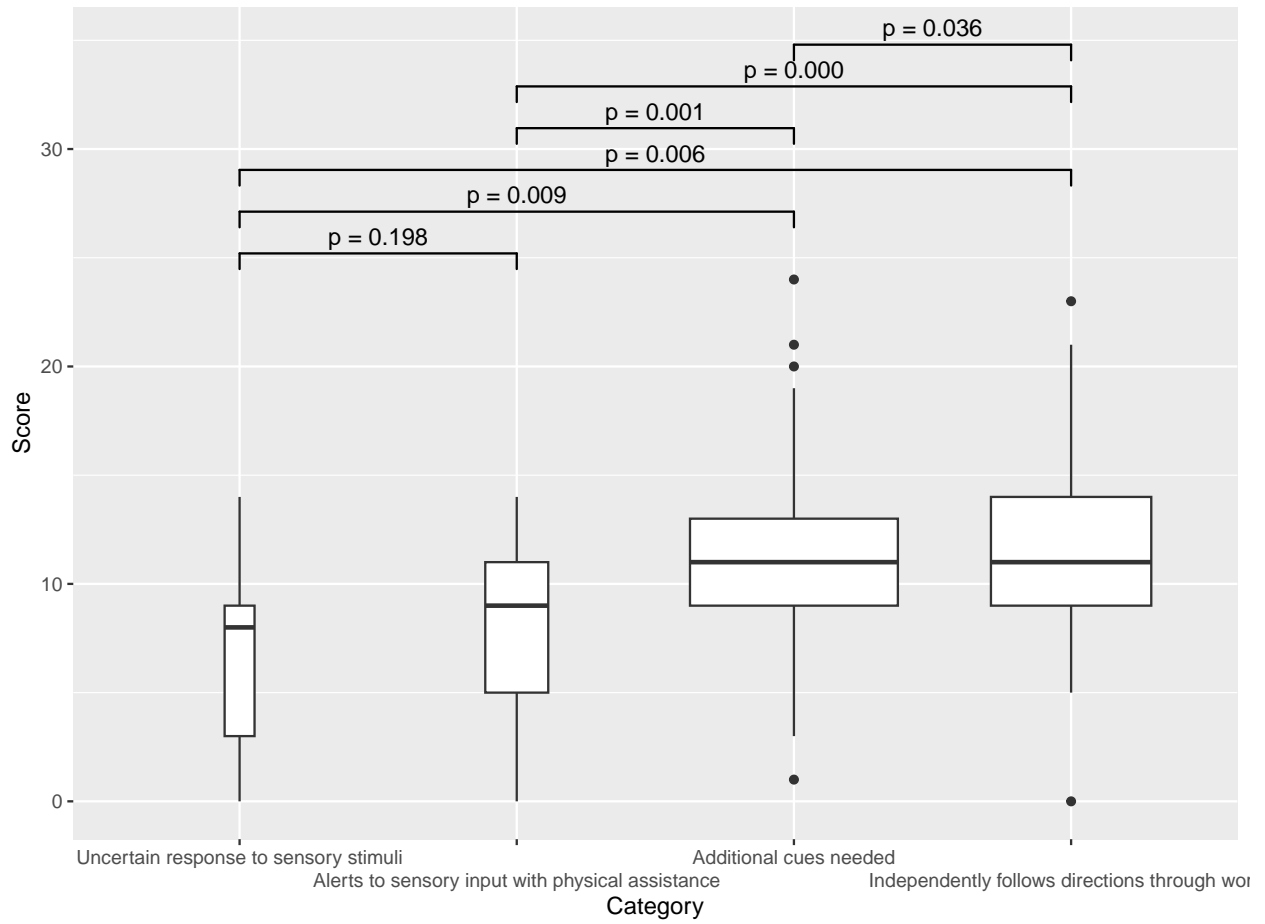


Figure 8: Math 08 Learner Characteristic: Receptive Language

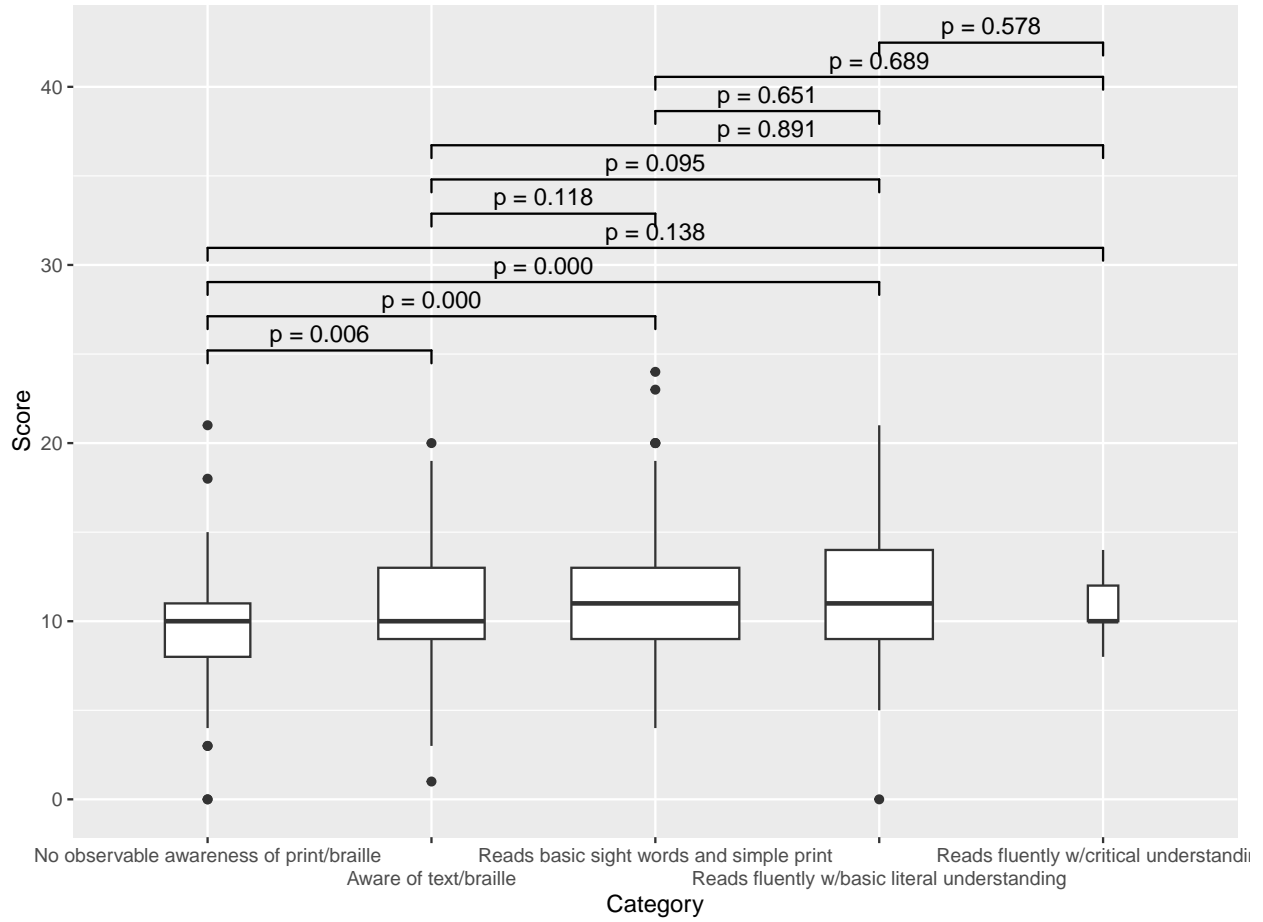


Figure 9: Math 08 Learner Characteristic: Reading

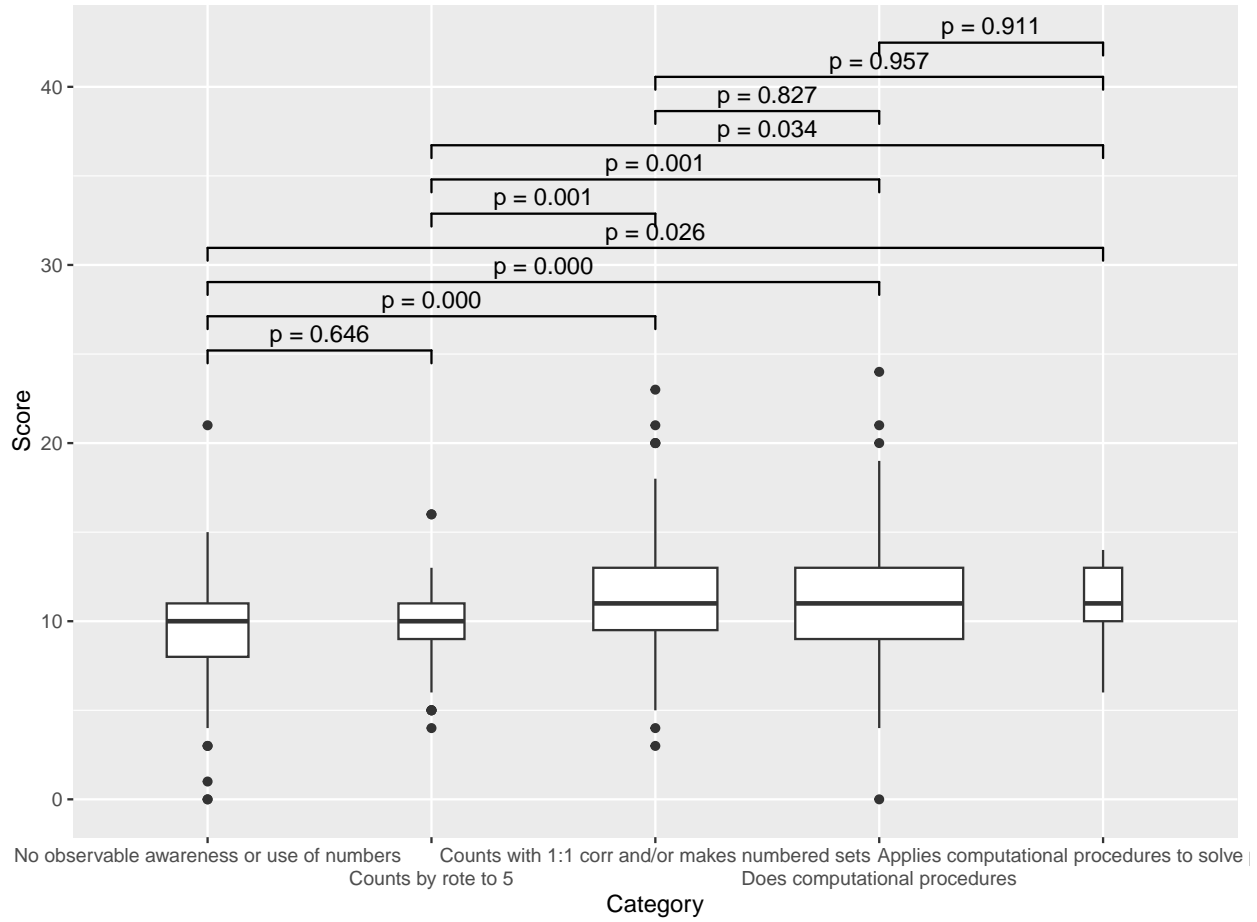


Figure 10: Math 08 Learner Characteristic: Mathematics

Math Grade 7

Table 1: Math 07 Item Statistics

	Item	n	mean	sd	se	
	A1	1	513	0.480	0.500	0.022
	A2	2	513	0.331	0.471	0.021
	A3	3	513	0.480	0.500	0.022
	A4	4	513	0.337	0.473	0.021
	A5	5	513	0.318	0.466	0.021
	B1	6	513	0.614	0.487	0.022
	B2	7	513	0.382	0.486	0.021
	B3	8	513	0.561	0.497	0.022
	B4	9	513	0.400	0.490	0.022
	B5	10	513	0.320	0.467	0.021
	C1	11	513	0.384	0.487	0.021
	C2	12	513	0.388	0.488	0.022
	C3	13	513	0.298	0.458	0.020
	C4	14	513	0.380	0.486	0.021
	C5	15	513	0.622	0.485	0.021
	D1	16	513	0.281	0.450	0.020
	D2	17	513	0.327	0.470	0.021
	D3	18	513	0.513	0.500	0.022
	D4	19	513	0.288	0.454	0.020
	D5	20	513	0.384	0.487	0.021
	E1	21	513	0.372	0.484	0.021
	E2	22	513	0.556	0.497	0.022
	E3	23	513	0.468	0.499	0.022
	E4	24	513	0.248	0.432	0.019
	E5	25	513	0.300	0.459	0.020
	F1	26	513	0.390	0.488	0.022
	F2	27	513	0.405	0.491	0.022
	F3	28	513	0.515	0.500	0.022
	F4	29	513	0.368	0.483	0.021
	F5	30	513	0.298	0.458	0.020

Chronbach's Alpha: 0.4637

Table 2: Math 07 Raw Score Frequencies

Score	freq	pct	pct_cum
4	1	0.195	0.195
5	8	1.559	1.754
6	6	1.170	2.924
7	21	4.094	7.018
8	26	5.068	12.086
9	54	10.526	22.612
10	77	15.010	37.622
11	72	14.035	51.657
12	57	11.111	62.768
13	47	9.162	71.930
14	30	5.848	77.778
15	34	6.628	84.405
16	21	4.094	88.499
17	20	3.899	92.398
18	13	2.534	94.932
19	11	2.144	97.076
20	5	0.975	98.051
21	2	0.390	98.441
22	2	0.390	98.830
24	4	0.780	99.610
25	1	0.195	99.805
26	1	0.195	100.000

Table 3: Math 07 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A1		a	113	0.220	-0.292	-0.195	0.301	0.236	0.194	0.105
A1	*	b	246	0.480	0.284	0.489	0.275	0.403	0.575	0.763
A1		c	154	0.300	-0.395	-0.293	0.425	0.361	0.231	0.132
A2			1	0.002	0.062	0.009	0.000	0.000	0.000	0.009
A2		a	144	0.281	-0.220	-0.116	0.326	0.292	0.269	0.211
A2		b	198	0.386	-0.165	-0.005	0.373	0.389	0.418	0.368
A2	*	c	170	0.331	-0.016	0.112	0.301	0.319	0.313	0.412
A3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A3	*	a	246	0.480	0.104	0.290	0.342	0.472	0.552	0.632
A3		b	128	0.250	-0.165	-0.045	0.264	0.208	0.276	0.219
A3		c	139	0.271	-0.343	-0.245	0.394	0.319	0.172	0.149
A4			3	0.006	-0.108	-0.016	0.016	0.000	0.000	0.000
A4		a	166	0.324	-0.200	-0.086	0.358	0.333	0.313	0.272
A4	*	b	173	0.337	0.152	0.317	0.218	0.250	0.388	0.535
A4		c	171	0.333	-0.320	-0.216	0.409	0.417	0.299	0.193
A5			2	0.004	-0.080	-0.010	0.010	0.000	0.000	0.000
A5	*	a	163	0.318	0.099	0.212	0.192	0.319	0.425	0.404
A5		b	152	0.296	-0.249	-0.117	0.337	0.347	0.276	0.219
A5		c	196	0.382	-0.225	-0.084	0.461	0.333	0.299	0.377
B1			1	0.002	-0.025	0.000	0.000	0.014	0.000	0.000
B1		a	108	0.211	-0.241	-0.147	0.269	0.208	0.201	0.123
B1		b	89	0.173	-0.338	-0.240	0.275	0.153	0.157	0.035
B1	*	c	315	0.614	0.166	0.386	0.456	0.625	0.642	0.842
B2			1	0.002	-0.063	-0.005	0.005	0.000	0.000	0.000
B2	*	a	196	0.382	0.244	0.400	0.223	0.319	0.440	0.623
B2		b	140	0.273	-0.280	-0.179	0.337	0.306	0.261	0.158
B2		c	176	0.343	-0.344	-0.216	0.435	0.375	0.299	0.219
B3			1	0.002	-0.075	-0.005	0.005	0.000	0.000	0.000
B3		a	97	0.189	-0.322	-0.213	0.275	0.264	0.134	0.061
B3		b	127	0.248	-0.284	-0.184	0.316	0.194	0.276	0.132
B3	*	c	288	0.561	0.194	0.403	0.404	0.542	0.590	0.807
B4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B4		a	149	0.290	-0.240	-0.156	0.332	0.306	0.321	0.175
B4	*	b	205	0.400	0.205	0.441	0.244	0.389	0.388	0.684
B4		c	159	0.310	-0.358	-0.285	0.425	0.306	0.291	0.140
B5			2	0.004	-0.035	-0.005	0.005	0.000	0.007	0.000
B5	*	a	164	0.320	0.124	0.308	0.192	0.319	0.351	0.500
B5		b	158	0.308	-0.054	0.045	0.280	0.278	0.351	0.325
B5		c	189	0.368	-0.429	-0.348	0.523	0.403	0.291	0.175
C1			2	0.004	-0.062	-0.005	0.005	0.014	0.000	0.000
C1		a	159	0.310	-0.174	-0.023	0.321	0.292	0.313	0.298
C1	*	b	197	0.384	0.152	0.308	0.254	0.333	0.448	0.561
C1		c	155	0.302	-0.365	-0.279	0.420	0.361	0.239	0.140
C2			2	0.004	0.026	0.004	0.005	0.000	0.000	0.009
C2		a	114	0.222	-0.229	-0.153	0.285	0.181	0.231	0.132
C2		b	198	0.386	-0.168	0.020	0.358	0.444	0.403	0.377
C2	*	c	199	0.388	-0.012	0.130	0.352	0.375	0.366	0.482
C3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C3	*	a	153	0.298	0.062	0.160	0.218	0.292	0.351	0.377

Table 3: Math 07 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	141	0.275	-0.160	-0.041	0.269	0.306	0.306	0.228
C3		c	219	0.427	-0.275	-0.118	0.513	0.403	0.343	0.395
C4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C4	*	a	162	0.316	-0.222	-0.144	0.337	0.361	0.366	0.193
C4		b	195	0.380	0.165	0.378	0.254	0.333	0.373	0.632
C4		c	156	0.304	-0.335	-0.234	0.409	0.306	0.261	0.175
C5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C5	*	a	86	0.168	-0.269	-0.172	0.207	0.250	0.179	0.035
C5		b	319	0.622	0.243	0.449	0.446	0.542	0.687	0.895
C5		c	108	0.211	-0.385	-0.277	0.347	0.208	0.134	0.070
D1			1	0.002	-0.063	-0.005	0.005	0.000	0.000	0.000
D1	*	a	172	0.335	-0.282	-0.169	0.389	0.361	0.343	0.219
D1		b	144	0.281	0.170	0.280	0.176	0.250	0.299	0.456
D1		c	196	0.382	-0.244	-0.105	0.430	0.389	0.358	0.325
D2			2	0.004	-0.062	-0.005	0.005	0.014	0.000	0.000
D2	*	a	200	0.390	-0.004	0.163	0.311	0.444	0.403	0.474
D2		b	143	0.279	-0.277	-0.133	0.326	0.236	0.306	0.193
D2		c	168	0.327	-0.115	-0.024	0.358	0.306	0.291	0.333
D3			2	0.004	-0.062	-0.010	0.010	0.000	0.000	0.000
D3	*	a	263	0.513	0.114	0.355	0.347	0.583	0.552	0.702
D3		b	130	0.253	-0.232	-0.137	0.295	0.208	0.299	0.158
D3		c	118	0.230	-0.286	-0.207	0.347	0.208	0.149	0.140
D4			1	0.002	-0.025	0.000	0.000	0.014	0.000	0.000
D4	*	a	151	0.294	-0.150	0.001	0.280	0.333	0.306	0.281
D4		b	148	0.288	0.045	0.140	0.228	0.222	0.343	0.368
D4		c	213	0.415	-0.268	-0.141	0.492	0.431	0.351	0.351
D5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D5	*	a	167	0.326	-0.200	-0.084	0.347	0.375	0.321	0.263
D5		b	149	0.290	-0.100	0.069	0.264	0.250	0.313	0.333
D5		c	197	0.384	-0.095	0.015	0.389	0.375	0.366	0.404
E1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E1	*	a	141	0.275	-0.253	-0.141	0.316	0.319	0.276	0.175
E1		b	191	0.372	0.189	0.348	0.249	0.278	0.410	0.596
E1		c	181	0.353	-0.321	-0.207	0.435	0.403	0.313	0.228
E2			2	0.004	0.009	0.004	0.005	0.000	0.000	0.009
E2	*	a	101	0.197	-0.328	-0.194	0.264	0.264	0.172	0.070
E2		b	125	0.244	-0.282	-0.195	0.301	0.250	0.276	0.105
E2		c	285	0.556	0.189	0.386	0.430	0.486	0.552	0.816
E3			3	0.006	-0.101	-0.016	0.016	0.000	0.000	0.000
E3	*	a	240	0.468	0.213	0.402	0.326	0.347	0.515	0.728
E3		b	128	0.250	-0.269	-0.120	0.269	0.347	0.254	0.149
E3		c	142	0.277	-0.338	-0.266	0.389	0.306	0.231	0.123
E4			2	0.004	-0.044	-0.005	0.005	0.014	0.000	0.000
E4	*	a	132	0.257	-0.112	0.026	0.228	0.222	0.321	0.254
E4		b	127	0.248	0.058	0.159	0.166	0.222	0.313	0.325
E4		c	252	0.491	-0.293	-0.180	0.601	0.542	0.366	0.421
E5			6	0.012	-0.092	-0.012	0.021	0.014	0.000	0.009
E5	*	a	154	0.300	0.026	0.232	0.233	0.278	0.269	0.465
E5		b	153	0.298	-0.129	-0.013	0.285	0.333	0.321	0.272
E5		c	200	0.390	-0.262	-0.207	0.461	0.375	0.410	0.254

Table 3: Math 07 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.075	-0.005	0.005	0.000	0.000	0.000
F1		a	158	0.308	-0.203	-0.125	0.326	0.431	0.306	0.202
F1		b	154	0.300	-0.126	0.014	0.311	0.208	0.313	0.325
F1	*	c	200	0.390	-0.062	0.116	0.358	0.361	0.381	0.474
F2			1	0.002	-0.075	-0.005	0.005	0.000	0.000	0.000
F2	*	a	208	0.405	0.231	0.443	0.259	0.375	0.381	0.702
F2		b	156	0.304	-0.302	-0.201	0.368	0.347	0.306	0.167
F2		c	148	0.288	-0.318	-0.236	0.368	0.278	0.313	0.132
F3			1	0.002	-0.075	-0.005	0.005	0.000	0.000	0.000
F3		a	136	0.265	-0.275	-0.148	0.306	0.292	0.284	0.158
F3		b	112	0.218	-0.266	-0.175	0.280	0.278	0.194	0.105
F3	*	c	264	0.515	0.136	0.328	0.409	0.431	0.522	0.737
F4			2	0.004	-0.027	-0.005	0.005	0.000	0.007	0.000
F4	*	a	189	0.368	0.051	0.252	0.275	0.417	0.343	0.526
F4		b	134	0.261	-0.154	-0.052	0.280	0.208	0.291	0.228
F4		c	188	0.366	-0.285	-0.195	0.440	0.375	0.358	0.246
F5			3	0.006	-0.051	-0.005	0.005	0.000	0.015	0.000
F5		a	91	0.177	-0.205	-0.131	0.228	0.222	0.149	0.096
F5	*	b	153	0.298	0.079	0.238	0.192	0.236	0.373	0.430
F5		c	266	0.519	-0.243	-0.101	0.575	0.542	0.463	0.474

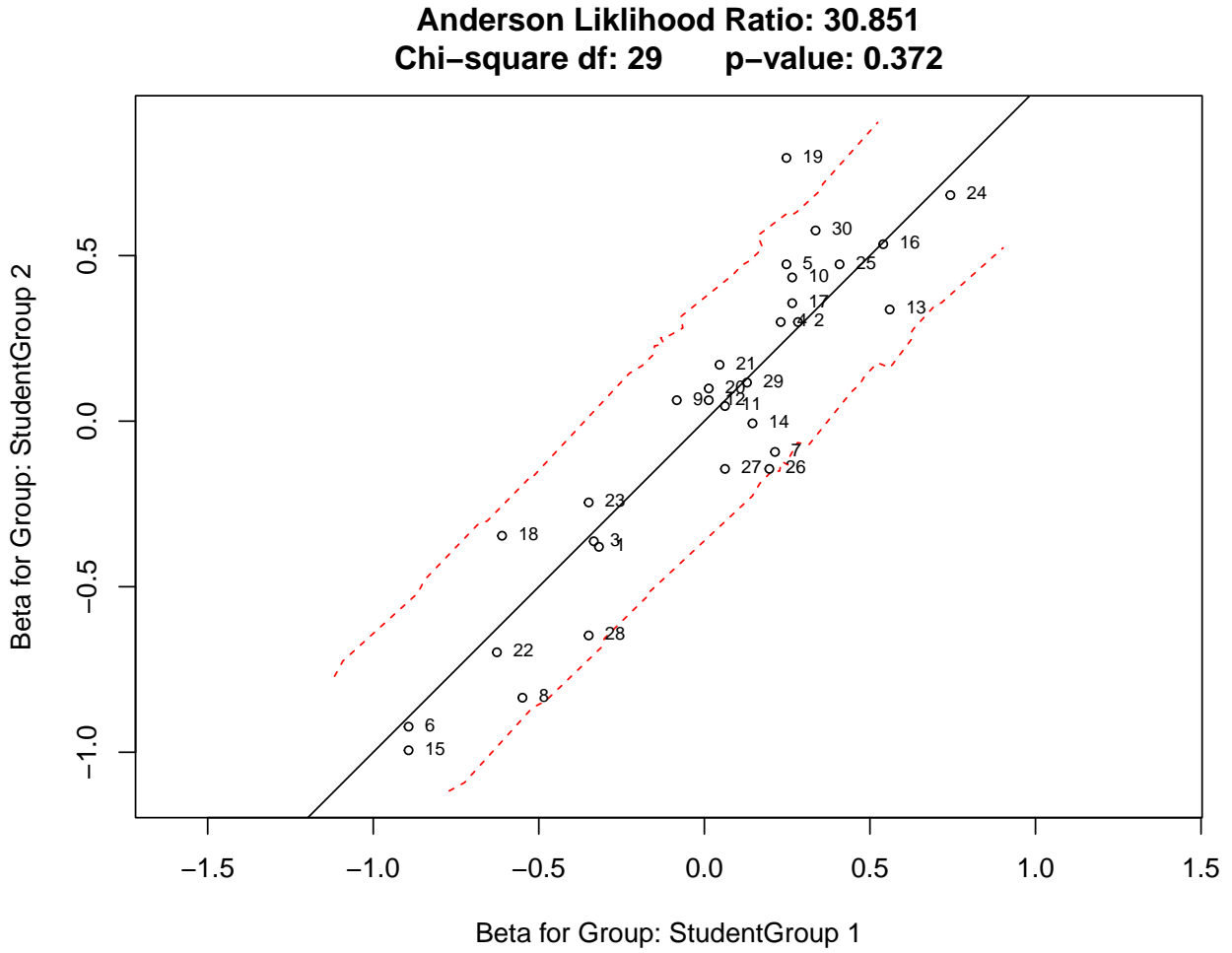


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Math 07 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	513	0.9011	0.9121
A2	513	1.0788	1.0494
A3	513	0.9962	0.9979
A4	513	0.9640	0.9692
A5	513	0.9766	0.9948
B1	513	0.9410	0.9610
B2	513	0.9147	0.9292
B3	513	0.9356	0.9518
B4	513	0.9482	0.9488
B5	513	0.9751	0.9836
C1	513	0.9656	0.9738
C2	513	1.0692	1.0552
C3	513	1.0067	1.0063
C4	513	0.9622	0.9673
C5	513	0.8937	0.9223
D1	513	0.9413	0.9508
D2	513	1.1218	1.1005
D3	513	1.0004	0.9895
D4	513	1.0238	1.0140
D5	513	1.1052	1.0982
E1	513	0.9492	0.9548
E2	513	0.9376	0.9547
E3	513	0.9373	0.9469
E4	513	0.9882	1.0013
E5	513	1.0363	1.0284
F1	513	1.0922	1.0814
F2	513	0.9262	0.9366
F3	513	0.9749	0.9845
F4	513	1.0309	1.0220
F5	513	1.0189	0.9980

Table 5: Math 07 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9871	0.0609
Infit	Infit	0.9895	0.0498

Table 6: Math 07 Raw to Theta Table

Raw Score	theta	SE
4	-1.4225	0.5257
5	-1.1762	0.4855
6	-0.9621	0.4563
7	-0.7705	0.4342
8	-0.5951	0.4173
9	-0.4317	0.4041
10	-0.2775	0.3938
11	-0.1302	0.3860
12	0.0121	0.3802
13	0.1508	0.3762
14	0.2871	0.3738
15	0.4223	0.3729
16	0.5573	0.3735
17	0.6933	0.3757
18	0.8315	0.3795
19	0.9731	0.3851
20	1.1195	0.3927
21	1.2726	0.4027
22	1.4346	0.4157
24	1.7984	0.4544
25	2.0105	0.4835
26	2.2546	0.5236

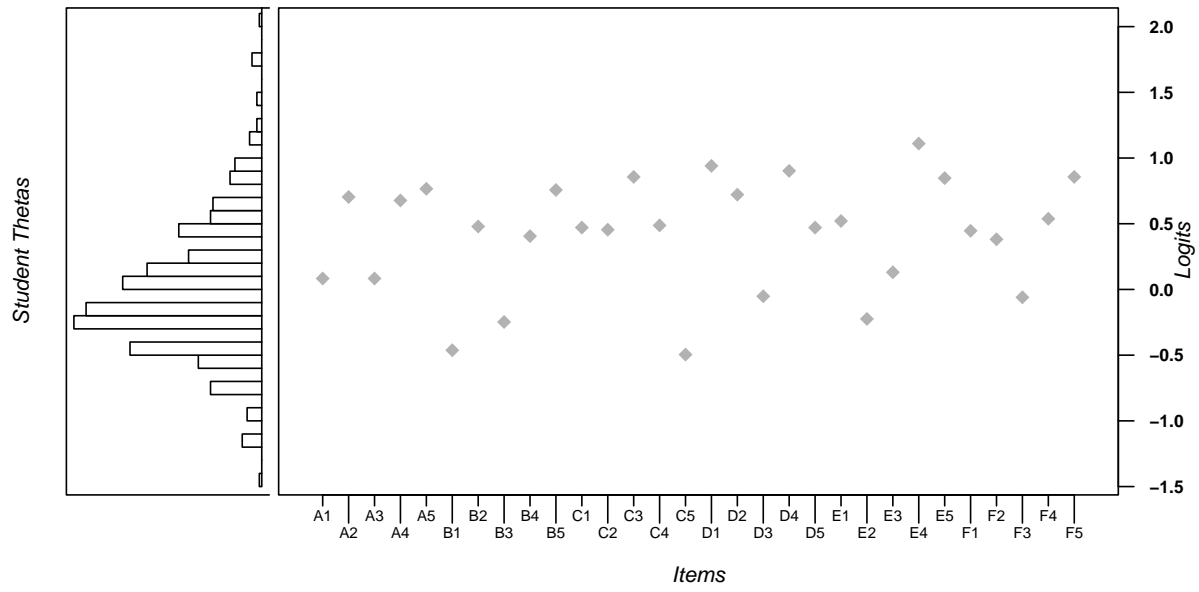


Figure 2: Student Ability - Item Difficulty Wright Map

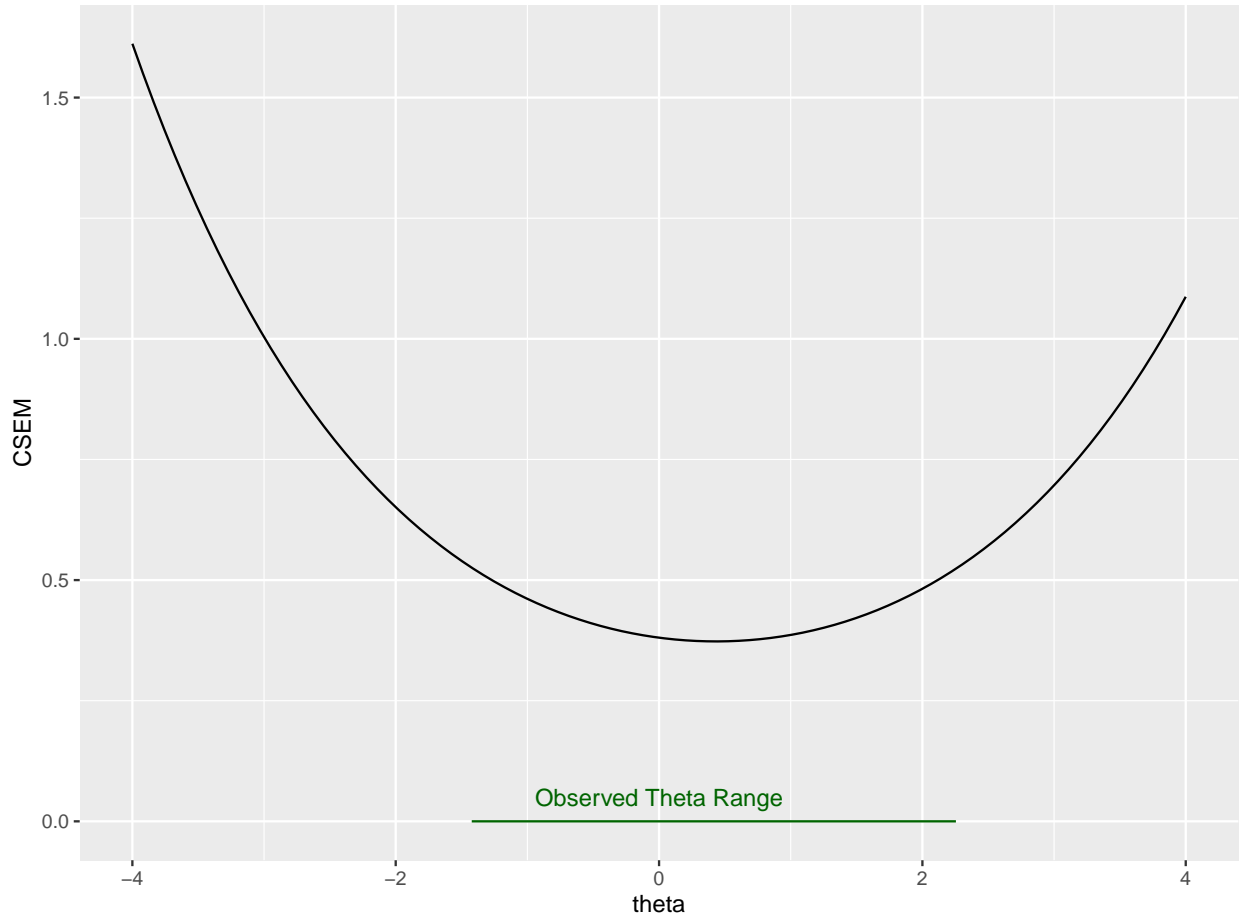


Figure 3: Math 07 Conditional Standard Error of Measure

Table 7: Math 07 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		513	0.43
Ethnic	Black	67	0.05
Ethnic	Hispanic	24	0.04
Ethnic	Other	23	0.57
Ethnic	White	388	0.47
Disadvantaged	No	367	0.40
Disadvantaged	Yes	146	0.50
LEP	No	486	0.44
LEP	Yes	27	0.03
Gender	Female	178	0.39
Gender	Male	335	0.45
Homeless	No	496	0.42
Homeless	Yes	17	0.43

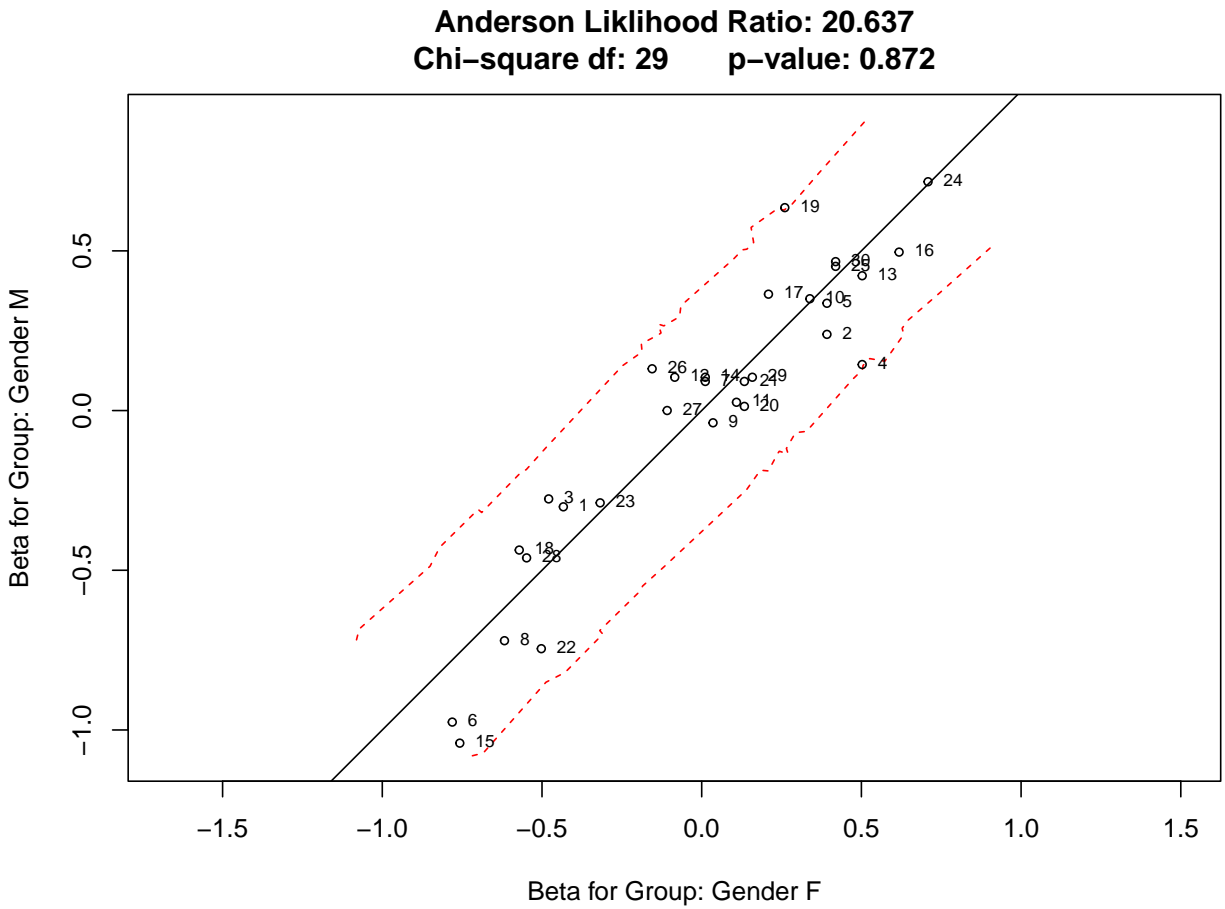


Figure 4: Math 07 Differential Item (DIF) and Test (DTF) Function for Gender

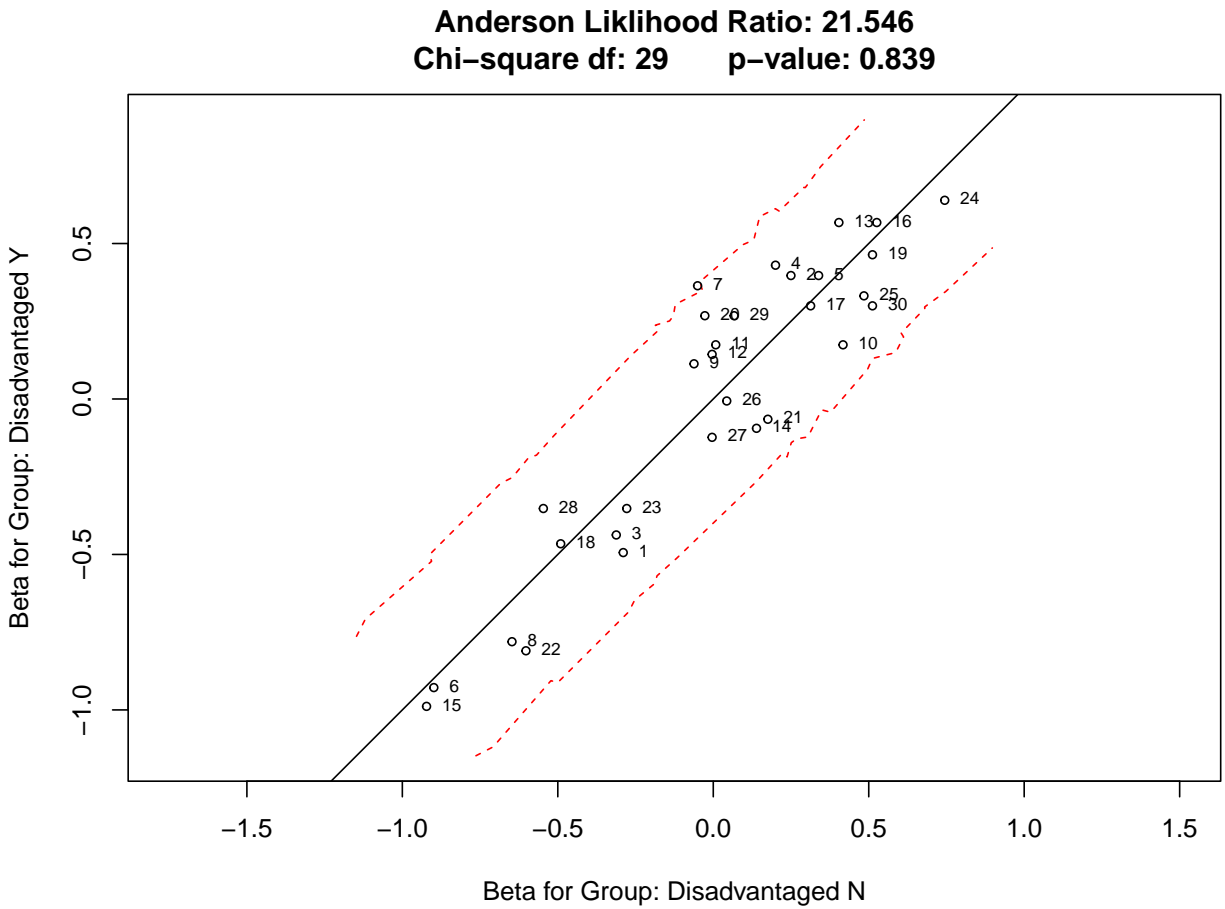


Figure 5: Math 07 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

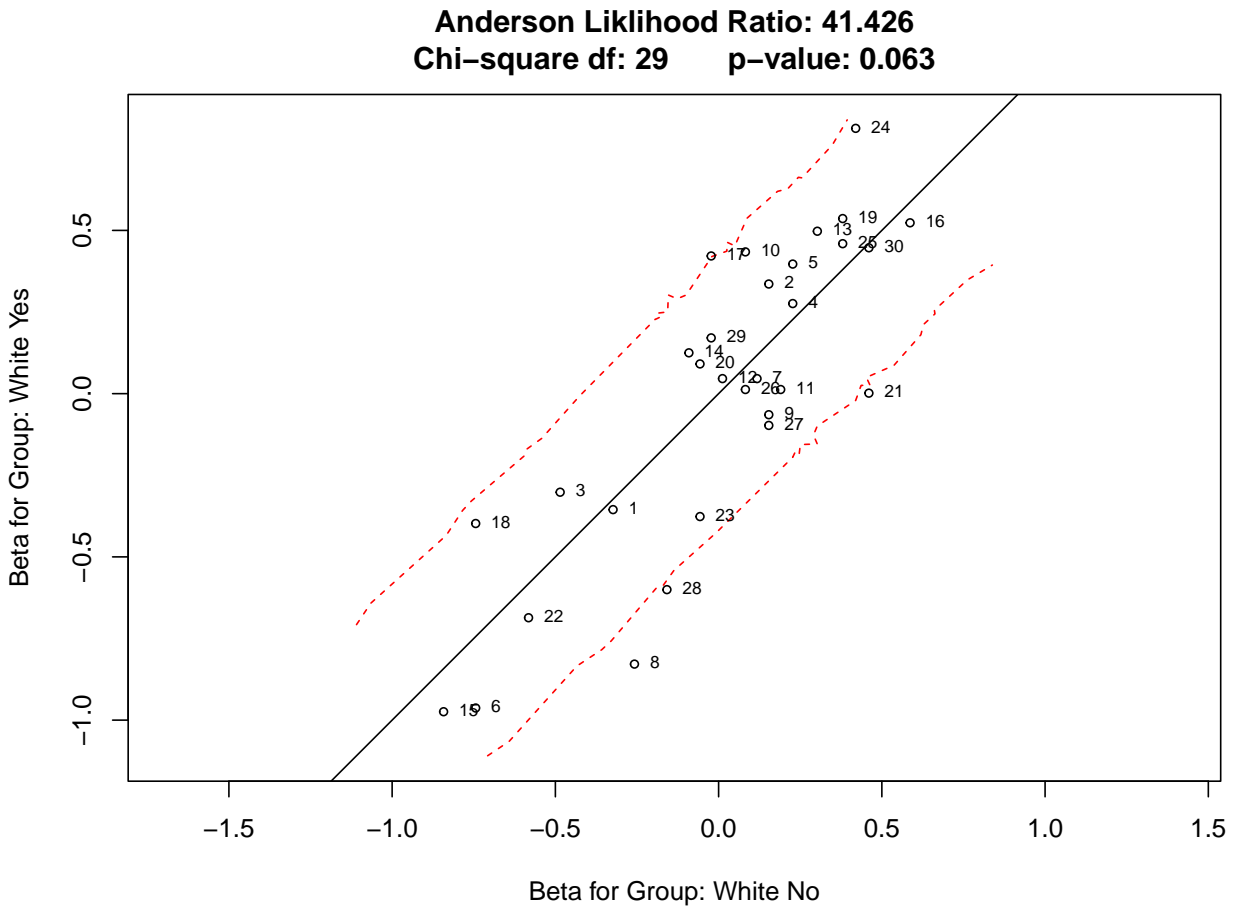


Figure 6: Math 07 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.5796	0.1615	0.7411
False	0.0437	0.2152	0.2589
Total	0.6233	0.3767	1.0000

Accuracy = 0.7411

Table 9: Proficiency Decision Consistency

Contingency Matrix			
.	i	j	
i	0.4603	0.1630	
j	0.1630	0.2138	

Proportion of Consistent Classifications = 0.6741
Cohen's Kappa = 0.306

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0071	0.0413	0.9447	0.0069	0.5097	0.9581	0.9518	0.0100	0.0023	0.0076
Apprentice	0.5244	0.0505	0.1688	0.2563	0.6717	0.7699	0.6932	0.3813	0.3304	0.0760
Proficient	0.1546	0.2146	0.5802	0.0506	0.7533	0.7300	0.7348	0.2015	0.1363	0.0755
Distinguished	0.0001	0.0075	0.9924	0.0000	0.6211	0.9925	0.9925	0.0007	0.0001	0.0007

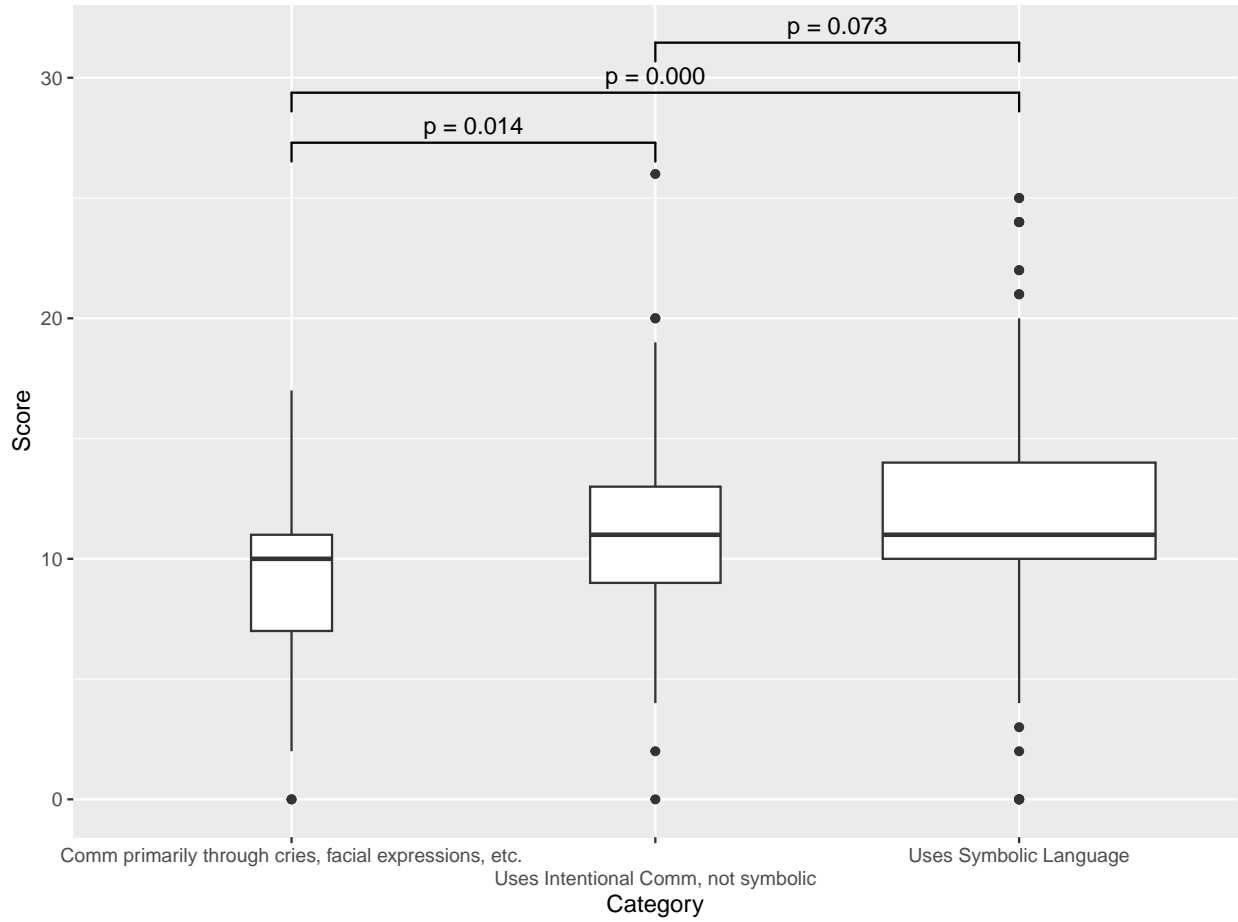


Figure 7: Math 07 Learner Characteristic: Expressive Communication

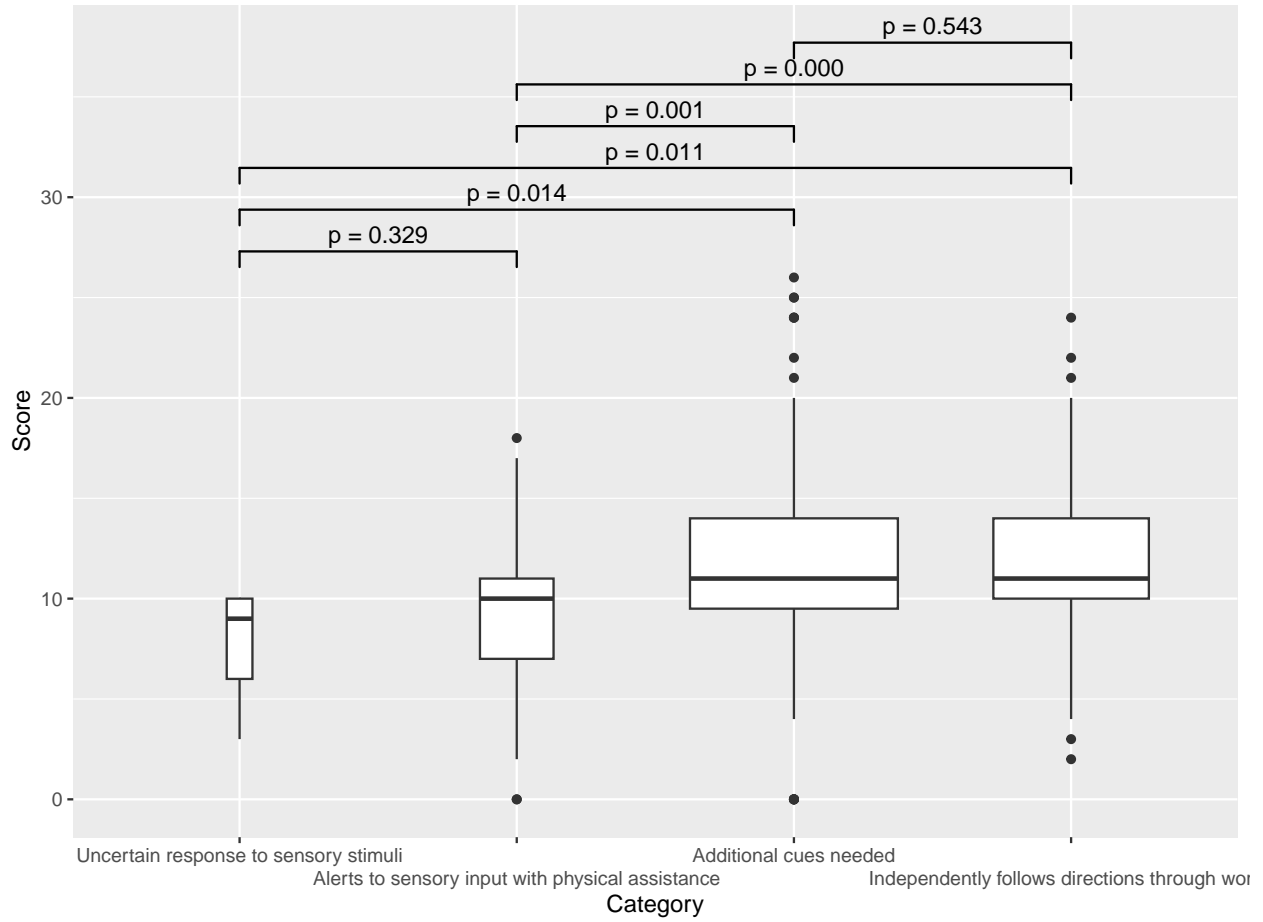


Figure 8: Math 07 Learner Characteristic: Receptive Language

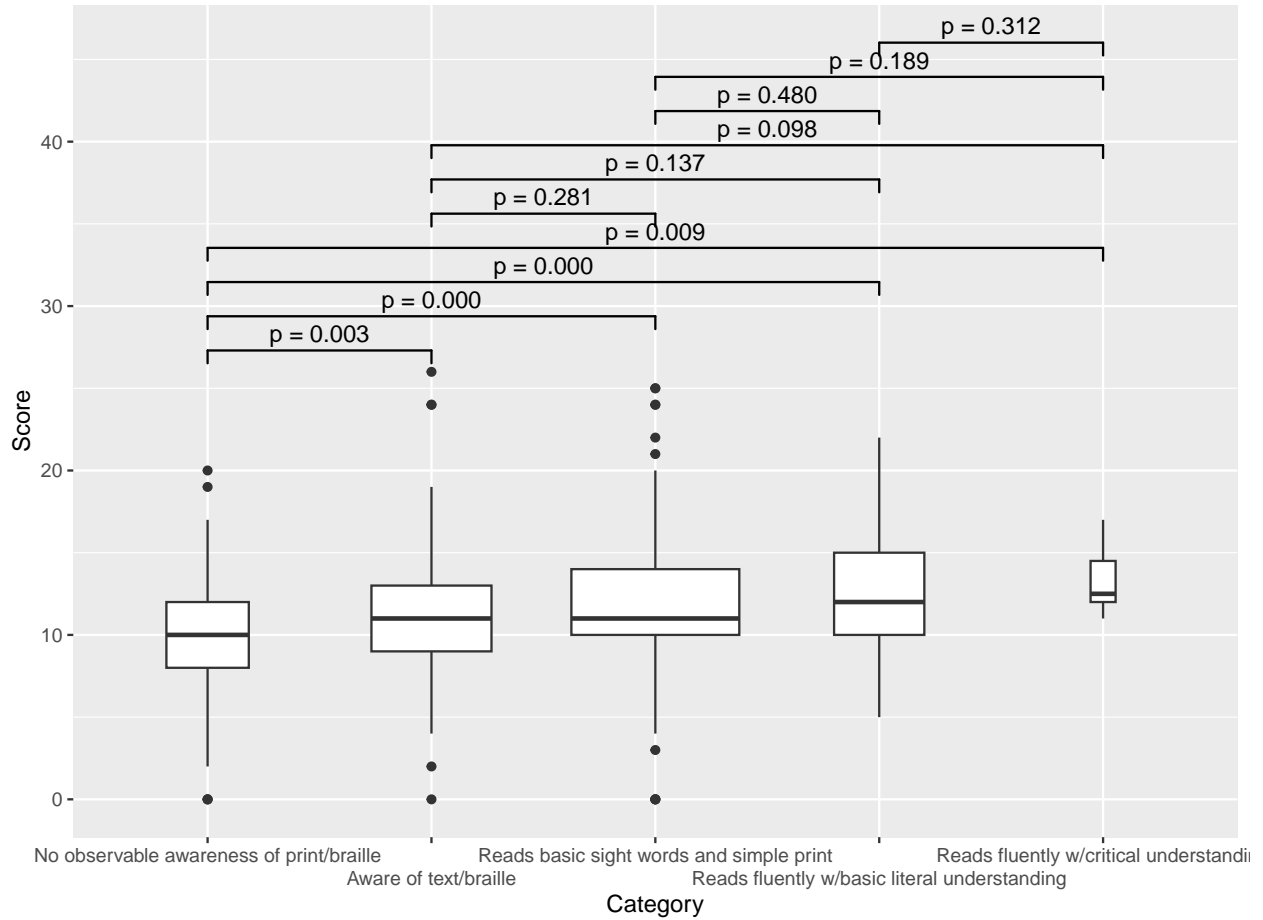


Figure 9: Math 07 Learner Characteristic: Reading

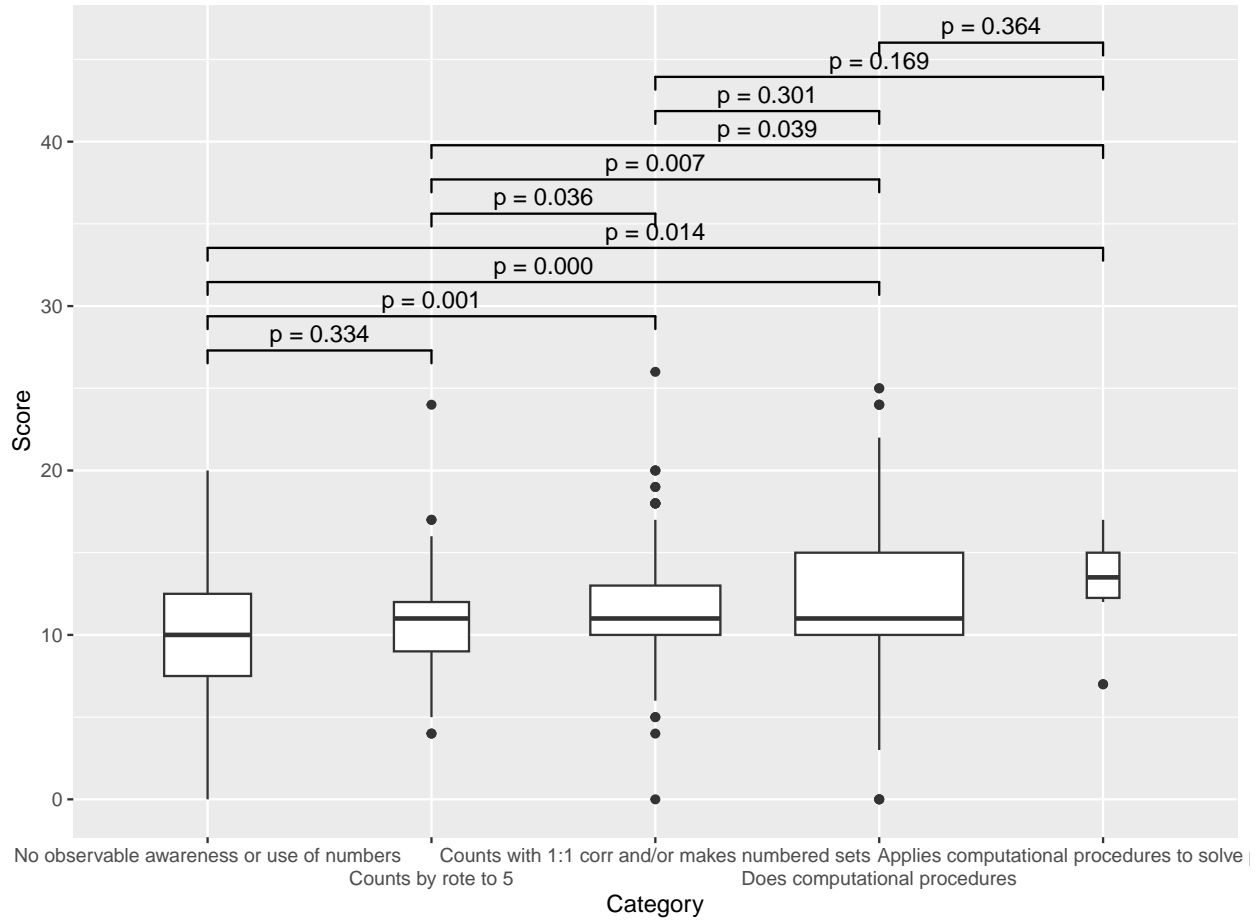


Figure 10: Math 07 Learner Characteristic: Mathematics

Math Grade 6

Table 1: Math 06 Item Statistics

	Item	n	mean	sd	se
	A1	1 451	0.481	0.500	0.024
	A2	2 451	0.534	0.499	0.024
	A3	3 451	0.361	0.481	0.023
	A4	4 451	0.517	0.500	0.024
	A5	5 451	0.324	0.468	0.022
	B1	6 451	0.439	0.497	0.023
	B2	7 451	0.208	0.407	0.019
	B3	8 451	0.492	0.500	0.024
	B4	9 451	0.772	0.420	0.020
	B5	10 451	0.319	0.467	0.022
	C1	11 451	0.397	0.490	0.023
	C2	12 451	0.359	0.480	0.023
	C3	13 451	0.364	0.482	0.023
	C4	14 451	0.328	0.470	0.022
	C5	15 451	0.268	0.444	0.021
	D1	16 451	0.335	0.472	0.022
	D2	17 451	0.279	0.449	0.021
	D3	18 451	0.477	0.500	0.024
	D4	19 451	0.308	0.462	0.022
	D5	20 451	0.392	0.489	0.023
	E1	21 451	0.463	0.499	0.024
	E2	22 451	0.350	0.478	0.022
	E3	23 451	0.494	0.501	0.024
	E4	24 451	0.313	0.464	0.022
	E5	25 451	0.501	0.501	0.024
	F1	26 451	0.461	0.499	0.023
	F2	27 451	0.463	0.499	0.024
	F3	28 451	0.306	0.461	0.022
	F4	29 451	0.253	0.435	0.020
	F5	30 451	0.377	0.485	0.023

Chronbach's Alpha: 0.5298

Table 2: Math 06 Raw Score Frequencies

Score	freq	pct	pct_cum
5	5	1.109	1.109
6	13	2.882	3.991
7	22	4.878	8.869
8	29	6.430	15.299
9	57	12.639	27.938
10	64	14.191	42.129
11	49	10.865	52.993
12	45	9.978	62.971
13	36	7.982	70.953
14	28	6.208	77.162
15	23	5.100	82.262
16	21	4.656	86.918
17	11	2.439	89.357
18	15	3.326	92.683
19	14	3.104	95.787
20	8	1.774	97.561
21	7	1.552	99.113
22	2	0.443	99.557
23	1	0.222	99.778
25	1	0.222	100.000

Table 3: Math 06 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			1	0.002	-0.050	-0.008	0.008	0.000	0.000	0.000
A1		a	106	0.235	-0.335	-0.265	0.333	0.274	0.239	0.068
A1	*	b	217	0.481	0.337	0.613	0.222	0.381	0.550	0.835
A1		c	127	0.282	-0.385	-0.339	0.437	0.345	0.211	0.097
A2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A2		a	117	0.259	-0.285	-0.163	0.270	0.354	0.294	0.107
A2		b	93	0.206	-0.255	-0.122	0.278	0.212	0.165	0.155
A2	*	c	241	0.534	0.149	0.285	0.452	0.434	0.541	0.738
A3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A3	*	a	163	0.361	0.178	0.352	0.230	0.274	0.394	0.583
A3		b	117	0.259	-0.214	-0.103	0.278	0.248	0.330	0.175
A3		c	171	0.379	-0.326	-0.249	0.492	0.478	0.275	0.243
A4			2	0.004	-0.088	-0.016	0.016	0.000	0.000	0.000
A4		a	142	0.315	-0.365	-0.285	0.421	0.389	0.284	0.136
A4		b	74	0.164	-0.221	-0.133	0.230	0.177	0.138	0.097
A4	*	c	233	0.517	0.213	0.434	0.333	0.434	0.578	0.767
A5			4	0.009	-0.017	0.002	0.008	0.009	0.009	0.010
A5	*	a	146	0.324	0.151	0.359	0.175	0.327	0.294	0.534
A5		b	137	0.304	-0.210	-0.137	0.341	0.319	0.339	0.204
A5		c	164	0.364	-0.299	-0.224	0.476	0.345	0.358	0.252
B1			1	0.002	0.001	0.000	0.000	0.000	0.009	0.000
B1		a	164	0.364	-0.182	-0.032	0.333	0.442	0.376	0.301
B1		b	88	0.195	-0.332	-0.230	0.317	0.204	0.147	0.087
B1	*	c	198	0.439	0.112	0.262	0.349	0.354	0.468	0.612
B2			2	0.004	-0.097	-0.016	0.016	0.000	0.000	0.000
B2	*	a	94	0.208	-0.155	-0.021	0.167	0.265	0.257	0.146
B2		b	156	0.346	-0.017	0.136	0.349	0.292	0.266	0.485
B2		c	199	0.441	-0.186	-0.099	0.468	0.442	0.477	0.369
B3			4	0.009	-0.080	-0.016	0.016	0.018	0.000	0.000
B3		a	113	0.251	-0.290	-0.177	0.294	0.292	0.284	0.117
B3	*	b	222	0.492	0.241	0.475	0.302	0.407	0.532	0.777
B3		c	112	0.248	-0.333	-0.282	0.389	0.283	0.183	0.107
B4			2	0.004	-0.043	0.000	0.000	0.018	0.000	0.000
B4		a	51	0.113	-0.270	-0.138	0.167	0.186	0.055	0.029
B4		b	50	0.111	-0.300	-0.195	0.214	0.088	0.101	0.019
B4	*	c	348	0.772	0.208	0.332	0.619	0.708	0.844	0.951
B5			2	0.004	0.019	0.010	0.000	0.000	0.009	0.010
B5	*	a	144	0.319	0.220	0.393	0.151	0.310	0.312	0.544
B5		b	107	0.237	-0.259	-0.172	0.317	0.265	0.202	0.146
B5		c	198	0.439	-0.314	-0.231	0.532	0.425	0.477	0.301
C1			1	0.002	-0.037	0.000	0.000	0.009	0.000	0.000
C1		a	133	0.295	-0.241	-0.157	0.341	0.327	0.312	0.184
C1	*	b	179	0.397	0.245	0.526	0.183	0.354	0.394	0.709
C1		c	138	0.306	-0.372	-0.369	0.476	0.310	0.294	0.107
C2			1	0.002	-0.050	-0.008	0.008	0.000	0.000	0.000
C2		a	112	0.248	-0.217	-0.099	0.294	0.257	0.239	0.194
C2	*	b	162	0.359	0.081	0.279	0.206	0.319	0.459	0.485
C2		c	176	0.390	-0.232	-0.172	0.492	0.425	0.303	0.320
C3			1	0.002	-0.024	0.000	0.000	0.009	0.000	0.000
C3		a	102	0.226	-0.211	-0.057	0.222	0.319	0.193	0.165

Table 3: Math 06 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3	*	b	164	0.364	0.171	0.320	0.214	0.283	0.459	0.534
C3		c	184	0.408	-0.320	-0.263	0.563	0.389	0.349	0.301
C4			1	0.002	0.039	0.010	0.000	0.000	0.000	0.010
C4	*	a	148	0.328	0.073	0.226	0.230	0.283	0.367	0.456
C4		b	120	0.266	-0.230	-0.114	0.317	0.257	0.275	0.204
C4		c	182	0.404	-0.216	-0.122	0.452	0.460	0.358	0.330
C5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C5		a	175	0.388	-0.167	-0.026	0.405	0.398	0.367	0.379
C5	*	b	121	0.268	0.111	0.243	0.175	0.248	0.257	0.417
C5		c	155	0.344	-0.290	-0.217	0.421	0.354	0.376	0.204
D1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D1		a	136	0.302	-0.256	-0.139	0.333	0.301	0.367	0.194
D1	*	b	151	0.335	0.295	0.474	0.167	0.221	0.358	0.641
D1		c	164	0.364	-0.380	-0.335	0.500	0.478	0.275	0.165
D2			1	0.002	-0.037	0.000	0.000	0.009	0.000	0.000
D2	*	a	126	0.279	0.109	0.256	0.190	0.212	0.294	0.447
D2		b	167	0.370	-0.212	-0.084	0.405	0.372	0.376	0.320
D2		c	157	0.348	-0.245	-0.172	0.405	0.407	0.330	0.233
D3			2	0.004	-0.070	-0.016	0.016	0.000	0.000	0.000
D3		a	128	0.284	-0.331	-0.293	0.429	0.292	0.248	0.136
D3		b	106	0.235	-0.193	-0.064	0.278	0.186	0.257	0.214
D3	*	c	215	0.477	0.148	0.373	0.278	0.522	0.495	0.650
D4			4	0.009	-0.055	-0.008	0.008	0.009	0.018	0.000
D4	*	a	139	0.308	0.139	0.326	0.198	0.301	0.239	0.524
D4		b	122	0.271	-0.187	-0.058	0.262	0.327	0.284	0.204
D4		c	186	0.412	-0.295	-0.260	0.532	0.363	0.459	0.272
D5			1	0.002	-0.050	-0.008	0.008	0.000	0.000	0.000
D5		a	107	0.237	-0.246	-0.168	0.333	0.230	0.202	0.165
D5		b	166	0.368	-0.137	-0.033	0.373	0.354	0.404	0.340
D5	*	c	177	0.392	0.002	0.209	0.286	0.416	0.394	0.495
E1			3	0.007	-0.028	0.002	0.008	0.009	0.000	0.010
E1		a	90	0.200	-0.235	-0.132	0.278	0.177	0.183	0.146
E1	*	b	209	0.463	0.164	0.362	0.317	0.381	0.514	0.680
E1		c	149	0.330	-0.312	-0.232	0.397	0.434	0.303	0.165
E2			2	0.004	-0.061	-0.008	0.008	0.009	0.000	0.000
E2		a	112	0.248	-0.176	-0.056	0.270	0.283	0.220	0.214
E2	*	b	158	0.350	0.072	0.239	0.286	0.265	0.349	0.524
E2		c	179	0.397	-0.256	-0.174	0.437	0.442	0.431	0.262
E3			1	0.002	-0.037	0.000	0.000	0.009	0.000	0.000
E3		a	105	0.233	-0.288	-0.183	0.310	0.265	0.211	0.126
E3		b	122	0.271	-0.182	-0.077	0.310	0.283	0.248	0.233
E3	*	c	223	0.494	0.084	0.260	0.381	0.442	0.541	0.641
E4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E4	*	a	141	0.313	0.044	0.174	0.214	0.301	0.367	0.388
E4		b	130	0.288	-0.112	0.006	0.333	0.204	0.275	0.340
E4		c	180	0.399	-0.288	-0.181	0.452	0.496	0.358	0.272
E5			2	0.004	-0.017	0.000	0.000	0.000	0.018	0.000
E5		a	104	0.231	-0.289	-0.193	0.310	0.265	0.211	0.117
E5		b	119	0.264	-0.264	-0.192	0.357	0.265	0.248	0.165
E5	*	c	226	0.501	0.161	0.385	0.333	0.469	0.523	0.718

Table 3: Math 06 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.050	-0.008	0.008	0.000	0.000	0.000
F1	*	a	208	0.461	0.354	0.638	0.206	0.327	0.532	0.845
F1		b	136	0.302	-0.430	-0.391	0.468	0.389	0.229	0.078
F1		c	106	0.235	-0.296	-0.240	0.317	0.283	0.239	0.078
F2			2	0.004	-0.079	-0.016	0.016	0.000	0.000	0.000
F2		a	132	0.293	-0.271	-0.145	0.349	0.354	0.248	0.204
F2		b	108	0.239	-0.236	-0.129	0.333	0.248	0.156	0.204
F2	*	c	209	0.463	0.129	0.291	0.302	0.398	0.596	0.592
F3			2	0.004	-0.061	-0.008	0.008	0.009	0.000	0.000
F3		a	130	0.288	-0.128	-0.010	0.302	0.292	0.266	0.291
F3	*	b	138	0.306	0.117	0.257	0.238	0.239	0.275	0.495
F3		c	181	0.401	-0.330	-0.239	0.452	0.460	0.459	0.214
F4			1	0.002	-0.062	-0.008	0.008	0.000	0.000	0.000
F4	*	a	114	0.253	0.021	0.161	0.198	0.204	0.266	0.359
F4		b	139	0.308	-0.146	-0.023	0.333	0.265	0.321	0.311
F4		c	197	0.437	-0.221	-0.130	0.460	0.531	0.413	0.330
F5			4	0.009	-0.068	-0.014	0.024	0.000	0.000	0.010
F5		a	135	0.299	0.014	0.161	0.286	0.265	0.211	0.447
F5	*	b	170	0.377	-0.073	0.068	0.349	0.354	0.394	0.417
F5		c	142	0.315	-0.301	-0.215	0.341	0.381	0.394	0.126

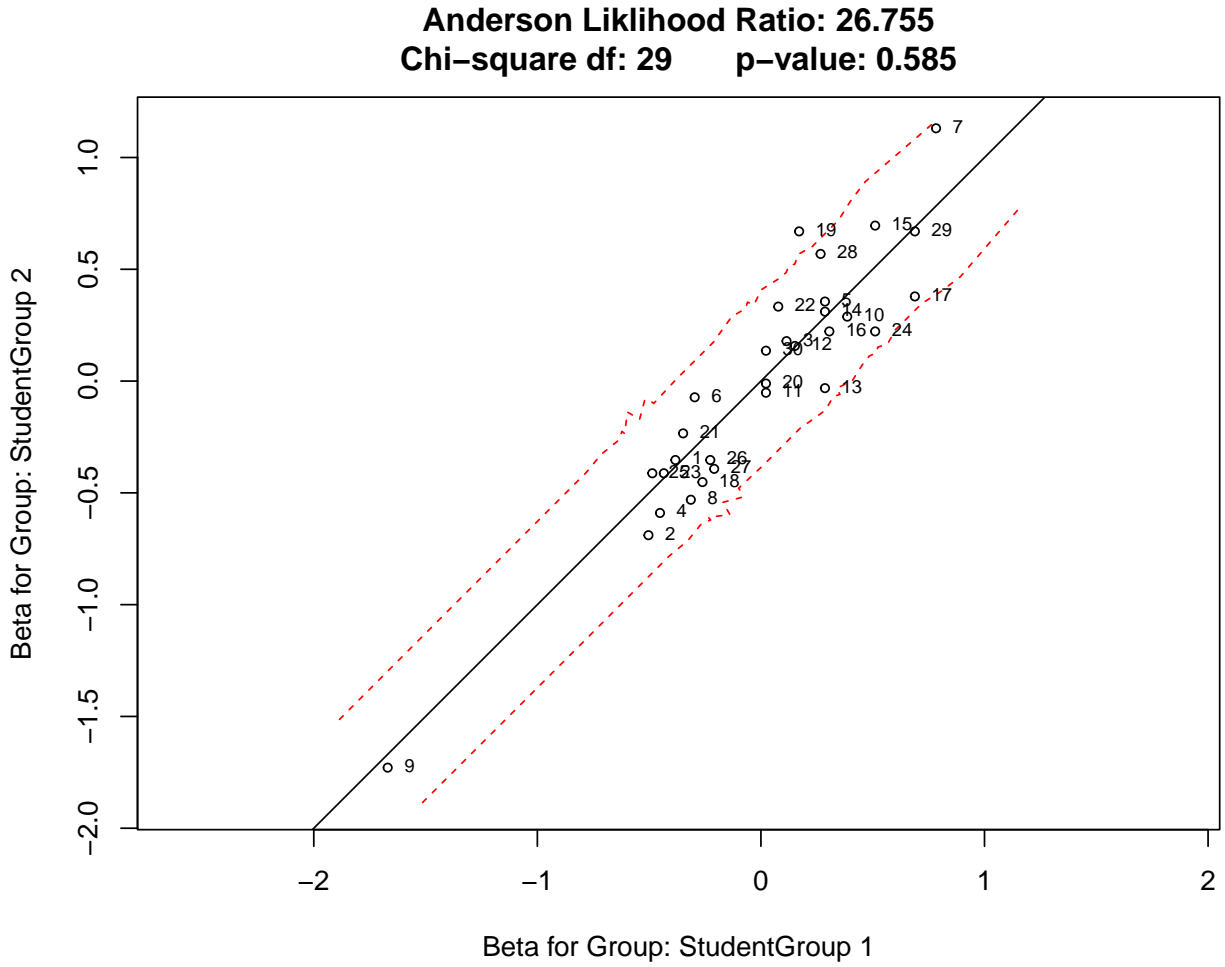


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Math 06 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	451	0.8825	0.8918
A2	451	0.9776	0.9893
A3	451	0.9647	0.9707
A4	451	0.9432	0.9540
A5	451	0.9795	0.9816
B1	451	1.0084	1.0096
B2	451	1.1896	1.1225
B3	451	0.9335	0.9412
B4	451	0.8678	0.9355
B5	451	0.9293	0.9457
C1	451	0.9312	0.9377
C2	451	1.0253	1.0228
C3	451	0.9705	0.9746
C4	451	1.0254	1.0246
C5	451	1.0044	0.9939
D1	451	0.8909	0.9097
D2	451	1.0027	0.9985
D3	451	0.9812	0.9891
D4	451	0.9825	0.9861
D5	451	1.0701	1.0672
E1	451	0.9787	0.9809
E2	451	1.0493	1.0246
E3	451	1.0244	1.0240
E4	451	1.0392	1.0381
E5	451	0.9749	0.9814
F1	451	0.8766	0.8836
F2	451	1.0002	0.9997
F3	451	1.0087	0.9960
F4	451	1.0565	1.0405
F5	451	1.1236	1.1076

Table 5: Math 06 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9897	0.0702
Infit	Infit	0.9908	0.0548

Table 6: Math 06 Raw to Theta Table

Raw Score	theta	SE
5	-1.1660	0.4902
6	-0.9475	0.4605
7	-0.7521	0.4381
8	-0.5735	0.4207
9	-0.4074	0.4073
10	-0.2507	0.3968
11	-0.1012	0.3887
12	0.0431	0.3828
13	0.1837	0.3786
14	0.3217	0.3761
15	0.4585	0.3751
16	0.5952	0.3757
17	0.7327	0.3778
18	0.8724	0.3815
19	1.0155	0.3870
20	1.1634	0.3946
21	1.3180	0.4046
22	1.4815	0.4176
23	1.6569	0.4343
25	2.0622	0.4853

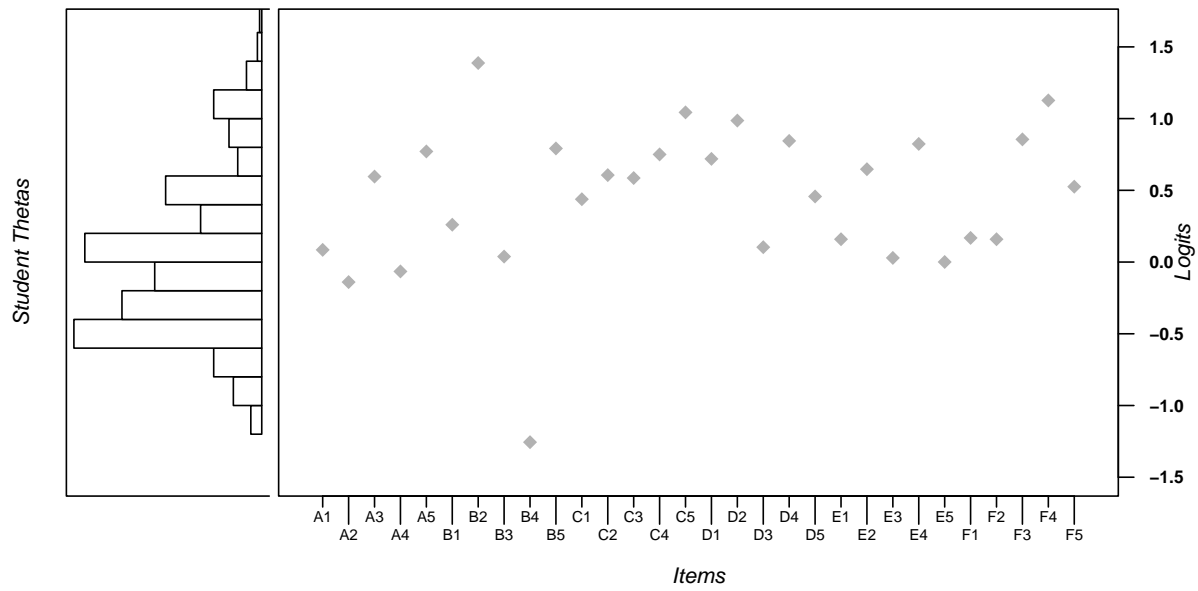


Figure 2: Student Ability - Item Difficulty Wright Map

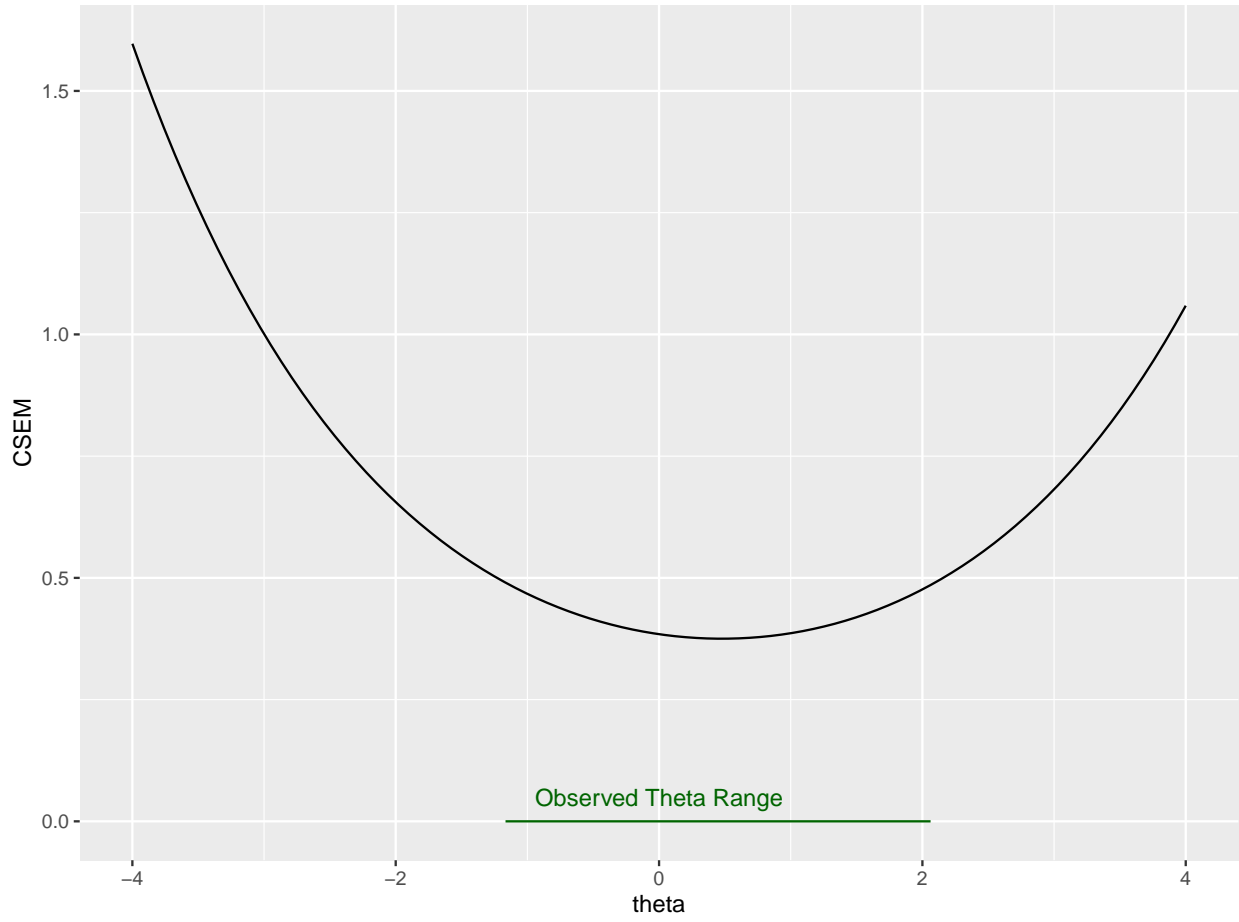


Figure 3: Math 06 Conditional Standard Error of Measure

Table 7: Math 06 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		451	0.48
Ethnic	Black	55	0.23
Ethnic	Hispanic	28	0.06
Ethnic	Other	23	0.55
Ethnic	White	335	0.51
Disadvantaged	No	345	0.45
Disadvantaged	Yes	106	0.56
LEP	No	426	0.48
LEP	Yes	25	-0.25
Gender	Female	138	0.35
Gender	Male	313	0.52
Homeless	No	436	0.48
Homeless	Yes	15	0.54

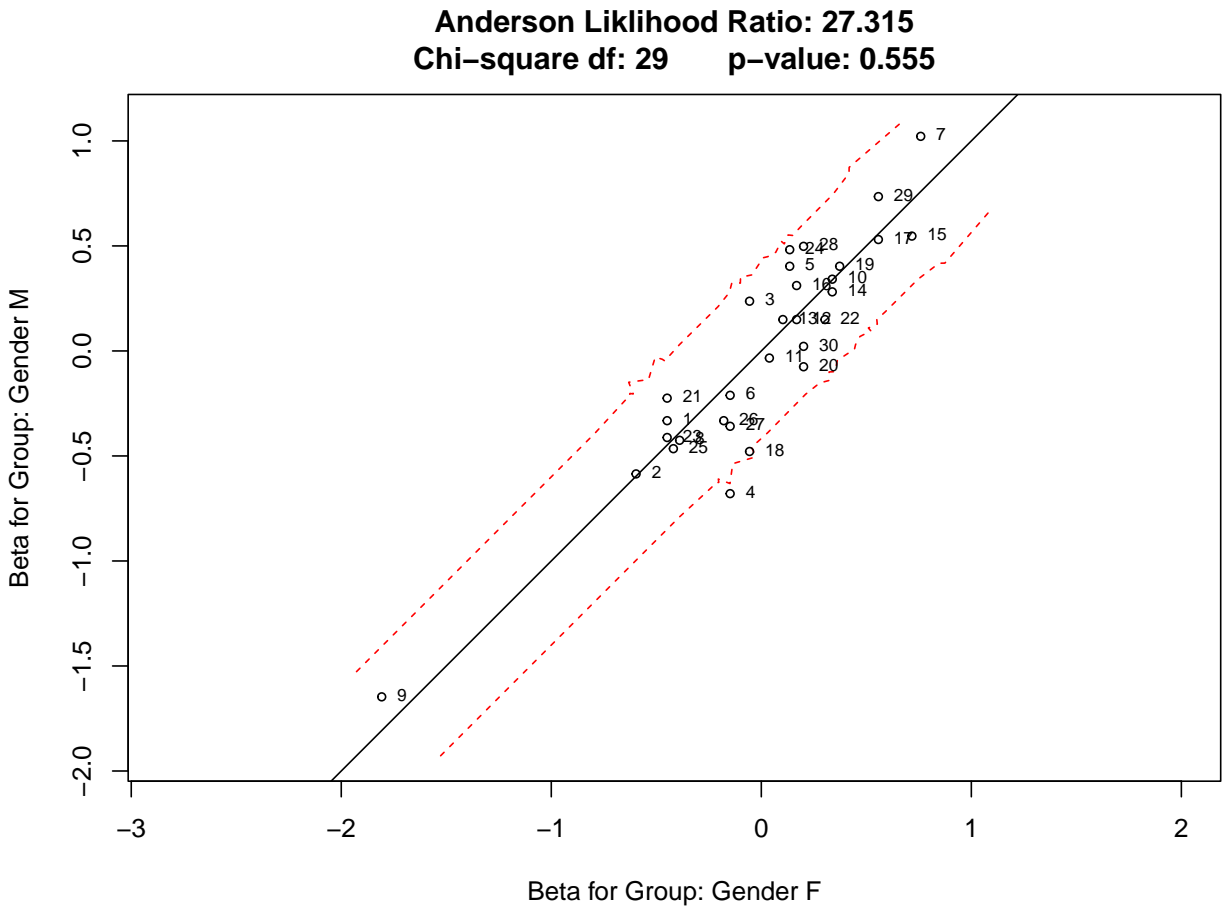


Figure 4: Math 06 Differential Item (DIF) and Test (DTF) Function for Gender

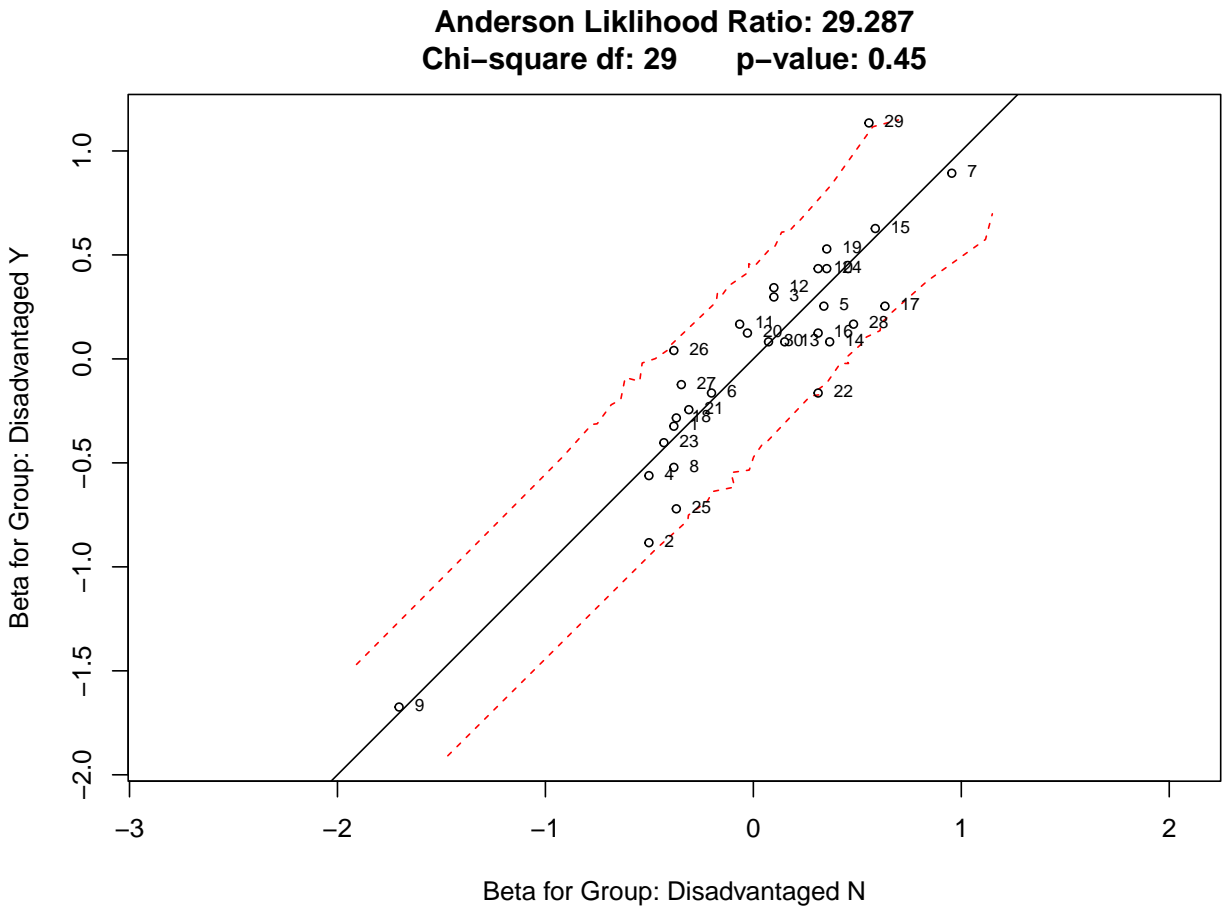


Figure 5: Math 06 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

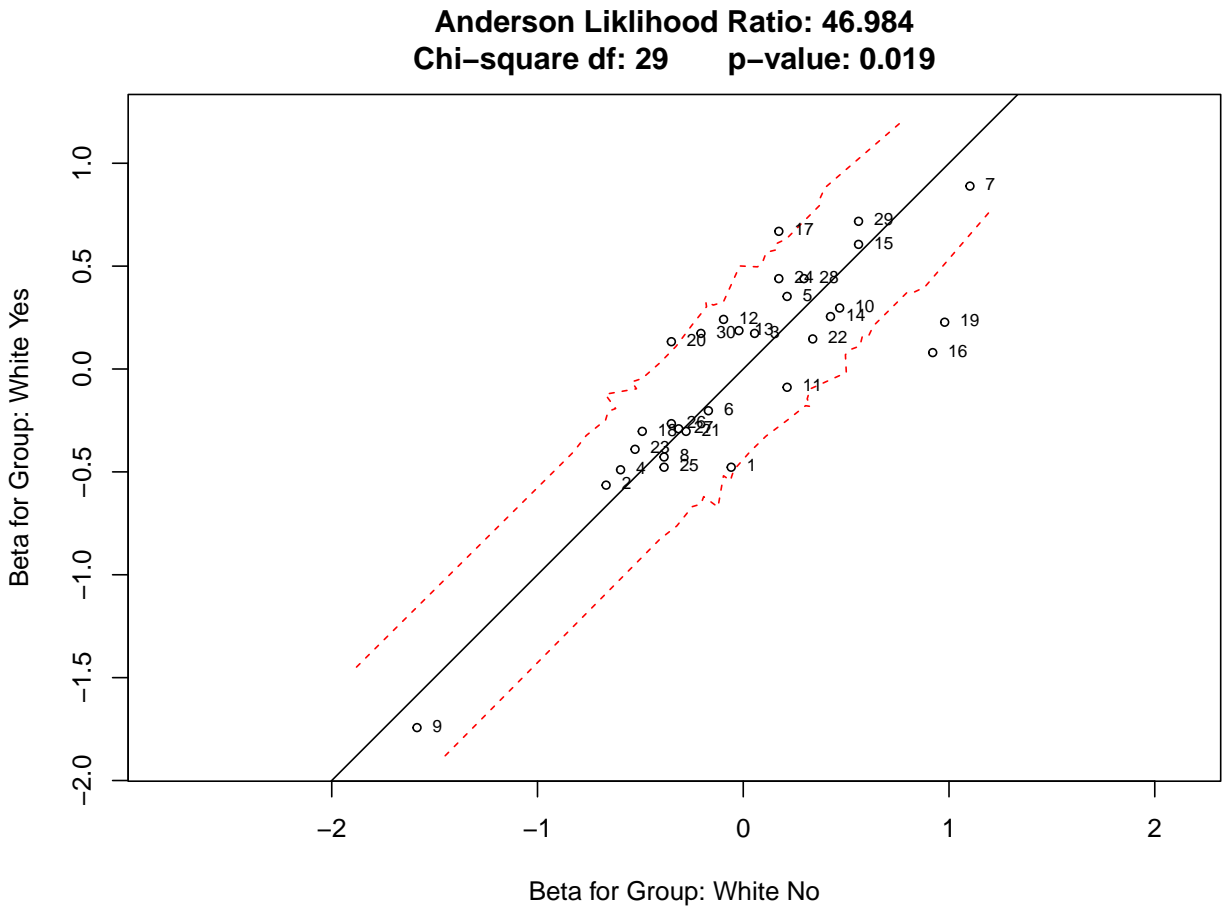


Figure 6: Math 06 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.7217	0.1000	0.8218
False	0.0348	0.1435	0.1782
Total	0.7565	0.2435	1.0000

Accuracy = 0.8218

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.6346	0.1219
j	0.1219	0.1217

Proportion of Consistent Classifications = 0.7563
Cohen's Kappa = 0.3386

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0145	0.0388	0.9324	0.0143	0.5020	0.9600	0.9468	0.0136	0.0028	0.0108
Apprentice	0.6541	0.0491	0.1145	0.1823	0.7821	0.7000	0.7686	0.5438	0.4945	0.0976
Proficient	0.0984	0.1434	0.7218	0.0364	0.7301	0.8342	0.8202	0.1188	0.0585	0.0641
Distinguished	0.0000	0.0017	0.9983	0.0000	0.6015	0.9983	0.9983	0.0001	0.0000	0.0001

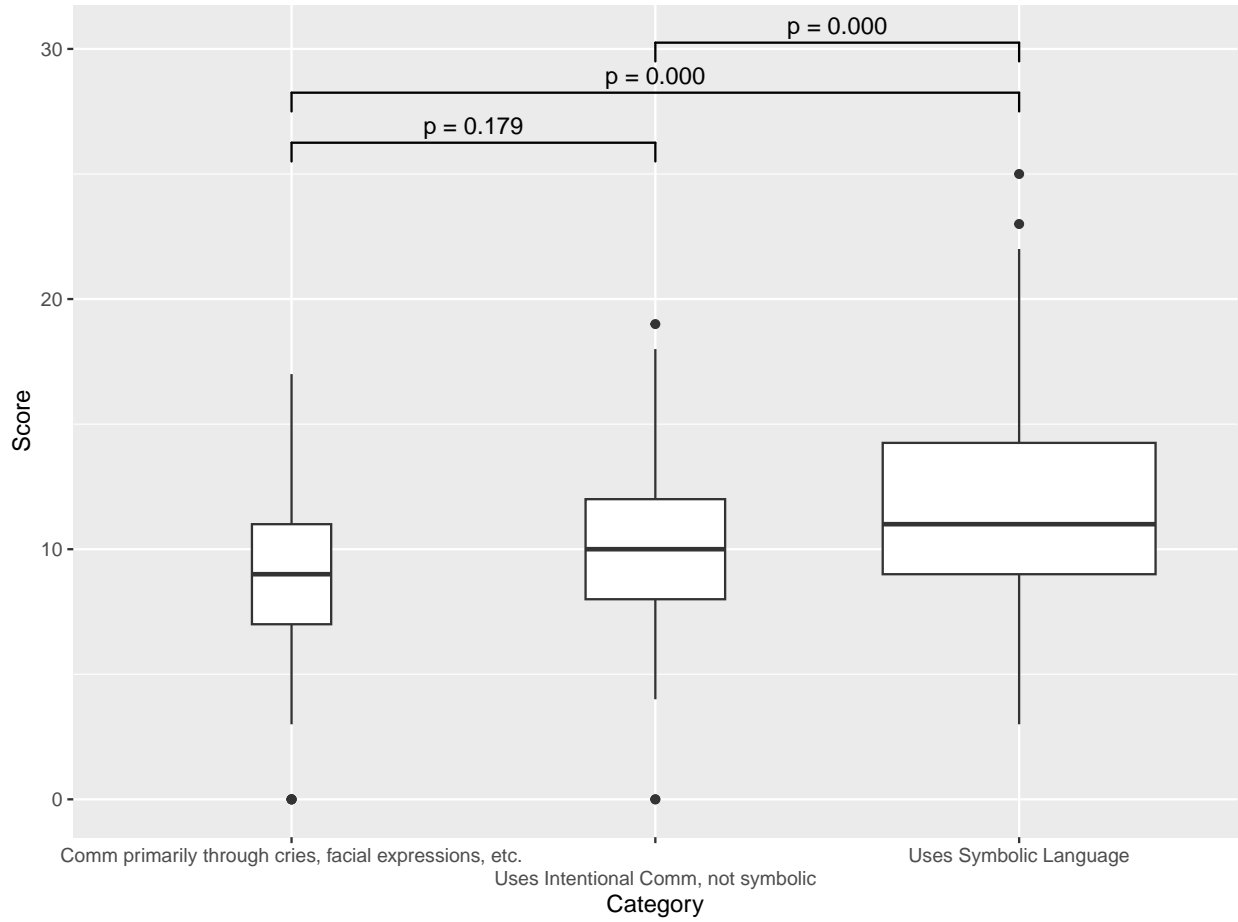


Figure 7: Math 06 Learner Characteristic: Expressive Communication

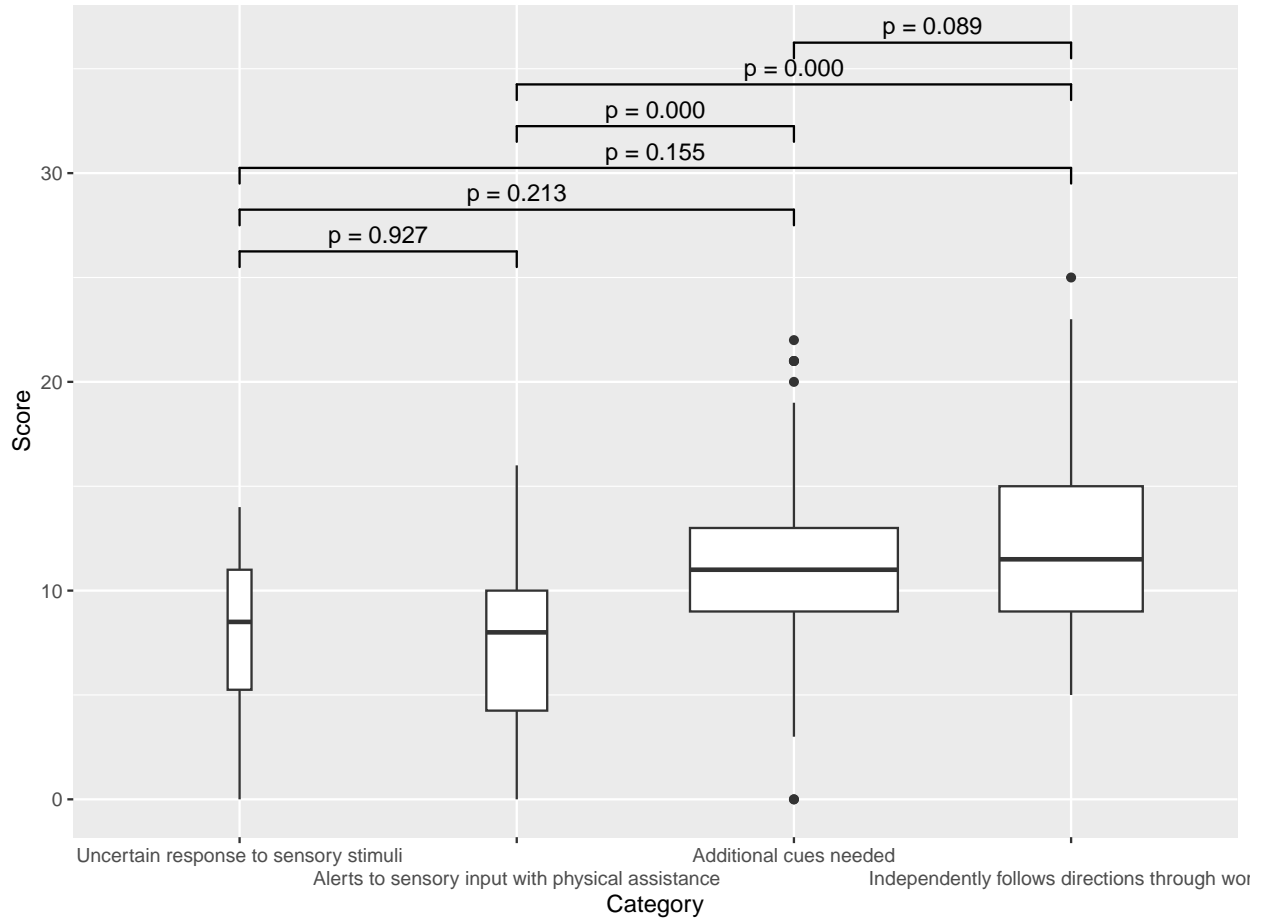


Figure 8: Math 06 Learner Characteristic: Receptive Language

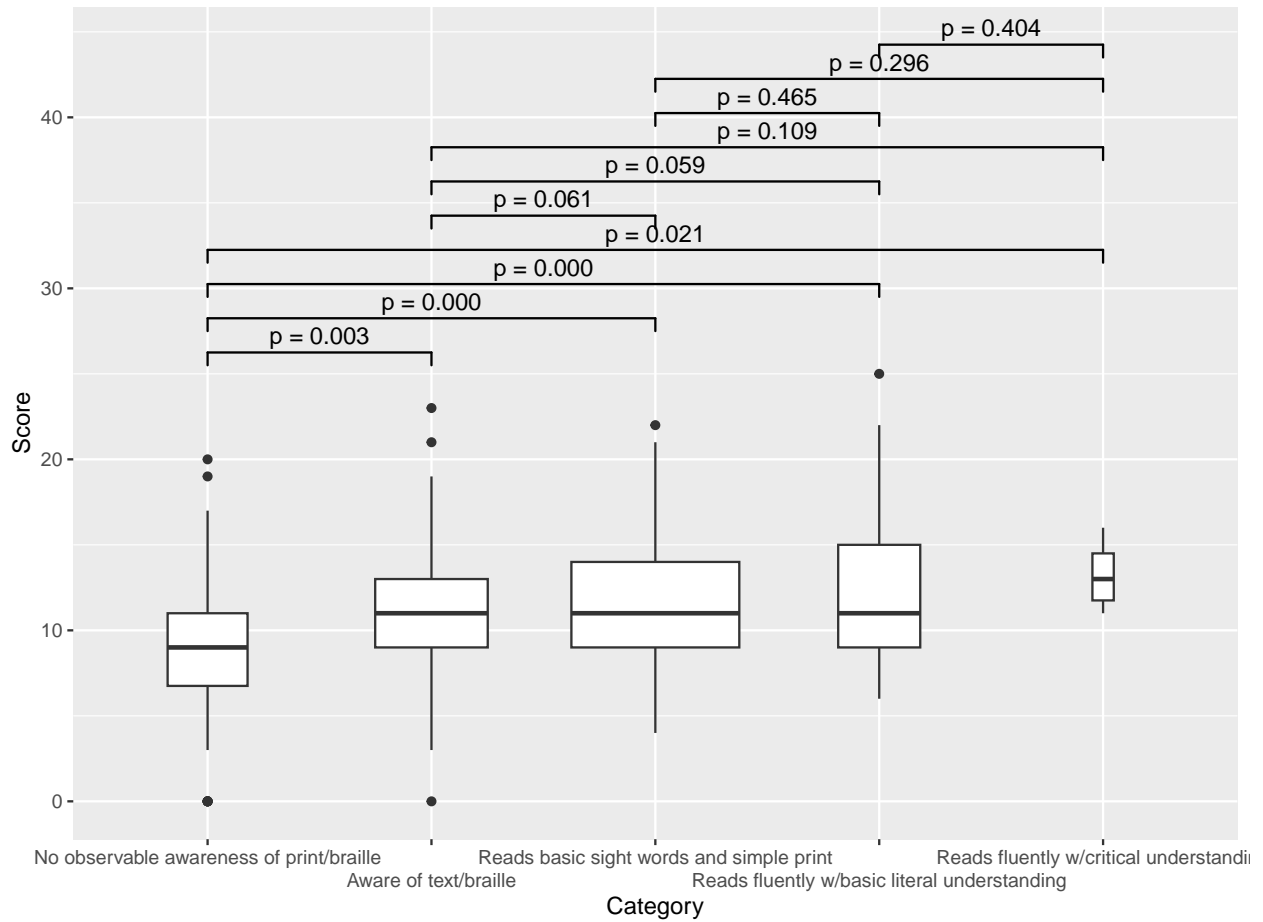


Figure 9: Math 06 Learner Characteristic: Reading

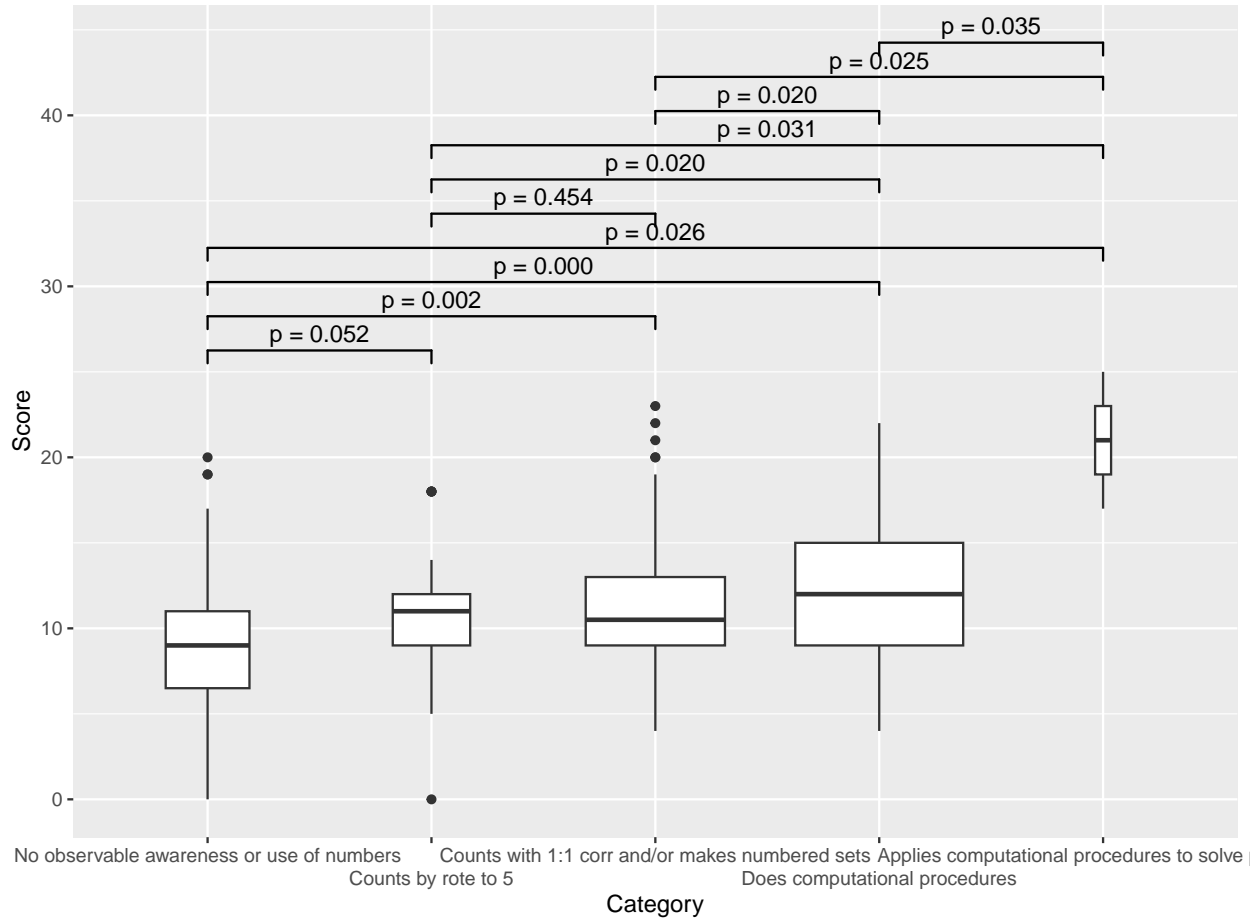


Figure 10: Math 06 Learner Characteristic: Mathematics

Math Grade 5

Table 1: Math 05 Item Statistics

	Item	n	mean	sd	se	
	A1	1	504	0.411	0.492	0.022
	A2	2	504	0.423	0.494	0.022
	A3	3	504	0.548	0.498	0.022
	A4	4	504	0.387	0.488	0.022
	A5	5	504	0.421	0.494	0.022
	B1	6	504	0.359	0.480	0.021
	B2	7	504	0.371	0.484	0.022
	B3	8	504	0.286	0.452	0.020
	B4	9	504	0.331	0.471	0.021
	B5	10	504	0.373	0.484	0.022
	C1	11	504	0.403	0.491	0.022
	C2	12	504	0.355	0.479	0.021
	C3	13	504	0.500	0.500	0.022
	C4	14	504	0.421	0.494	0.022
	C5	15	504	0.488	0.500	0.022
	D1	16	504	0.474	0.500	0.022
	D2	17	504	0.454	0.498	0.022
	D3	18	504	0.454	0.498	0.022
	D4	19	504	0.343	0.475	0.021
	D5	20	504	0.437	0.496	0.022
	E1	21	504	0.294	0.456	0.020
	E2	22	504	0.373	0.484	0.022
	E3	23	504	0.474	0.500	0.022
	E4	24	504	0.343	0.475	0.021
	E5	25	504	0.488	0.500	0.022
	F1	26	504	0.413	0.493	0.022
	F2	27	504	0.335	0.473	0.021
	F3	28	504	0.304	0.460	0.021
	F4	29	504	0.409	0.492	0.022
	F5	30	504	0.389	0.488	0.022

Chronbach's Alpha: 0.6228

Table 2: Math 05 Raw Score Frequencies

Score	freq	pct	pct_cum
2	1	0.198	0.198
4	1	0.198	0.397
5	4	0.794	1.190
6	13	2.579	3.770
7	23	4.563	8.333
8	47	9.325	17.659
9	54	10.714	28.373
10	67	13.294	41.667
11	66	13.095	54.762
12	50	9.921	64.683
13	41	8.135	72.817
14	28	5.556	78.373
15	17	3.373	81.746
16	19	3.770	85.516
17	14	2.778	88.294
18	12	2.381	90.675
19	9	1.786	92.460
20	10	1.984	94.444
21	8	1.587	96.032
22	4	0.794	96.825
23	6	1.190	98.016
24	3	0.595	98.611
25	5	0.992	99.603
27	1	0.198	99.802
28	1	0.198	100.000

Table 3: Math 05 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			3	0.006	-0.062	-0.007	0.007	0.015	0.000	0.000
A1	*	a	207	0.411	0.281	0.478	0.238	0.323	0.437	0.716
A1		b	134	0.266	-0.184	-0.055	0.266	0.286	0.294	0.211
A1		c	160	0.317	-0.417	-0.416	0.490	0.376	0.269	0.073
A2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A2		a	124	0.246	-0.270	-0.181	0.301	0.293	0.244	0.119
A2	*	b	213	0.423	0.257	0.448	0.259	0.346	0.445	0.706
A2		c	167	0.331	-0.325	-0.266	0.441	0.361	0.311	0.174
A3			2	0.004	-0.053	-0.007	0.007	0.008	0.000	0.000
A3		a	120	0.238	-0.308	-0.214	0.315	0.301	0.202	0.101
A3		b	106	0.210	-0.291	-0.222	0.287	0.248	0.210	0.064
A3	*	c	276	0.548	0.245	0.443	0.392	0.444	0.588	0.835
A4			4	0.008	-0.043	0.000	0.000	0.023	0.008	0.000
A4	*	a	195	0.387	0.113	0.271	0.280	0.353	0.403	0.550
A4		b	153	0.304	-0.220	-0.111	0.350	0.286	0.328	0.239
A4		c	152	0.302	-0.225	-0.160	0.371	0.338	0.261	0.211
A5			5	0.010	-0.086	-0.021	0.021	0.008	0.008	0.000
A5		a	116	0.230	-0.159	-0.112	0.259	0.195	0.311	0.147
A5	*	b	212	0.421	0.178	0.430	0.231	0.383	0.471	0.661
A5		c	171	0.339	-0.336	-0.297	0.490	0.414	0.210	0.193
B1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B1		a	106	0.210	-0.129	-0.014	0.189	0.248	0.227	0.174
B1	*	b	181	0.359	0.211	0.394	0.175	0.293	0.462	0.569
B1		c	217	0.431	-0.383	-0.379	0.636	0.459	0.311	0.257
B2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B2		a	151	0.300	-0.195	-0.088	0.336	0.301	0.303	0.248
B2		b	166	0.329	-0.181	-0.077	0.343	0.316	0.387	0.266
B2	*	c	187	0.371	0.041	0.165	0.322	0.383	0.311	0.486
B3			1	0.002	-0.022	0.000	0.000	0.008	0.000	0.000
B3	*	a	144	0.286	0.135	0.273	0.168	0.263	0.311	0.440
B3		b	141	0.280	-0.162	-0.071	0.301	0.256	0.328	0.229
B3		c	218	0.433	-0.275	-0.201	0.531	0.474	0.361	0.330
B4			3	0.006	-0.068	-0.007	0.007	0.015	0.000	0.000
B4	*	a	167	0.331	0.202	0.348	0.203	0.278	0.345	0.550
B4		b	119	0.236	-0.111	0.027	0.175	0.256	0.319	0.202
B4		c	215	0.427	-0.378	-0.368	0.615	0.451	0.336	0.248
B5			3	0.006	-0.062	-0.007	0.007	0.015	0.000	0.000
B5		a	139	0.276	-0.168	-0.080	0.273	0.278	0.353	0.193
B5		b	174	0.345	-0.268	-0.195	0.434	0.338	0.345	0.239
B5	*	c	188	0.373	0.113	0.282	0.287	0.368	0.303	0.569
C1			1	0.002	-0.011	0.000	0.000	0.000	0.008	0.000
C1		a	166	0.329	-0.296	-0.243	0.427	0.383	0.286	0.183
C1	*	b	203	0.403	0.286	0.506	0.182	0.293	0.529	0.688
C1		c	134	0.266	-0.324	-0.263	0.392	0.323	0.176	0.128
C2			2	0.004	-0.046	-0.007	0.007	0.000	0.008	0.000
C2	*	a	179	0.355	0.279	0.470	0.154	0.293	0.420	0.624
C2		b	165	0.327	-0.286	-0.185	0.406	0.338	0.319	0.220
C2		c	158	0.313	-0.306	-0.278	0.434	0.368	0.252	0.156
C3			1	0.002	-0.022	0.000	0.000	0.008	0.000	0.000
C3		a	122	0.242	-0.226	-0.137	0.266	0.271	0.286	0.128

Table 3: Math 05 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	129	0.256	-0.287	-0.237	0.329	0.278	0.294	0.092
C3	*	c	252	0.500	0.163	0.374	0.406	0.444	0.420	0.780
C4			4	0.008	-0.049	-0.007	0.007	0.008	0.017	0.000
C4		a	106	0.210	-0.191	-0.142	0.252	0.248	0.210	0.110
C4	*	b	212	0.421	0.123	0.310	0.287	0.346	0.504	0.596
C4		c	182	0.361	-0.264	-0.161	0.455	0.398	0.269	0.294
C5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C5		a	143	0.284	-0.205	-0.124	0.308	0.308	0.319	0.183
C5		b	115	0.228	-0.182	-0.063	0.238	0.241	0.252	0.174
C5	*	c	246	0.488	0.045	0.188	0.455	0.451	0.429	0.642
D1			2	0.004	-0.046	0.000	0.000	0.015	0.000	0.000
D1	*	a	239	0.474	0.203	0.373	0.315	0.361	0.597	0.688
D1		b	109	0.216	-0.211	-0.130	0.259	0.271	0.185	0.128
D1		c	154	0.306	-0.332	-0.243	0.427	0.353	0.218	0.183
D2			3	0.006	-0.099	-0.021	0.021	0.000	0.000	0.000
D2	*	a	229	0.454	0.314	0.535	0.245	0.353	0.521	0.780
D2		b	118	0.234	-0.265	-0.144	0.273	0.271	0.244	0.128
D2		c	154	0.306	-0.377	-0.370	0.462	0.376	0.235	0.092
D3			1	0.002	-0.011	0.000	0.000	0.000	0.008	0.000
D3		a	131	0.260	-0.203	-0.077	0.252	0.278	0.328	0.174
D3		b	143	0.284	-0.239	-0.136	0.357	0.316	0.218	0.220
D3	*	c	229	0.454	0.099	0.214	0.392	0.406	0.445	0.606
D4			3	0.006	-0.007	0.000	0.000	0.008	0.017	0.000
D4		a	161	0.319	-0.186	-0.092	0.322	0.316	0.403	0.229
D4	*	b	173	0.343	0.243	0.440	0.175	0.308	0.336	0.615
D4		c	167	0.331	-0.373	-0.348	0.503	0.368	0.244	0.156
D5			4	0.008	-0.043	-0.014	0.014	0.000	0.017	0.000
D5	*	a	220	0.437	0.281	0.501	0.252	0.331	0.487	0.752
D5		b	131	0.260	-0.300	-0.216	0.336	0.323	0.227	0.119
D5		c	149	0.296	-0.320	-0.270	0.399	0.346	0.269	0.128
E1			2	0.004	-0.053	-0.007	0.007	0.008	0.000	0.000
E1		a	178	0.353	-0.072	0.066	0.329	0.368	0.328	0.394
E1	*	b	148	0.294	0.061	0.190	0.168	0.263	0.420	0.358
E1		c	176	0.349	-0.301	-0.249	0.497	0.361	0.252	0.248
E2			1	0.002	-0.011	0.000	0.000	0.000	0.008	0.000
E2	*	a	188	0.373	0.202	0.384	0.203	0.376	0.378	0.587
E2		b	153	0.304	-0.207	-0.107	0.364	0.278	0.303	0.257
E2		c	162	0.321	-0.323	-0.278	0.434	0.346	0.311	0.156
E3			3	0.006	-0.025	0.000	0.000	0.008	0.017	0.000
E3		a	132	0.262	-0.155	-0.045	0.238	0.293	0.319	0.193
E3		b	130	0.258	-0.302	-0.237	0.357	0.256	0.269	0.119
E3	*	c	239	0.474	0.112	0.282	0.406	0.444	0.395	0.688
E4			1	0.002	-0.022	0.000	0.000	0.008	0.000	0.000
E4		a	167	0.331	-0.179	-0.065	0.350	0.353	0.328	0.284
E4	*	b	173	0.343	0.223	0.376	0.175	0.256	0.454	0.550
E4		c	163	0.323	-0.360	-0.310	0.476	0.383	0.218	0.165
E5			1	0.002	-0.032	0.000	0.000	0.008	0.000	0.000
E5		a	121	0.240	-0.210	-0.123	0.252	0.278	0.286	0.128
E5		b	136	0.270	-0.288	-0.193	0.322	0.286	0.319	0.128
E5	*	c	246	0.488	0.152	0.317	0.427	0.429	0.395	0.743

Table 3: Math 05 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.032	0.000	0.000	0.008	0.000	0.000
F1		a	157	0.312	-0.170	-0.081	0.329	0.331	0.328	0.248
F1		b	138	0.274	-0.302	-0.249	0.378	0.278	0.277	0.128
F1	*	c	208	0.413	0.132	0.330	0.294	0.383	0.395	0.624
F2			3	0.006	-0.044	-0.014	0.014	0.000	0.008	0.000
F2	*	a	169	0.335	0.314	0.525	0.154	0.263	0.319	0.679
F2		b	116	0.230	-0.247	-0.140	0.287	0.226	0.244	0.147
F2		c	216	0.429	-0.365	-0.371	0.545	0.511	0.429	0.174
F3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F3		a	153	0.304	-0.134	-0.007	0.301	0.338	0.277	0.294
F3	*	b	153	0.304	0.106	0.256	0.175	0.263	0.387	0.431
F3		c	198	0.393	-0.284	-0.249	0.524	0.398	0.336	0.275
F4			1	0.002	-0.022	0.000	0.000	0.008	0.000	0.000
F4		a	132	0.262	-0.142	-0.032	0.280	0.263	0.252	0.248
F4	*	b	206	0.409	0.092	0.266	0.266	0.421	0.454	0.532
F4		c	165	0.327	-0.283	-0.234	0.455	0.308	0.294	0.220
F5			2	0.004	-0.076	-0.014	0.014	0.000	0.000	0.000
F5	*	a	196	0.389	0.184	0.375	0.203	0.376	0.454	0.578
F5		b	131	0.260	-0.228	-0.122	0.315	0.241	0.277	0.193
F5		c	175	0.347	-0.281	-0.239	0.469	0.383	0.269	0.229

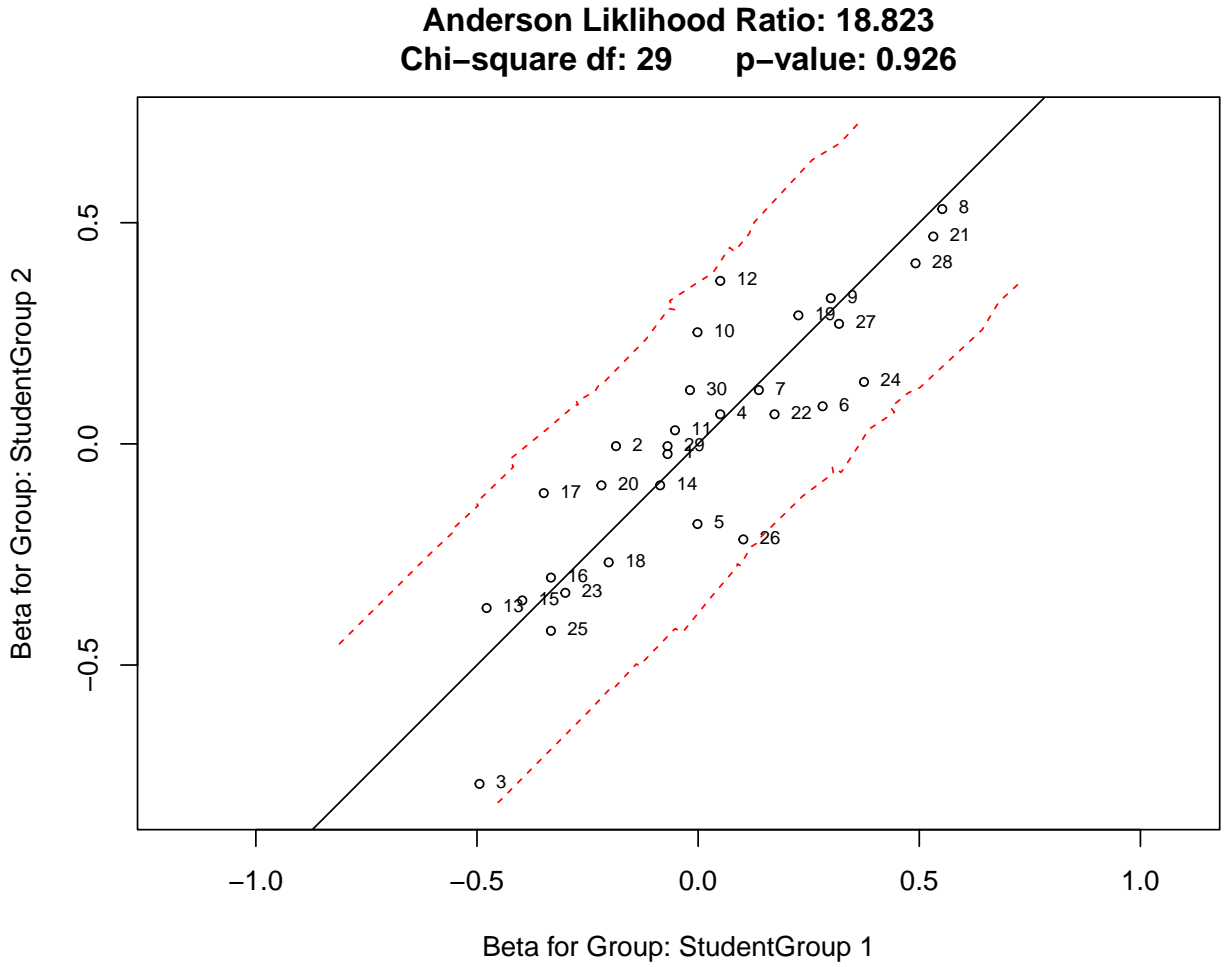


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Math 05 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	504	0.9231	0.9336
A2	504	0.9321	0.9474
A3	504	0.9225	0.9491
A4	504	1.0330	1.0315
A5	504	1.0054	0.9919
B1	504	0.9776	0.9740
B2	504	1.0758	1.0744
B3	504	1.0193	1.0134
B4	504	0.9702	0.9785
B5	504	1.0285	1.0308
C1	504	0.9214	0.9307
C2	504	0.9184	0.9354
C3	504	0.9932	1.0002
C4	504	1.0424	1.0244
C5	504	1.0753	1.0692
D1	504	0.9689	0.9753
D2	504	0.8984	0.9140
D3	504	1.0341	1.0387
D4	504	0.9556	0.9530
D5	504	0.9197	0.9330
E1	504	1.0786	1.0624
E2	504	0.9634	0.9793
E3	504	1.0249	1.0322
E4	504	0.9533	0.9667
E5	504	0.9921	1.0091
F1	504	1.0200	1.0194
F2	504	0.8939	0.9140
F3	504	1.0319	1.0356
F4	504	1.0666	1.0431
F5	504	0.9818	0.9899

Table 5: Math 05 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9874	0.0558
Infit	Infit	0.9917	0.0472

Table 6: Math 05 Raw to Theta Table

Raw Score	theta	SE
2	-2.0438	0.6732
4	-1.3776	0.5212
5	-1.1357	0.4810
6	-0.9258	0.4517
7	-0.7383	0.4296
8	-0.5668	0.4126
9	-0.4074	0.3995
10	-0.2569	0.3893
11	-0.1132	0.3815
12	0.0256	0.3758
13	0.1608	0.3718
14	0.2939	0.3695
15	0.4258	0.3688
16	0.5577	0.3695
17	0.6907	0.3718
18	0.8260	0.3757
19	0.9647	0.3815
20	1.1084	0.3892
21	1.2589	0.3994
22	1.4183	0.4126
23	1.5896	0.4295
24	1.7771	0.4516
25	1.9869	0.4809
27	2.5199	0.5796
28	2.8948	0.6731

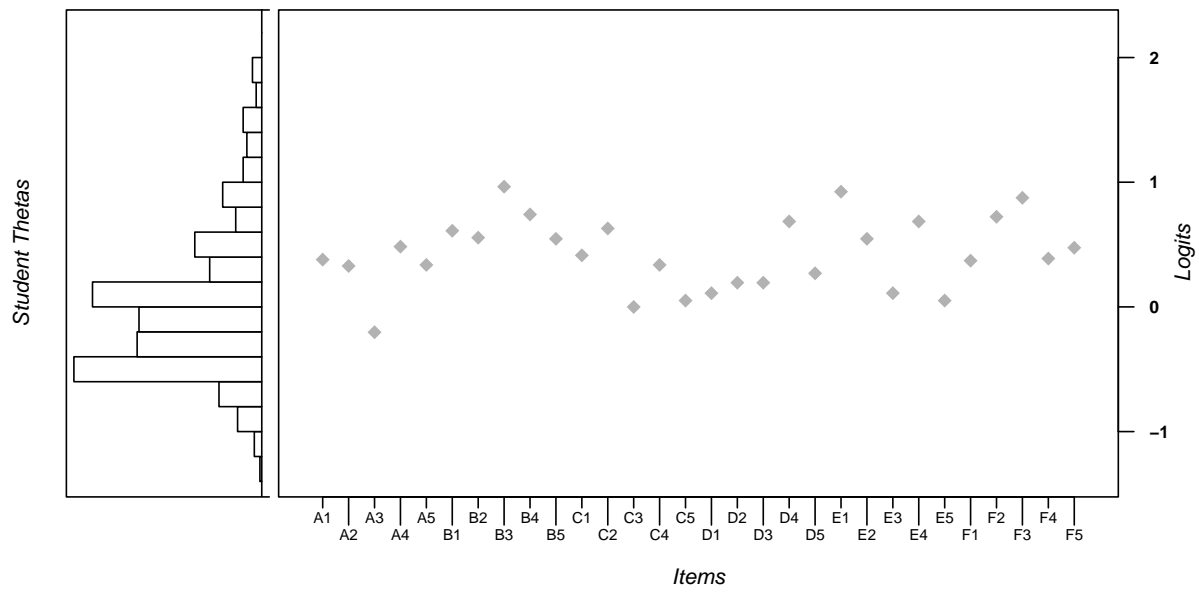


Figure 2: Student Ability - Item Difficulty Wright Map

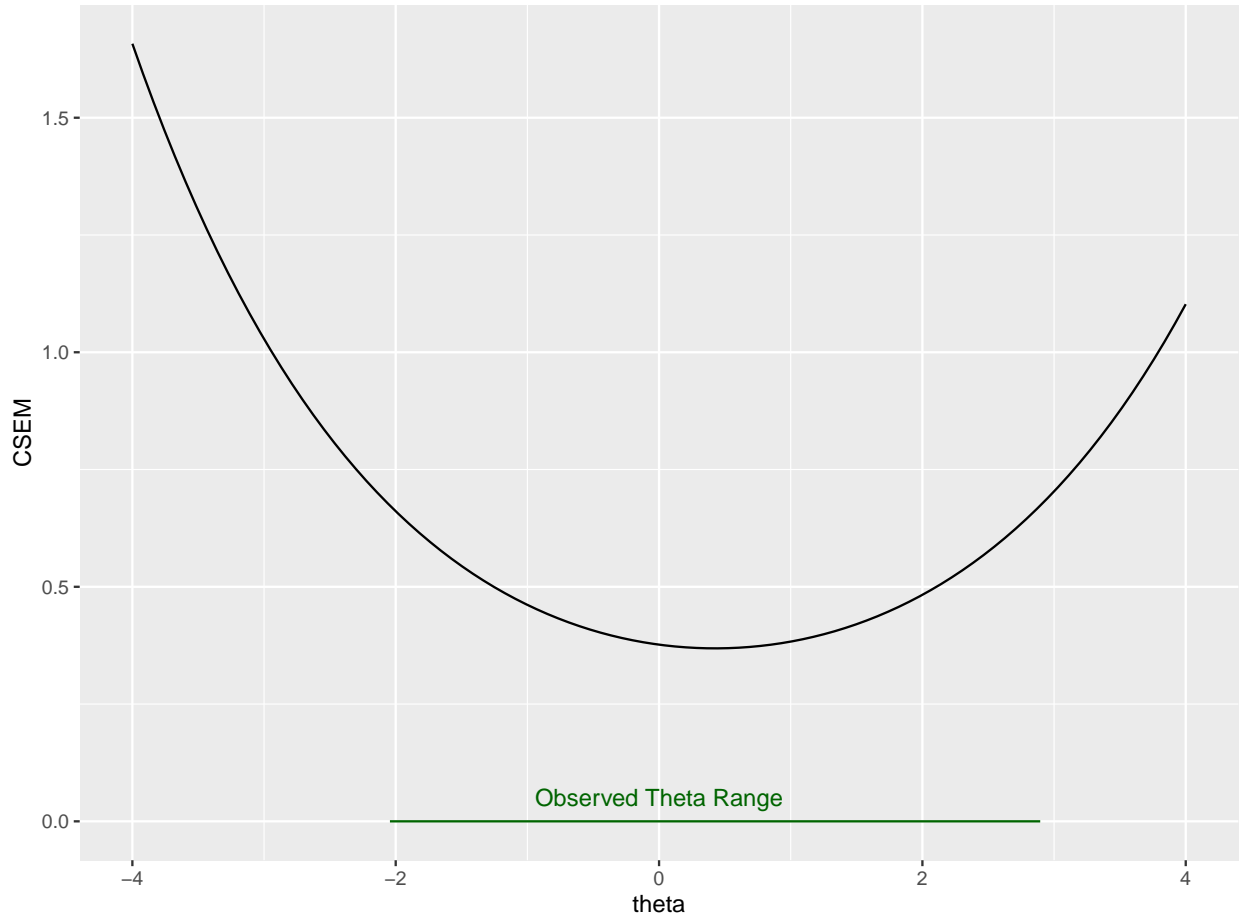


Figure 3: Math 05 Conditional Standard Error of Measure

Table 7: Math 05 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		504	0.59
Ethnic	Black	64	0.16
Ethnic	Hispanic	33	0.39
Ethnic	Other	25	0.62
Ethnic	White	374	0.63
Disadvantaged	No	377	0.57
Disadvantaged	Yes	127	0.64
LEP	No	476	0.60
LEP	Yes	28	0.11
Gender	Female	173	0.47
Gender	Male	331	0.63
Homeless	No	486	0.59
Homeless	Yes	18	0.69

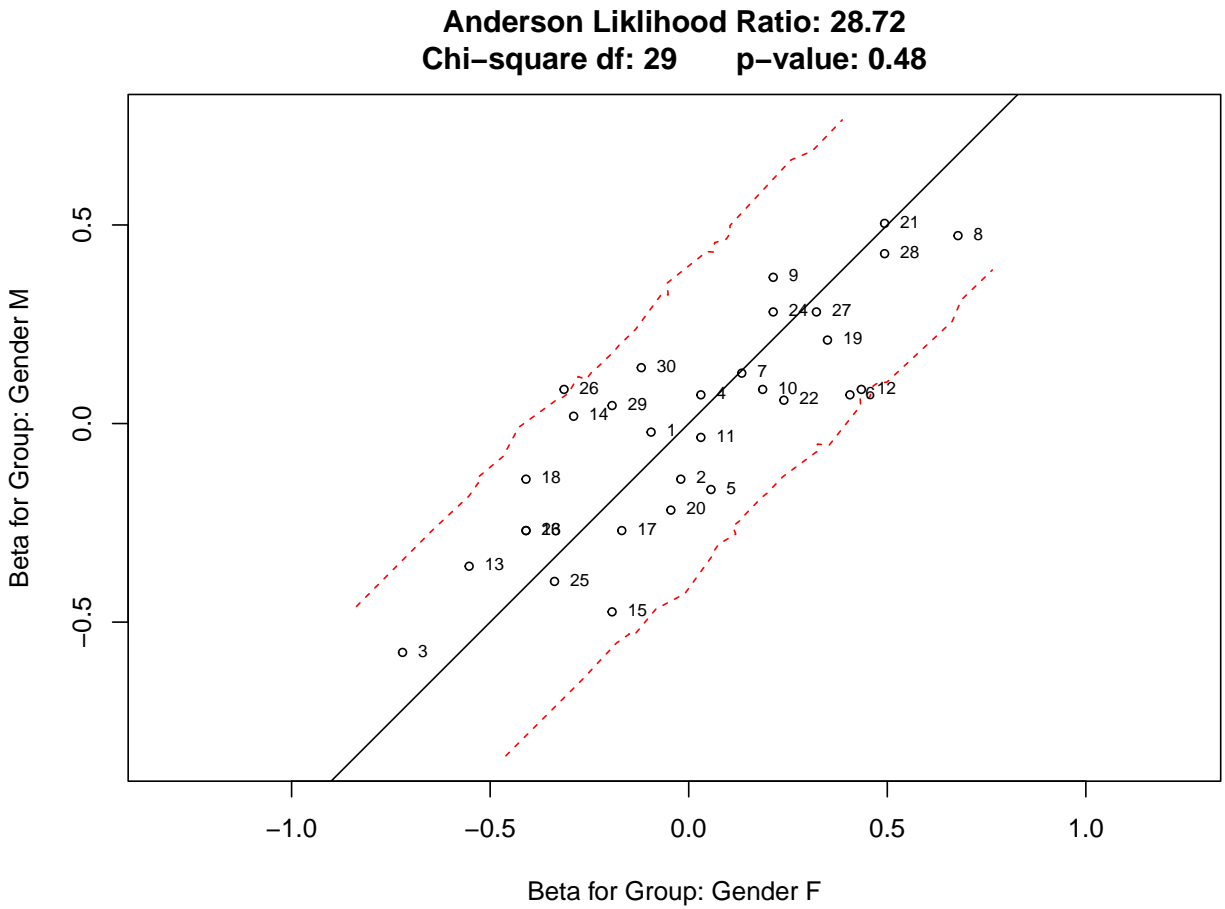


Figure 4: Math 05 Differential Item (DIF) and Test (DTF) Function for Gender

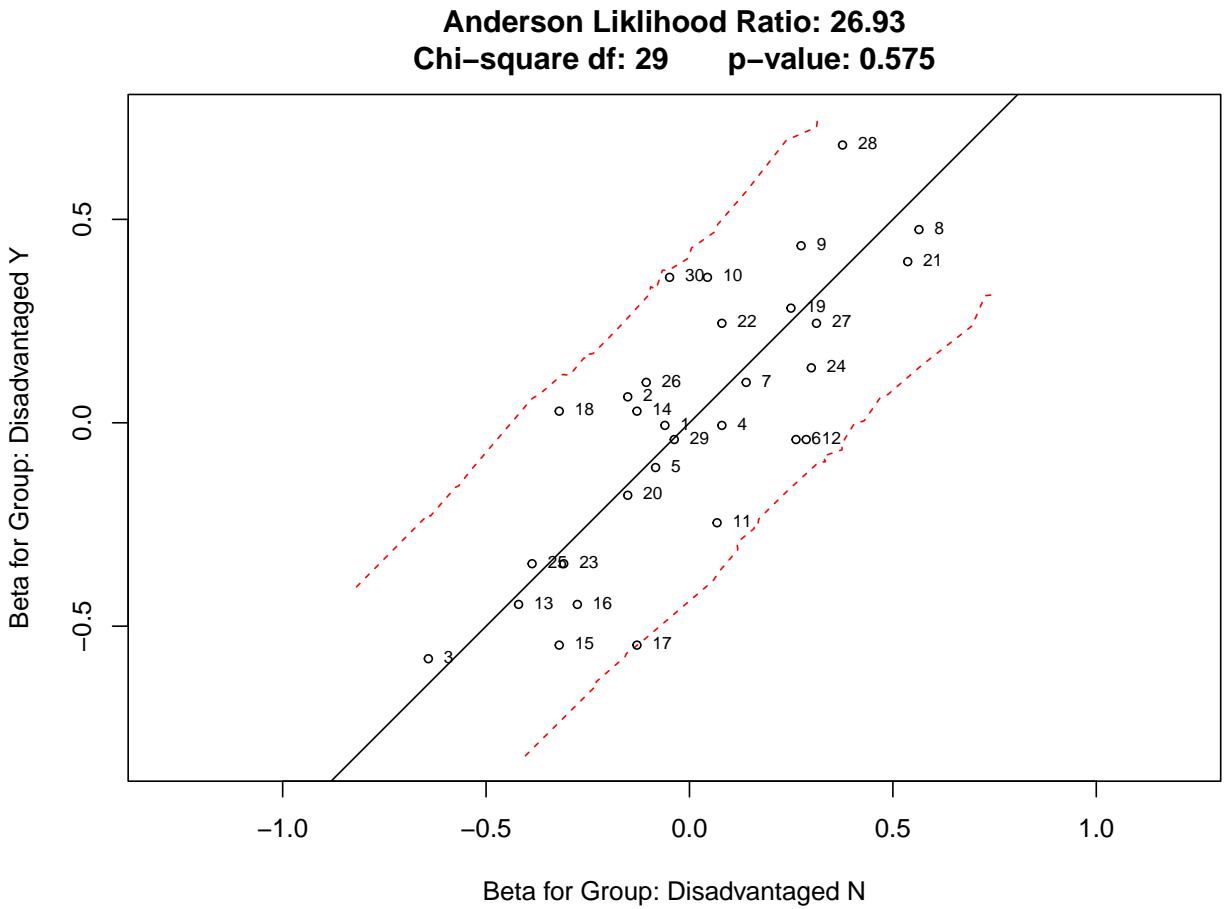


Figure 5: Math 05 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

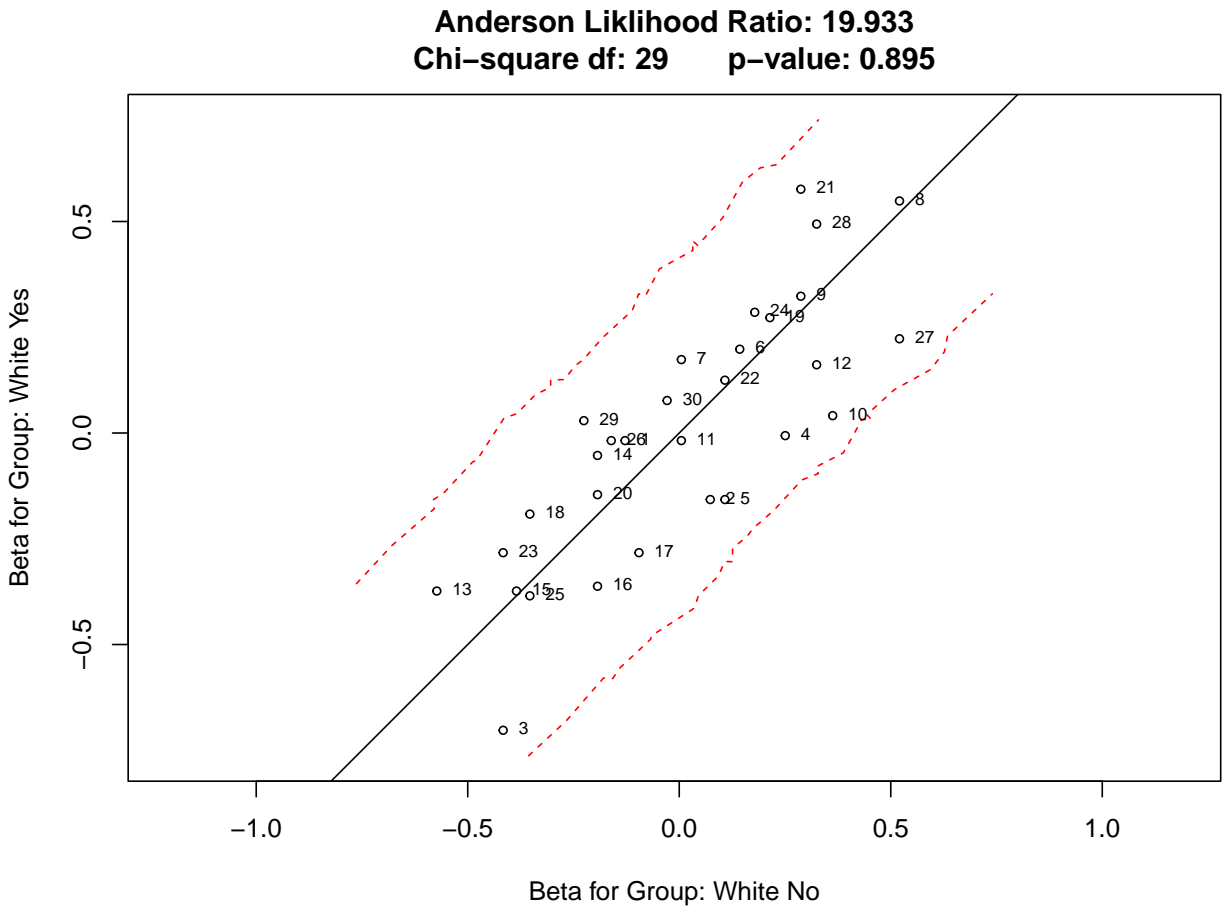


Figure 6: Math 05 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.7586	0.0958	0.8545
False	0.0295	0.1161	0.1455
Total	0.7881	0.2119	1.0000

Accuracy = 0.8545

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.6877	0.1004
j	0.1004	0.1115

Proportion of Consistent Classifications = 0.7992
Cohen's Kappa = 0.3989

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0721	0.0731	0.8146	0.0403	0.6413	0.9177	0.8866	0.0651	0.0211	0.0450
Apprentice	0.5733	0.0697	0.1680	0.1890	0.7520	0.7068	0.7413	0.4670	0.4134	0.0913
Proficient	0.0922	0.1160	0.7588	0.0330	0.7368	0.8674	0.8511	0.1054	0.0434	0.0648
Distinguished	0.0001	0.0036	0.9963	0.0000	0.7001	0.9964	0.9963	0.0005	0.0000	0.0005

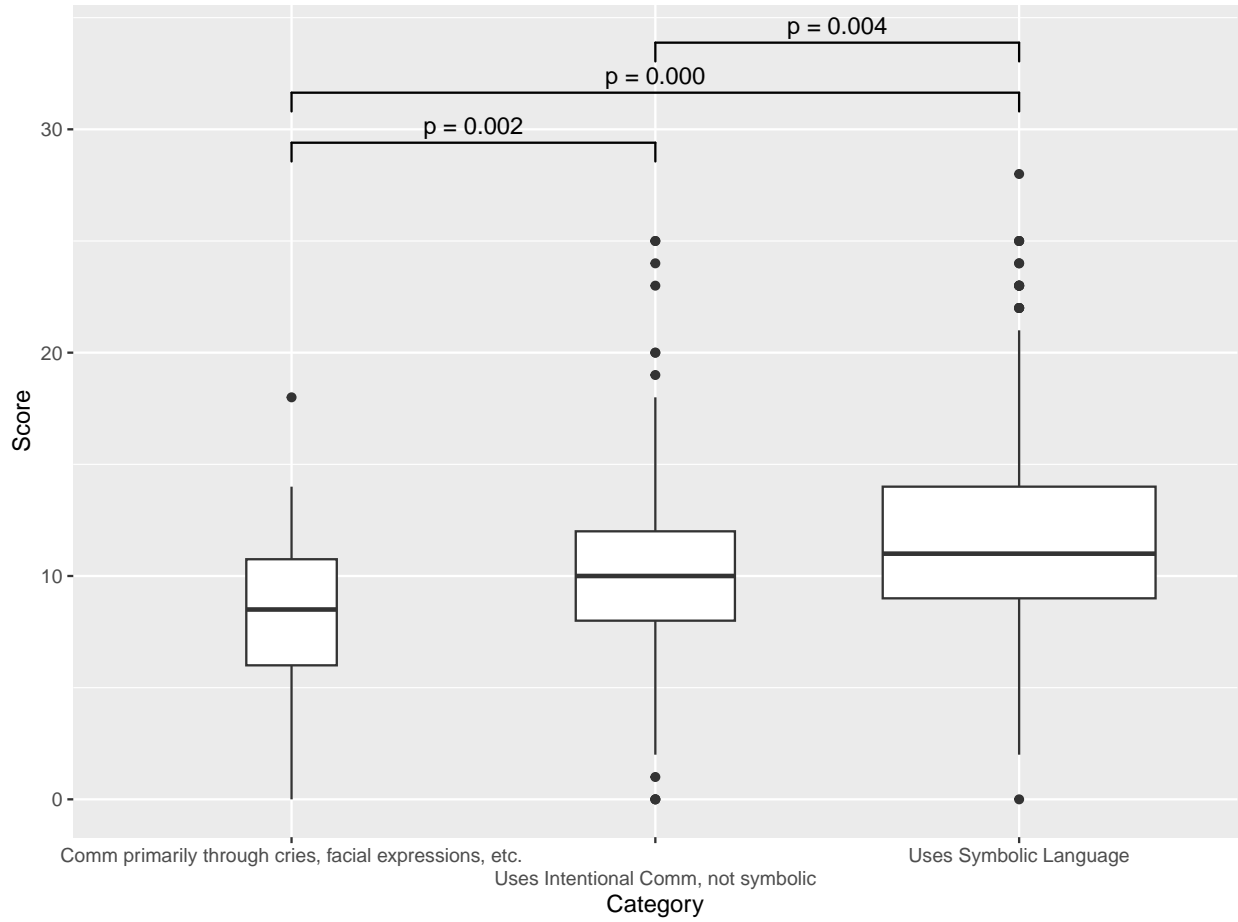


Figure 7: Math 05 Learner Characteristic: Expressive Communication

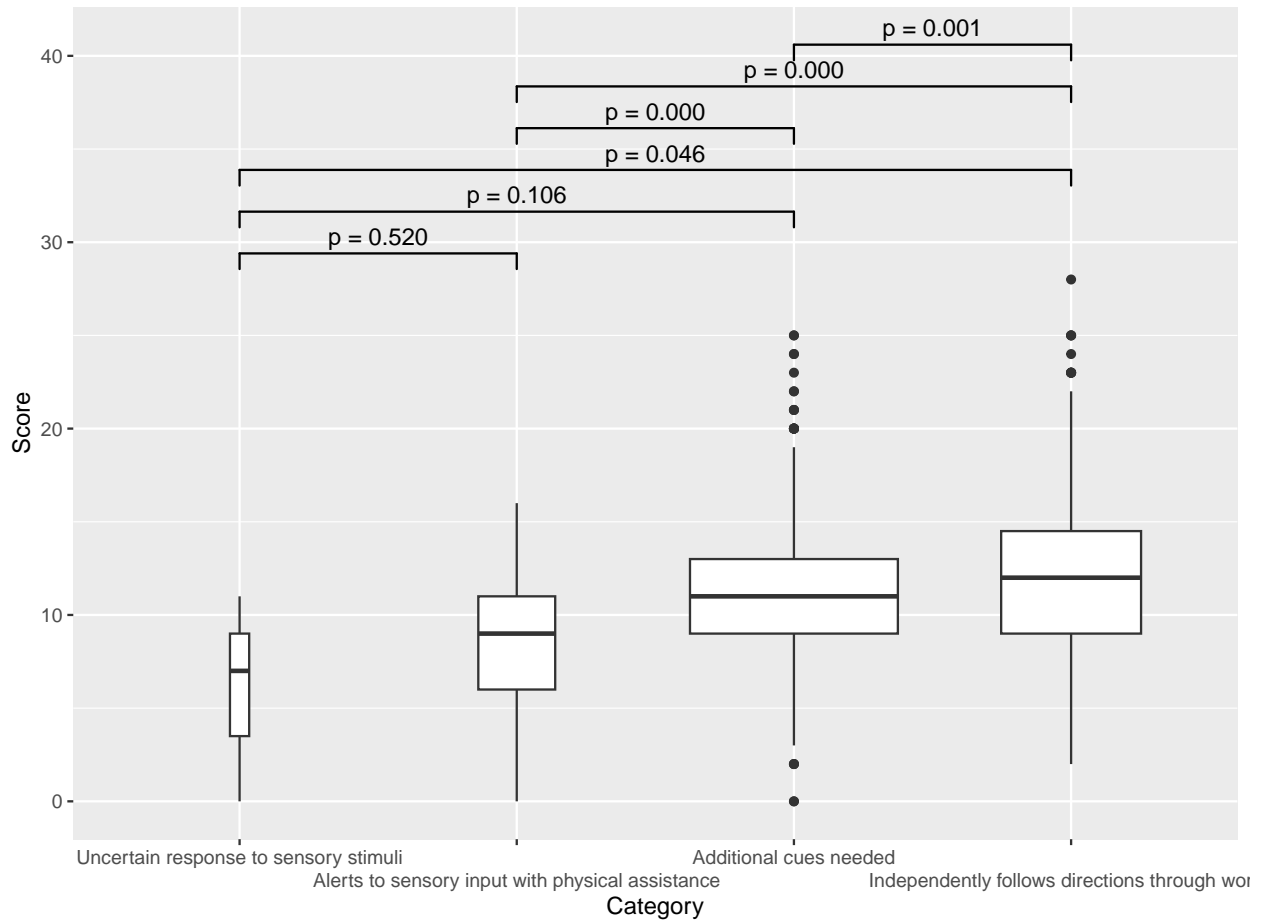


Figure 8: Math 05 Learner Characteristic: Receptive Language

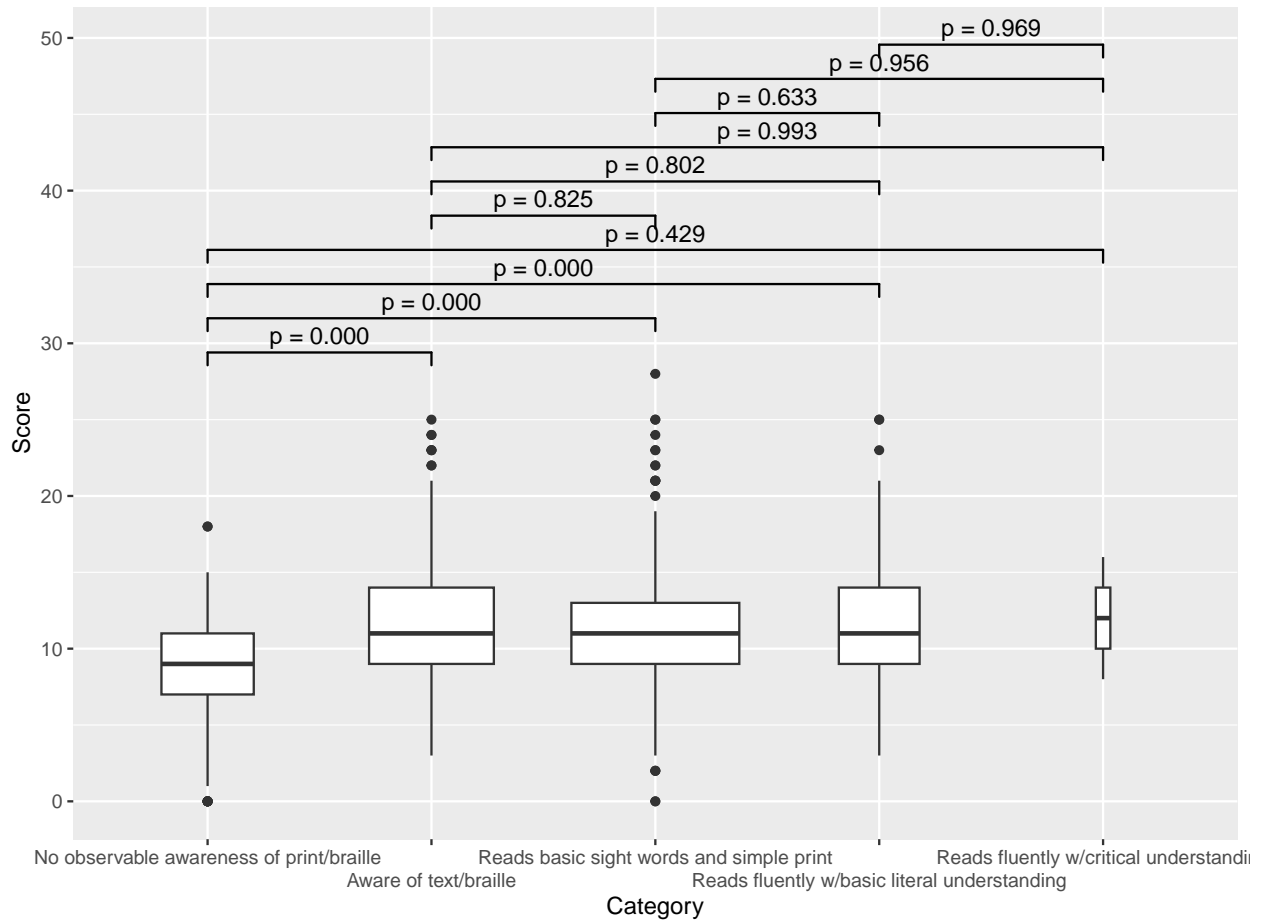


Figure 9: Math 05 Learner Characteristic: Reading

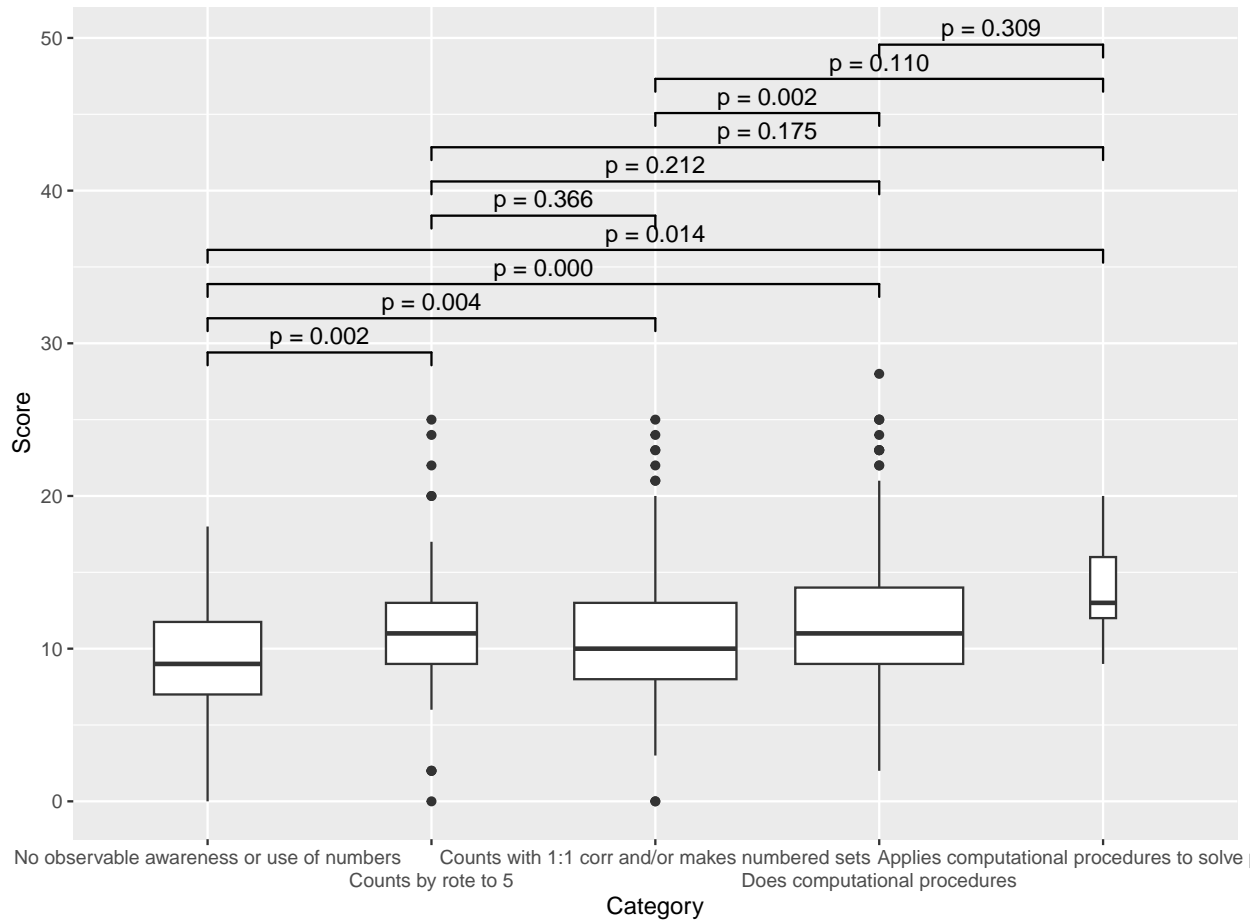


Figure 10: Math 05 Learner Characteristic: Mathematics

Math Grade 4

Table 1: Math 04 Item Statistics

	Item	n	mean	sd	se
	A1	1 474	0.420	0.494	0.023
	A2	2 474	0.253	0.435	0.020
	A3	3 474	0.502	0.501	0.023
	A4	4 474	0.527	0.500	0.023
	A5	5 474	0.357	0.479	0.022
	B1	6 474	0.319	0.466	0.021
	B2	7 474	0.506	0.500	0.023
	B3	8 474	0.354	0.479	0.022
	B4	9 474	0.464	0.499	0.023
	B5	10 474	0.451	0.498	0.023
	C1	11 474	0.424	0.495	0.023
	C2	12 474	0.253	0.435	0.020
	C3	13 474	0.477	0.500	0.023
	C4	14 474	0.591	0.492	0.023
	C5	15 474	0.241	0.428	0.020
	D1	16 474	0.517	0.500	0.023
	D2	17 474	0.473	0.500	0.023
	D3	18 474	0.276	0.448	0.021
	D4	19 474	0.329	0.470	0.022
	D5	20 474	0.477	0.500	0.023
	E1	21 474	0.238	0.427	0.020
	E2	22 474	0.359	0.480	0.022
	E3	23 474	0.451	0.498	0.023
	E4	24 474	0.414	0.493	0.023
	E5	25 474	0.323	0.468	0.021
	F1	26 474	0.373	0.484	0.022
	F2	27 474	0.361	0.481	0.022
	F3	28 474	0.487	0.500	0.023
	F4	29 474	0.276	0.448	0.021
	F5	30 474	0.534	0.499	0.023

Chronbach's Alpha: 0.6022

Table 2: Math 04 Raw Score Frequencies

Score	freq	pct	pct_cum
2	1	0.211	0.211
3	1	0.211	0.422
4	1	0.211	0.633
5	8	1.688	2.321
6	13	2.743	5.063
7	23	4.852	9.916
8	35	7.384	17.300
9	40	8.439	25.738
10	59	12.447	38.186
11	65	13.713	51.899
12	52	10.970	62.869
13	43	9.072	71.941
14	32	6.751	78.692
15	24	5.063	83.755
16	15	3.165	86.920
17	14	2.954	89.873
18	8	1.688	91.561
19	7	1.477	93.038
20	8	1.688	94.726
21	10	2.110	96.835
22	5	1.055	97.890
23	5	1.055	98.945
24	2	0.422	99.367
25	1	0.211	99.578
27	2	0.422	100.000

Table 3: Math 04 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.016	0.000	0.000	0.008	0.008	0.000
A1		a	112	0.236	-0.307	-0.244	0.352	0.242	0.220	0.109
A1	*	b	199	0.420	0.237	0.455	0.238	0.347	0.449	0.693
A1		c	161	0.340	-0.283	-0.212	0.410	0.403	0.323	0.198
A2			4	0.008	-0.040	0.010	0.000	0.024	0.000	0.010
A2	*	a	120	0.253	0.195	0.280	0.107	0.226	0.315	0.386
A2		b	97	0.205	-0.220	-0.125	0.254	0.250	0.173	0.129
A2		c	253	0.534	-0.270	-0.164	0.639	0.500	0.512	0.475
A3			1	0.002	-0.034	0.000	0.000	0.008	0.000	0.000
A3	*	a	238	0.502	0.222	0.415	0.328	0.419	0.559	0.743
A3		b	98	0.207	-0.261	-0.186	0.344	0.169	0.150	0.158
A3		c	137	0.289	-0.322	-0.229	0.328	0.403	0.291	0.099
A4			2	0.004	-0.120	-0.016	0.016	0.000	0.000	0.000
A4		a	145	0.306	-0.365	-0.348	0.467	0.331	0.276	0.119
A4		b	77	0.162	-0.213	-0.137	0.246	0.121	0.165	0.109
A4	*	c	250	0.527	0.236	0.502	0.270	0.548	0.559	0.772
A5			5	0.011	-0.006	0.012	0.008	0.016	0.000	0.020
A5		a	147	0.310	-0.230	-0.164	0.402	0.306	0.283	0.238
A5	*	b	169	0.357	0.209	0.404	0.180	0.290	0.409	0.584
A5		c	153	0.323	-0.317	-0.251	0.410	0.387	0.307	0.158
B1			5	0.011	-0.142	-0.033	0.033	0.008	0.000	0.000
B1	*	a	151	0.319	0.243	0.473	0.131	0.290	0.299	0.604
B1		b	98	0.207	-0.165	-0.068	0.246	0.218	0.181	0.178
B1		c	220	0.464	-0.357	-0.372	0.590	0.484	0.520	0.218
B2			7	0.015	-0.125	-0.041	0.041	0.008	0.008	0.000
B2		a	112	0.236	-0.259	-0.204	0.352	0.250	0.181	0.149
B2		b	115	0.243	-0.212	-0.105	0.303	0.242	0.220	0.198
B2	*	c	240	0.506	0.134	0.350	0.303	0.500	0.591	0.653
B3			5	0.011	-0.076	-0.025	0.025	0.008	0.008	0.000
B3		a	157	0.331	-0.166	-0.083	0.361	0.355	0.323	0.277
B3	*	b	168	0.354	0.132	0.338	0.246	0.266	0.362	0.584
B3		c	144	0.304	-0.297	-0.230	0.369	0.371	0.307	0.139
B4			1	0.002	-0.091	-0.008	0.008	0.000	0.000	0.000
B4	*	a	220	0.464	0.105	0.250	0.344	0.427	0.512	0.594
B4		b	107	0.226	-0.231	-0.140	0.328	0.194	0.189	0.188
B4		c	146	0.308	-0.225	-0.102	0.320	0.379	0.299	0.218
B5			3	0.006	-0.079	-0.025	0.025	0.000	0.000	0.000
B5		a	150	0.316	-0.239	-0.164	0.451	0.258	0.268	0.287
B5		b	107	0.226	-0.189	-0.107	0.246	0.266	0.236	0.139
B5	*	c	214	0.451	0.085	0.296	0.279	0.476	0.496	0.574
C1			2	0.004	-0.088	-0.008	0.008	0.008	0.000	0.000
C1		a	190	0.401	-0.320	-0.302	0.549	0.379	0.402	0.248
C1		b	81	0.171	-0.190	-0.083	0.221	0.177	0.142	0.139
C1	*	c	201	0.424	0.177	0.393	0.221	0.435	0.457	0.614
C2			2	0.004	-0.080	-0.008	0.008	0.008	0.000	0.000
C2		a	261	0.551	-0.273	-0.220	0.656	0.492	0.598	0.436
C2	*	b	120	0.253	0.162	0.308	0.148	0.202	0.244	0.455
C2		c	91	0.192	-0.178	-0.080	0.189	0.298	0.157	0.109
C3			1	0.002	-0.057	-0.008	0.008	0.000	0.000	0.000
C3		a	160	0.338	-0.222	-0.149	0.377	0.347	0.378	0.228

Table 3: Math 04 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	87	0.184	-0.285	-0.152	0.270	0.226	0.110	0.119
C3	*	c	226	0.477	0.141	0.309	0.344	0.427	0.512	0.653
C4			2	0.004	-0.120	-0.016	0.016	0.000	0.000	0.000
C4	*	a	280	0.591	0.090	0.188	0.525	0.476	0.669	0.713
C4		b	89	0.188	-0.188	-0.053	0.221	0.218	0.142	0.168
C4		c	103	0.217	-0.240	-0.119	0.238	0.306	0.189	0.119
C5			1	0.002	-0.079	-0.008	0.008	0.000	0.000	0.000
C5		a	208	0.439	-0.350	-0.338	0.566	0.419	0.504	0.228
C5	*	b	114	0.241	0.152	0.313	0.172	0.177	0.173	0.485
C5		c	151	0.319	-0.083	0.033	0.254	0.403	0.323	0.287
D1			2	0.004	-0.048	-0.008	0.008	0.008	0.000	0.000
D1	*	a	245	0.517	0.193	0.431	0.361	0.403	0.559	0.792
D1		b	97	0.205	-0.281	-0.237	0.287	0.258	0.197	0.050
D1		c	130	0.274	-0.274	-0.186	0.344	0.331	0.244	0.158
D2			2	0.004	-0.088	-0.016	0.016	0.000	0.000	0.000
D2		a	118	0.249	-0.273	-0.165	0.303	0.290	0.244	0.139
D2		b	130	0.274	-0.241	-0.146	0.344	0.290	0.252	0.198
D2	*	c	224	0.473	0.163	0.327	0.336	0.419	0.504	0.663
D3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D3		a	131	0.276	-0.247	-0.158	0.336	0.258	0.315	0.178
D3	*	b	131	0.276	0.057	0.204	0.221	0.242	0.244	0.426
D3		c	212	0.447	-0.143	-0.047	0.443	0.500	0.441	0.396
D4			3	0.006	-0.098	-0.016	0.016	0.008	0.000	0.000
D4	*	a	156	0.329	0.120	0.317	0.238	0.290	0.276	0.554
D4		b	131	0.276	-0.229	-0.148	0.336	0.266	0.299	0.188
D4		c	184	0.388	-0.214	-0.152	0.410	0.435	0.425	0.257
D5			3	0.006	-0.085	-0.016	0.016	0.008	0.000	0.000
D5		a	121	0.255	-0.197	-0.071	0.279	0.290	0.236	0.208
D5		b	124	0.262	-0.293	-0.215	0.393	0.250	0.213	0.178
D5	*	c	226	0.477	0.142	0.302	0.311	0.452	0.551	0.614
E1			2	0.004	-0.064	-0.008	0.008	0.008	0.000	0.000
E1		a	186	0.392	-0.157	-0.037	0.393	0.395	0.417	0.356
E1	*	b	113	0.238	0.139	0.270	0.156	0.202	0.205	0.426
E1		c	173	0.365	-0.279	-0.225	0.443	0.395	0.378	0.218
E2			1	0.002	-0.045	-0.008	0.008	0.000	0.000	0.000
E2	*	a	170	0.359	0.227	0.419	0.205	0.258	0.394	0.624
E2		b	129	0.272	-0.285	-0.245	0.393	0.290	0.236	0.149
E2		c	174	0.367	-0.276	-0.166	0.393	0.452	0.370	0.228
E3			2	0.004	-0.032	0.002	0.008	0.000	0.000	0.010
E3		a	136	0.287	-0.315	-0.243	0.402	0.323	0.244	0.158
E3		b	122	0.257	-0.238	-0.186	0.344	0.274	0.236	0.158
E3	*	c	214	0.451	0.199	0.427	0.246	0.403	0.520	0.673
E4			2	0.004	-0.032	0.000	0.000	0.016	0.000	0.000
E4	*	a	196	0.414	0.136	0.346	0.238	0.363	0.496	0.584
E4		b	134	0.283	-0.363	-0.323	0.492	0.274	0.181	0.168
E4		c	142	0.300	-0.122	-0.023	0.270	0.347	0.323	0.248
E5			5	0.011	-0.071	-0.006	0.016	0.016	0.000	0.010
E5	*	a	153	0.323	0.287	0.475	0.139	0.250	0.339	0.614
E5		b	194	0.409	-0.328	-0.316	0.574	0.347	0.433	0.257
E5		c	122	0.257	-0.263	-0.152	0.270	0.387	0.228	0.119

Table 3: Math 04 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			3	0.006	-0.092	-0.025	0.025	0.000	0.000	0.000
F1		a	126	0.266	-0.120	0.086	0.221	0.306	0.236	0.307
F1		b	168	0.354	-0.371	-0.364	0.533	0.355	0.331	0.168
F1	*	c	177	0.373	0.173	0.303	0.221	0.339	0.433	0.525
F2			1	0.002	-0.068	-0.008	0.008	0.000	0.000	0.000
F2	*	a	171	0.361	0.221	0.399	0.205	0.258	0.417	0.604
F2		b	151	0.319	-0.361	-0.333	0.492	0.339	0.260	0.158
F2		c	151	0.319	-0.189	-0.057	0.295	0.403	0.323	0.238
F3			3	0.006	-0.053	-0.008	0.008	0.016	0.000	0.000
F3		a	116	0.245	-0.256	-0.171	0.270	0.282	0.299	0.099
F3		b	124	0.262	-0.320	-0.281	0.410	0.250	0.236	0.129
F3	*	c	231	0.487	0.218	0.461	0.311	0.452	0.465	0.772
F4			1	0.002	-0.023	0.000	0.000	0.008	0.000	0.000
F4		a	114	0.241	-0.138	-0.061	0.279	0.202	0.260	0.218
F4	*	b	131	0.276	0.142	0.298	0.197	0.210	0.244	0.495
F4		c	228	0.481	-0.306	-0.237	0.525	0.581	0.496	0.287
F5			2	0.004	-0.024	0.000	0.000	0.008	0.008	0.000
F5		a	131	0.276	-0.232	-0.120	0.328	0.315	0.244	0.208
F5		b	88	0.186	-0.278	-0.208	0.287	0.202	0.157	0.079
F5	*	c	253	0.534	0.143	0.328	0.385	0.476	0.591	0.713

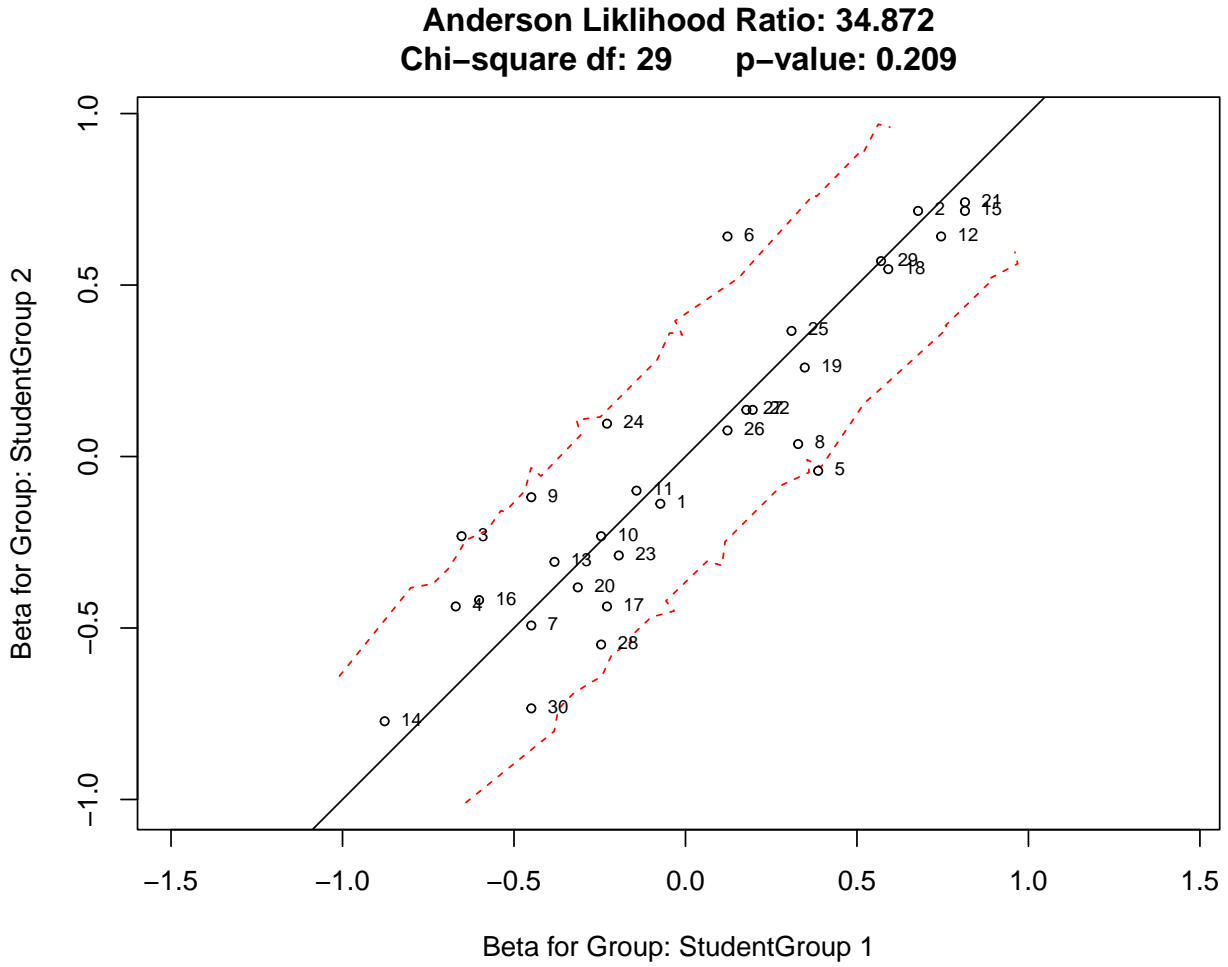


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Math 04 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	474	0.9389	0.9553
A2	474	0.9369	0.9696
A3	474	0.9456	0.9624
A4	474	0.9525	0.9510
A5	474	0.9648	0.9694
B1	474	0.9299	0.9483
B2	474	1.0123	1.0079
B3	474	1.0162	1.0136
B4	474	1.0307	1.0303
B5	474	1.0511	1.0394
C1	474	0.9804	0.9888
C2	474	1.0209	0.9830
C3	474	1.0027	1.0079
C4	474	1.0224	1.0323
C5	474	1.0294	0.9831
D1	474	0.9853	0.9769
D2	474	0.9875	0.9970
D3	474	1.1010	1.0490
D4	474	1.0262	1.0182
D5	474	1.0020	1.0047
E1	474	1.0010	0.9946
E2	474	0.9520	0.9584
E3	474	0.9696	0.9751
E4	474	1.0217	1.0123
E5	474	0.8995	0.9254
F1	474	0.9808	0.9906
F2	474	0.9508	0.9628
F3	474	0.9554	0.9657
F4	474	1.0211	0.9964
F5	474	1.0203	1.0024

Table 5: Math 04 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9903	0.0428
Infit	Infit	0.9891	0.0296

Table 6: Math 04 Raw to Theta Table

Raw Score	theta	SE
2	-2.0792	0.6763
3	-1.7008	0.5831
4	-1.4062	0.5249
5	-1.1608	0.4849
6	-0.9474	0.4558
7	-0.7563	0.4339
8	-0.5812	0.4171
9	-0.4181	0.4041
10	-0.2639	0.3940
11	-0.1164	0.3864
12	0.0263	0.3808
13	0.1654	0.3770
14	0.3024	0.3747
15	0.4384	0.3740
16	0.5744	0.3748
17	0.7115	0.3772
18	0.8509	0.3811
19	0.9939	0.3868
20	1.1419	0.3946
21	1.2966	0.4047
22	1.4604	0.4178
23	1.6361	0.4347
24	1.8280	0.4566
25	2.0423	0.4858
27	2.5842	0.5841

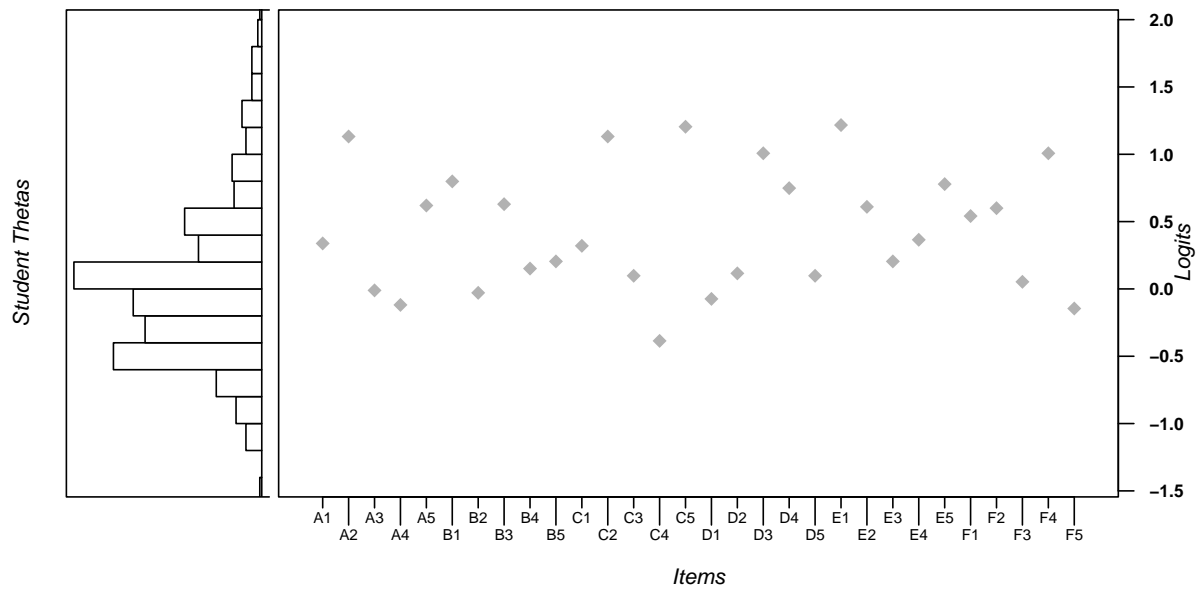


Figure 2: Student Ability - Item Difficulty Wright Map

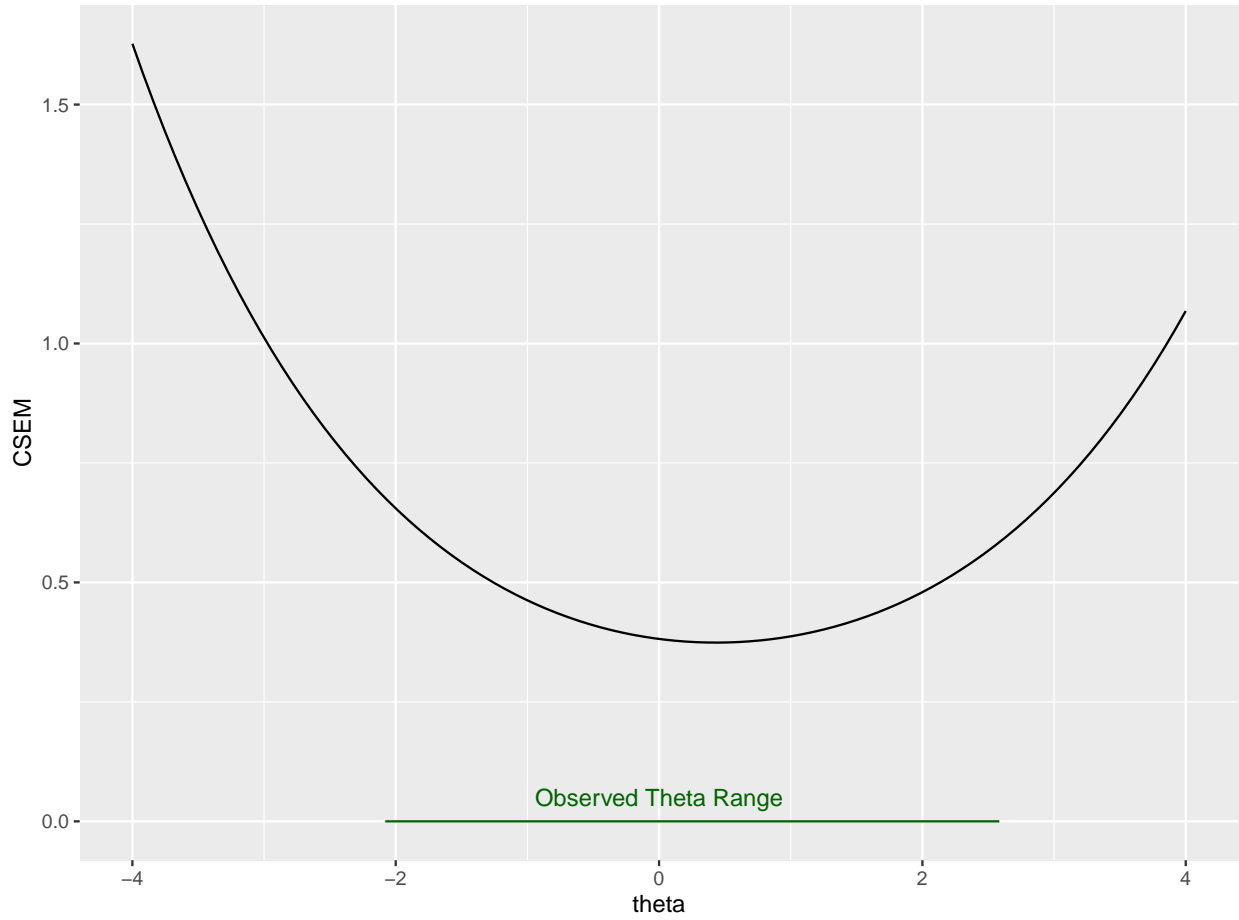


Figure 3: Math 04 Conditional Standard Error of Measure

Table 7: Math 04 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		474	0.58
Ethnic		11	0.05
Ethnic	Black	53	0.48
Ethnic	Hispanic	32	0.57
Ethnic	Other	22	0.70
Ethnic	White	354	0.58
Disadvantaged	No	368	0.59
Disadvantaged	Yes	106	0.54
LEP	No	446	0.58
LEP	Yes	28	0.42
Gender	Female	155	0.61
Gender	Male	319	0.56
Homeless	No	461	0.58
Homeless	Yes	13	-0.11

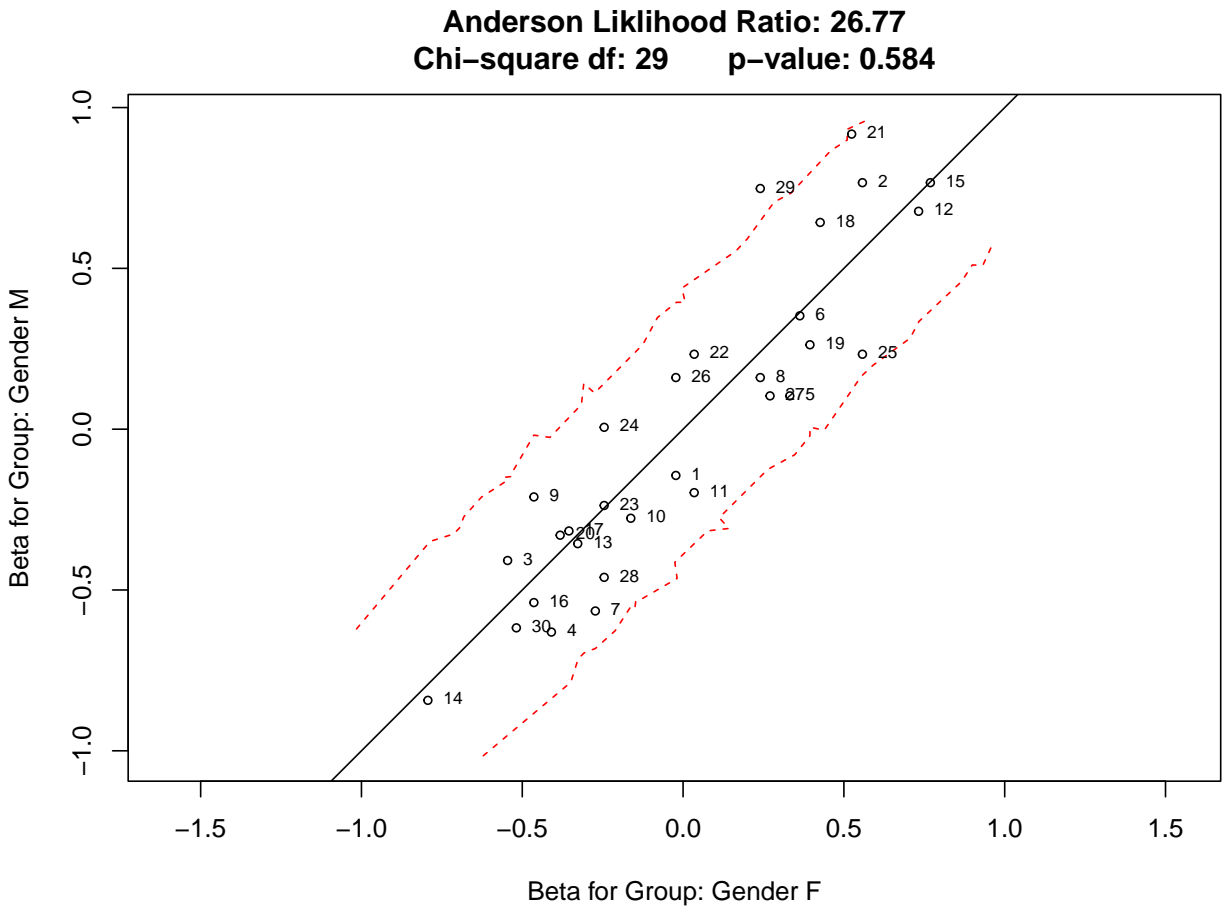


Figure 4: Math 04 Differential Item (DIF) and Test (DTF) Function for Gender

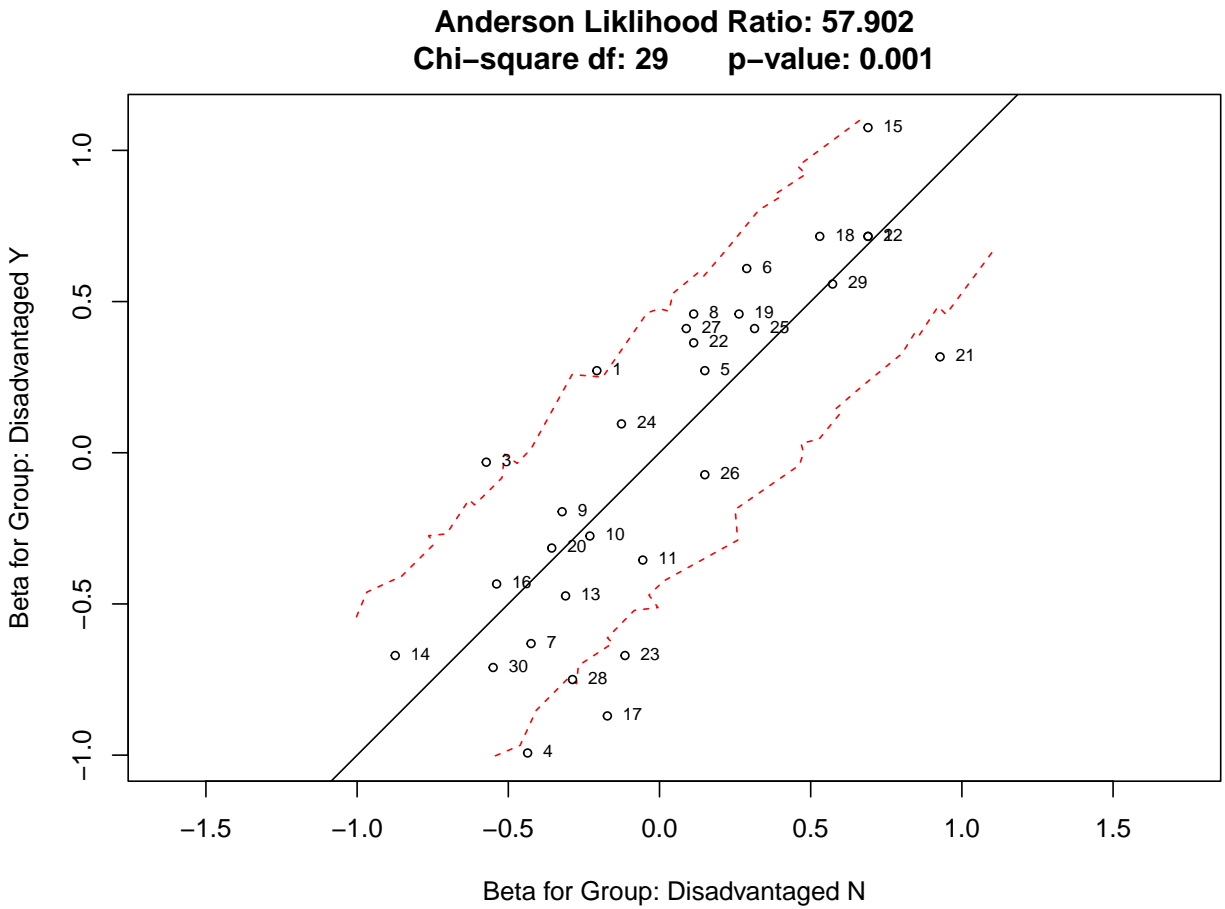


Figure 5: Math 04 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

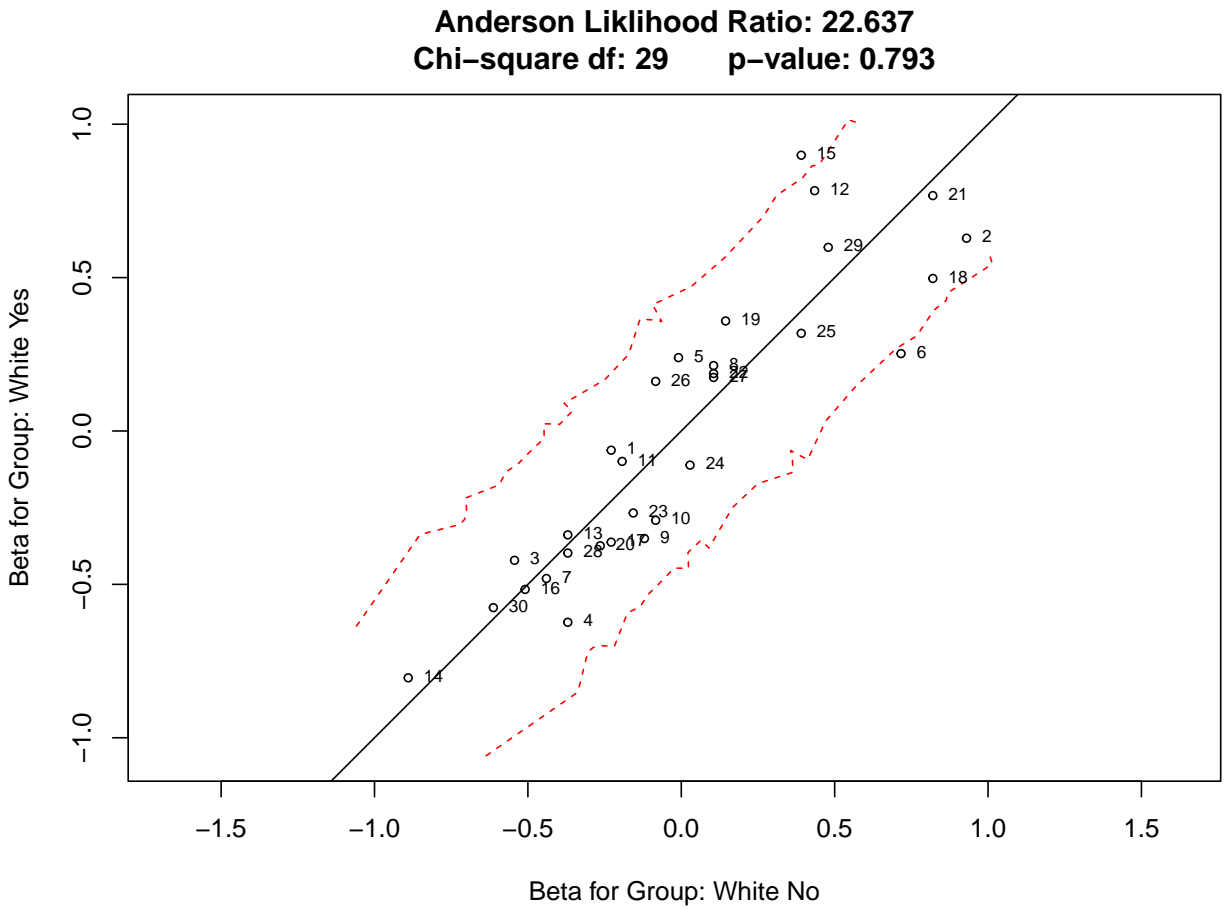


Figure 6: Math 04 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.7151	0.1276	0.8427
False	0.0502	0.1071	0.1573
Total	0.7653	0.2347	1.0000

Accuracy = 0.8427

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.6060	0.1593
j	0.0853	0.1494

Proportion of Consistent Classifications = 0.7554
Cohen's Kappa = 0.3862

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0595	0.0630	0.8366	0.0409	0.5928	0.9300	0.8961	0.0501	0.0150	0.0356
Apprentice	0.5518	0.0909	0.1873	0.1700	0.7645	0.6731	0.7391	0.4654	0.4132	0.0890
Proficient	0.1228	0.1071	0.7154	0.0547	0.6917	0.8698	0.8382	0.1172	0.0528	0.0679
Distinguished	0.0001	0.0047	0.9951	0.0001	0.6604	0.9953	0.9953	0.0007	0.0000	0.0006

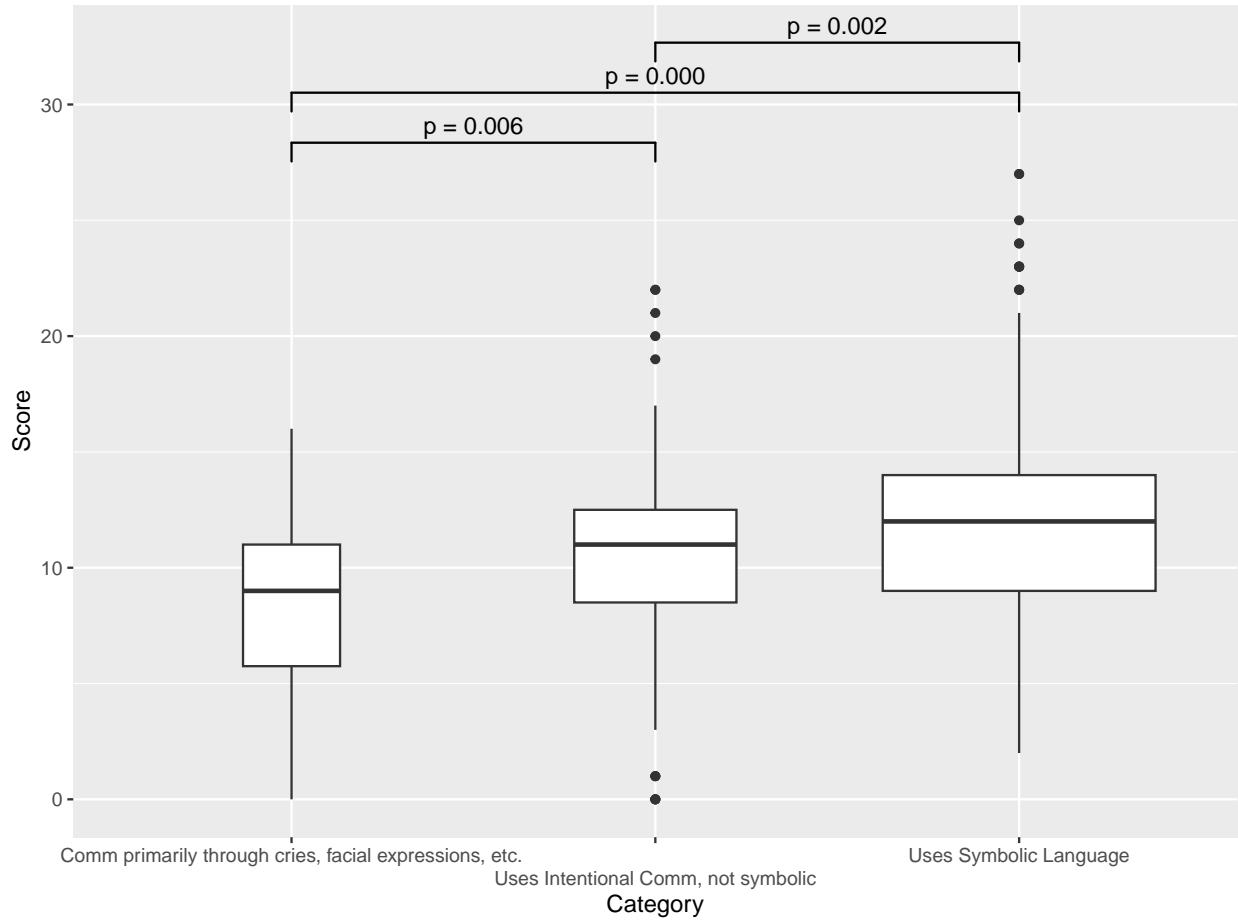


Figure 7: Math 04 Learner Characteristic: Expressive Communication

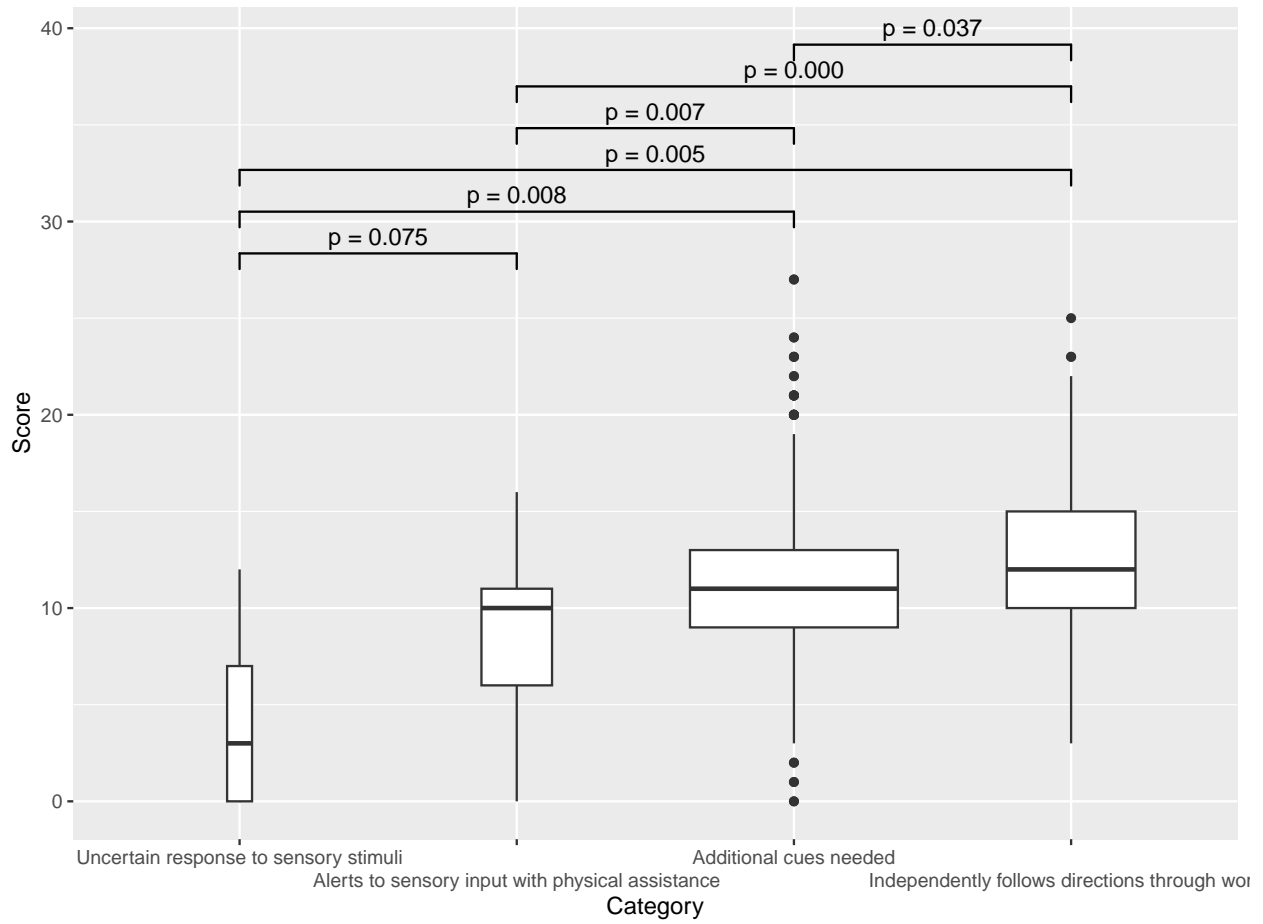


Figure 8: Math 04 Learner Characteristic: Receptive Language

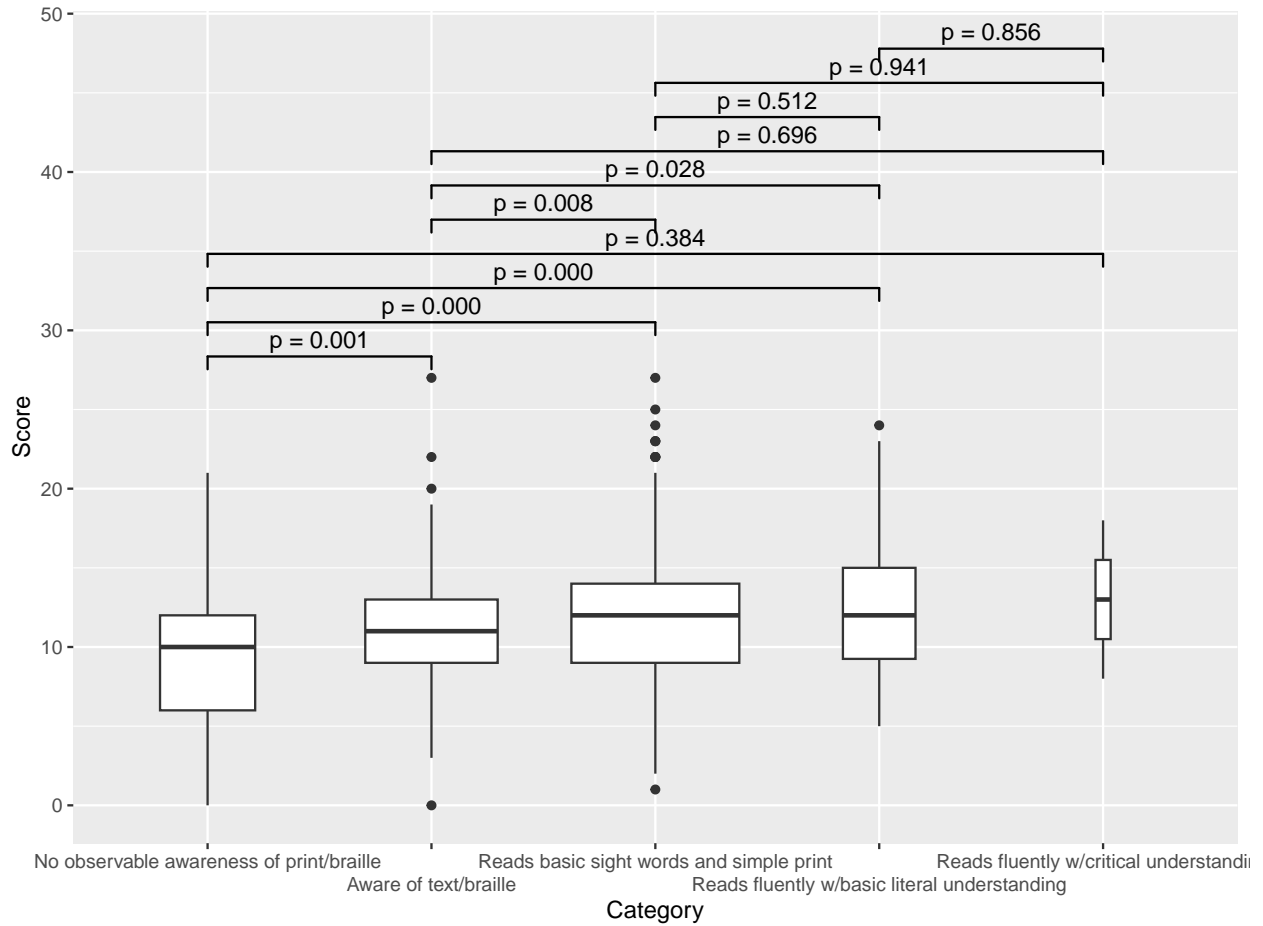


Figure 9: Math 04 Learner Characteristic: Reading

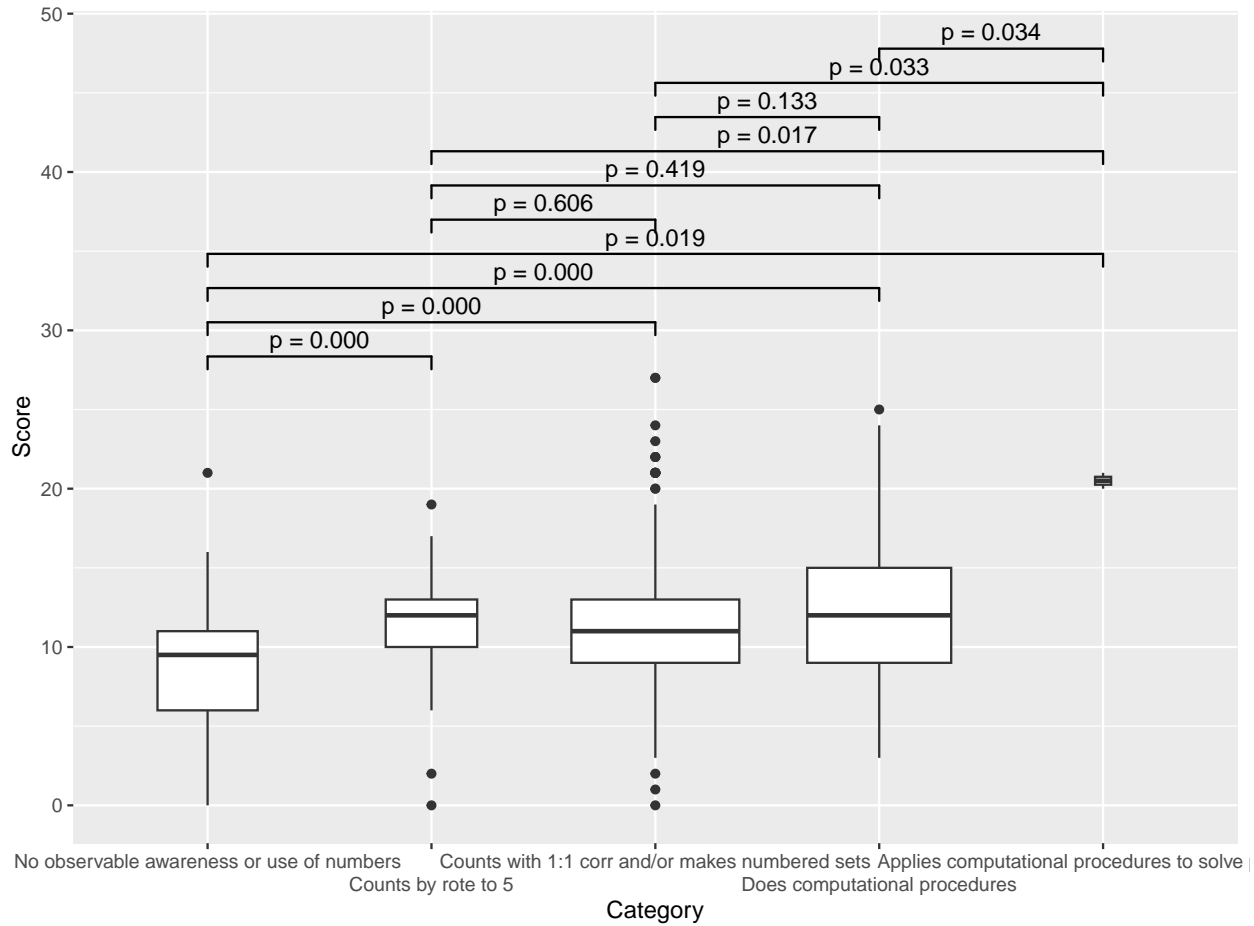


Figure 10: Math 04 Learner Characteristic: Mathematics

Math Grade 3

Table 1: Math 03 Item Statistics

	Item	n	mean	sd	se	
	A1	1	476	0.422	0.494	0.023
	A2	2	476	0.429	0.495	0.023
	A3	3	476	0.496	0.501	0.023
	A4	4	476	0.336	0.473	0.022
	A5	5	476	0.296	0.457	0.021
	B1	6	476	0.416	0.493	0.023
	B2	7	476	0.359	0.480	0.022
	B3	8	476	0.513	0.500	0.023
	B4	9	476	0.559	0.497	0.023
	B5	10	476	0.462	0.499	0.023
	C1	11	476	0.447	0.498	0.023
	C2	12	476	0.424	0.495	0.023
	C3	13	476	0.439	0.497	0.023
	C4	14	476	0.462	0.499	0.023
	C5	15	476	0.464	0.499	0.023
	D1	16	476	0.452	0.498	0.023
	D2	17	476	0.305	0.461	0.021
	D3	18	476	0.517	0.500	0.023
	D4	19	476	0.275	0.447	0.020
	D5	20	476	0.468	0.500	0.023
	E1	21	476	0.355	0.479	0.022
	E2	22	476	0.496	0.501	0.023
	E3	23	476	0.481	0.500	0.023
	E4	24	476	0.435	0.496	0.023
	E5	25	476	0.332	0.471	0.022
	F1	26	476	0.391	0.488	0.022
	F2	27	476	0.355	0.479	0.022
	F3	28	476	0.315	0.465	0.021
	F4	29	476	0.494	0.500	0.023
	F5	30	476	0.321	0.468	0.021

Chronbach's Alpha: 0.6473

Table 2: Math 03 Raw Score Frequencies

Score	freq	pct	pct_cum
3	1	0.210	0.210
4	2	0.420	0.630
5	8	1.681	2.311
6	6	1.261	3.571
7	19	3.992	7.563
8	40	8.403	15.966
9	44	9.244	25.210
10	49	10.294	35.504
11	66	13.866	49.370
12	44	9.244	58.613
13	40	8.403	67.017
14	30	6.303	73.319
15	22	4.622	77.941
16	25	5.252	83.193
17	15	3.151	86.345
18	13	2.731	89.076
19	9	1.891	90.966
20	12	2.521	93.487
21	12	2.521	96.008
22	5	1.050	97.059
23	6	1.261	98.319
24	2	0.420	98.739
25	1	0.210	98.950
26	3	0.630	99.580
27	1	0.210	99.790
30	1	0.210	100.000

Table 3: Math 03 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			4	0.008	-0.084	-0.025	0.025	0.006	0.000	0.000
A1	*	a	129	0.271	-0.228	-0.104	0.275	0.327	0.283	0.171
A1		b	201	0.422	0.293	0.487	0.208	0.352	0.511	0.695
A1		c	142	0.298	-0.378	-0.358	0.492	0.314	0.207	0.133
A2			3	0.006	-0.058	-0.017	0.017	0.000	0.011	0.000
A2	*	a	204	0.429	0.253	0.468	0.208	0.390	0.500	0.676
A2		b	112	0.235	-0.265	-0.177	0.292	0.283	0.217	0.114
A2		c	157	0.330	-0.312	-0.274	0.483	0.327	0.272	0.210
A3			2	0.004	-0.045	-0.008	0.008	0.000	0.011	0.000
A3		a	99	0.208	-0.157	-0.042	0.175	0.239	0.283	0.133
A3	*	b	139	0.292	-0.193	-0.106	0.325	0.314	0.293	0.219
A3		c	236	0.496	0.026	0.156	0.492	0.447	0.413	0.648
A4			5	0.011	-0.069	-0.008	0.008	0.025	0.000	0.000
A4	*	a	139	0.292	-0.146	-0.079	0.317	0.296	0.315	0.238
A4		b	160	0.336	0.201	0.402	0.150	0.277	0.435	0.552
A4		c	172	0.361	-0.347	-0.315	0.525	0.403	0.250	0.210
A5			4	0.008	-0.048	-0.015	0.025	0.000	0.000	0.010
A5	*	a	141	0.296	0.097	0.213	0.225	0.289	0.239	0.438
A5		b	146	0.307	-0.118	0.014	0.233	0.327	0.435	0.248
A5		c	185	0.389	-0.275	-0.212	0.517	0.384	0.326	0.305
B1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B1	*	a	116	0.244	-0.170	-0.064	0.217	0.270	0.337	0.152
B1		b	198	0.416	0.329	0.582	0.142	0.396	0.457	0.724
B1		c	162	0.340	-0.465	-0.518	0.642	0.333	0.207	0.124
B2			2	0.004	-0.052	-0.008	0.008	0.006	0.000	0.000
B2	*	a	171	0.359	0.183	0.374	0.217	0.308	0.370	0.590
B2		b	96	0.202	-0.069	0.035	0.175	0.189	0.250	0.210
B2		c	207	0.435	-0.392	-0.400	0.600	0.497	0.380	0.200
B3			7	0.015	-0.122	-0.032	0.042	0.006	0.000	0.010
B3	*	a	93	0.195	-0.187	-0.101	0.225	0.245	0.152	0.124
B3		b	244	0.513	0.259	0.505	0.267	0.453	0.641	0.771
B3		c	132	0.277	-0.383	-0.371	0.467	0.296	0.207	0.095
B4			1	0.002	-0.068	-0.008	0.008	0.000	0.000	0.000
B4	*	a	115	0.242	-0.216	-0.137	0.308	0.270	0.185	0.171
B4		b	94	0.197	-0.137	-0.043	0.167	0.233	0.261	0.124
B4		c	266	0.559	0.034	0.188	0.517	0.497	0.554	0.705
B5			3	0.006	-0.058	-0.017	0.017	0.000	0.011	0.000
B5	*	a	220	0.462	0.295	0.500	0.233	0.377	0.598	0.733
B5		b	97	0.204	-0.266	-0.174	0.250	0.252	0.207	0.076
B5		c	156	0.328	-0.357	-0.310	0.500	0.371	0.185	0.190
C1			1	0.002	-0.068	-0.008	0.008	0.000	0.000	0.000
C1	*	a	213	0.447	0.366	0.644	0.175	0.346	0.554	0.819
C1		b	115	0.242	-0.262	-0.200	0.267	0.308	0.293	0.067
C1		c	147	0.309	-0.424	-0.436	0.550	0.346	0.152	0.114
C2			1	0.002	-0.016	0.000	0.000	0.006	0.000	0.000
C2	*	a	87	0.183	-0.197	-0.138	0.233	0.164	0.250	0.095
C2		b	202	0.424	0.343	0.595	0.167	0.371	0.467	0.762
C2		c	186	0.391	-0.450	-0.457	0.600	0.459	0.283	0.143
C3			5	0.011	-0.116	-0.025	0.025	0.013	0.000	0.000
C3	*	a	209	0.439	0.361	0.624	0.167	0.371	0.511	0.790

Table 3: Math 03 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	109	0.229	-0.240	-0.187	0.292	0.233	0.283	0.105
C3		c	153	0.321	-0.423	-0.412	0.517	0.384	0.207	0.105
C4			3	0.006	-0.015	-0.007	0.017	0.000	0.000	0.010
C4		a	169	0.355	-0.187	-0.100	0.367	0.365	0.424	0.267
C4		b	84	0.176	-0.212	-0.132	0.208	0.201	0.207	0.076
C4	*	c	220	0.462	0.061	0.239	0.408	0.434	0.370	0.648
C5			3	0.006	-0.058	-0.008	0.008	0.013	0.000	0.000
C5		a	95	0.200	-0.177	-0.115	0.258	0.170	0.239	0.143
C5	*	b	221	0.464	0.292	0.550	0.183	0.421	0.598	0.733
C5		c	157	0.330	-0.427	-0.426	0.550	0.396	0.163	0.124
D1			7	0.015	-0.094	-0.017	0.017	0.031	0.000	0.000
D1		a	97	0.204	-0.238	-0.158	0.292	0.226	0.130	0.133
D1	*	b	215	0.452	0.331	0.537	0.225	0.321	0.620	0.762
D1		c	157	0.330	-0.403	-0.362	0.467	0.421	0.250	0.105
D2			6	0.013	-0.078	-0.008	0.008	0.031	0.000	0.000
D2	*	a	145	0.305	0.112	0.249	0.208	0.302	0.261	0.457
D2		b	179	0.376	-0.098	0.056	0.325	0.371	0.446	0.381
D2		c	146	0.307	-0.312	-0.296	0.458	0.296	0.293	0.162
D3			3	0.006	-0.076	-0.008	0.008	0.013	0.000	0.000
D3		a	135	0.284	-0.307	-0.288	0.383	0.302	0.337	0.095
D3		b	92	0.193	-0.158	-0.026	0.217	0.208	0.141	0.190
D3	*	c	246	0.517	0.144	0.323	0.392	0.478	0.522	0.714
D4			2	0.004	0.022	0.010	0.000	0.006	0.000	0.010
D4		a	138	0.290	-0.206	-0.130	0.358	0.277	0.293	0.229
D4	*	b	131	0.275	0.142	0.274	0.117	0.283	0.337	0.390
D4		c	205	0.431	-0.235	-0.154	0.525	0.434	0.370	0.371
D5			5	0.011	-0.017	0.010	0.000	0.019	0.011	0.010
D5		a	149	0.313	-0.223	-0.119	0.367	0.264	0.402	0.248
D5		b	99	0.208	-0.146	-0.012	0.183	0.264	0.185	0.171
D5	*	c	223	0.468	0.041	0.121	0.450	0.453	0.402	0.571
E1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E1		a	140	0.294	-0.255	-0.169	0.350	0.327	0.293	0.181
E1	*	b	169	0.355	0.242	0.426	0.183	0.277	0.424	0.610
E1		c	167	0.351	-0.297	-0.257	0.467	0.396	0.283	0.210
E2			2	0.004	-0.030	0.000	0.000	0.013	0.000	0.000
E2	*	a	236	0.496	0.287	0.527	0.292	0.384	0.587	0.819
E2		b	105	0.221	-0.271	-0.164	0.250	0.289	0.217	0.086
E2		c	133	0.279	-0.356	-0.363	0.458	0.314	0.196	0.095
E3			3	0.006	-0.046	-0.008	0.008	0.013	0.000	0.000
E3		a	103	0.216	-0.239	-0.160	0.283	0.239	0.196	0.124
E3		b	141	0.296	-0.199	-0.070	0.308	0.302	0.337	0.238
E3	*	c	229	0.481	0.104	0.238	0.400	0.447	0.467	0.638
E4			3	0.006	-0.070	-0.017	0.017	0.006	0.000	0.000
E4		a	148	0.311	-0.238	-0.150	0.417	0.283	0.272	0.267
E4		b	118	0.248	-0.120	0.018	0.192	0.321	0.239	0.210
E4	*	c	207	0.435	0.042	0.149	0.375	0.390	0.489	0.524
E5			4	0.008	-0.058	-0.008	0.008	0.019	0.000	0.000
E5		a	138	0.290	-0.252	-0.170	0.342	0.321	0.304	0.171
E5	*	b	158	0.332	0.229	0.408	0.192	0.264	0.326	0.600
E5		c	176	0.370	-0.274	-0.230	0.458	0.396	0.370	0.229

Table 3: Math 03 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			2	0.004	-0.023	0.000	0.000	0.006	0.011	0.000
F1	*	a	186	0.391	0.231	0.395	0.233	0.308	0.467	0.629
F1		b	117	0.246	-0.197	-0.067	0.267	0.277	0.217	0.200
F1		c	171	0.359	-0.348	-0.329	0.500	0.409	0.304	0.171
F2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F2		a	122	0.256	-0.172	-0.062	0.300	0.264	0.207	0.238
F2	*	b	169	0.355	0.142	0.305	0.200	0.296	0.489	0.505
F2		c	185	0.389	-0.282	-0.243	0.500	0.440	0.304	0.257
F3			4	0.008	-0.069	-0.008	0.008	0.019	0.000	0.000
F3	*	a	150	0.315	0.117	0.251	0.225	0.258	0.348	0.476
F3		b	146	0.307	-0.130	-0.010	0.267	0.321	0.391	0.257
F3		c	176	0.370	-0.283	-0.233	0.500	0.403	0.261	0.267
F4			3	0.006	-0.070	-0.017	0.017	0.006	0.000	0.000
F4		a	111	0.233	-0.201	-0.098	0.250	0.289	0.207	0.152
F4		b	127	0.267	-0.221	-0.140	0.350	0.245	0.261	0.210
F4	*	c	235	0.494	0.096	0.255	0.383	0.459	0.533	0.638
F5			2	0.004	-0.082	-0.017	0.017	0.000	0.000	0.000
F5	*	a	153	0.321	0.130	0.338	0.167	0.321	0.315	0.505
F5		b	125	0.263	-0.127	-0.012	0.250	0.302	0.239	0.238
F5		c	196	0.412	-0.295	-0.310	0.567	0.377	0.446	0.257

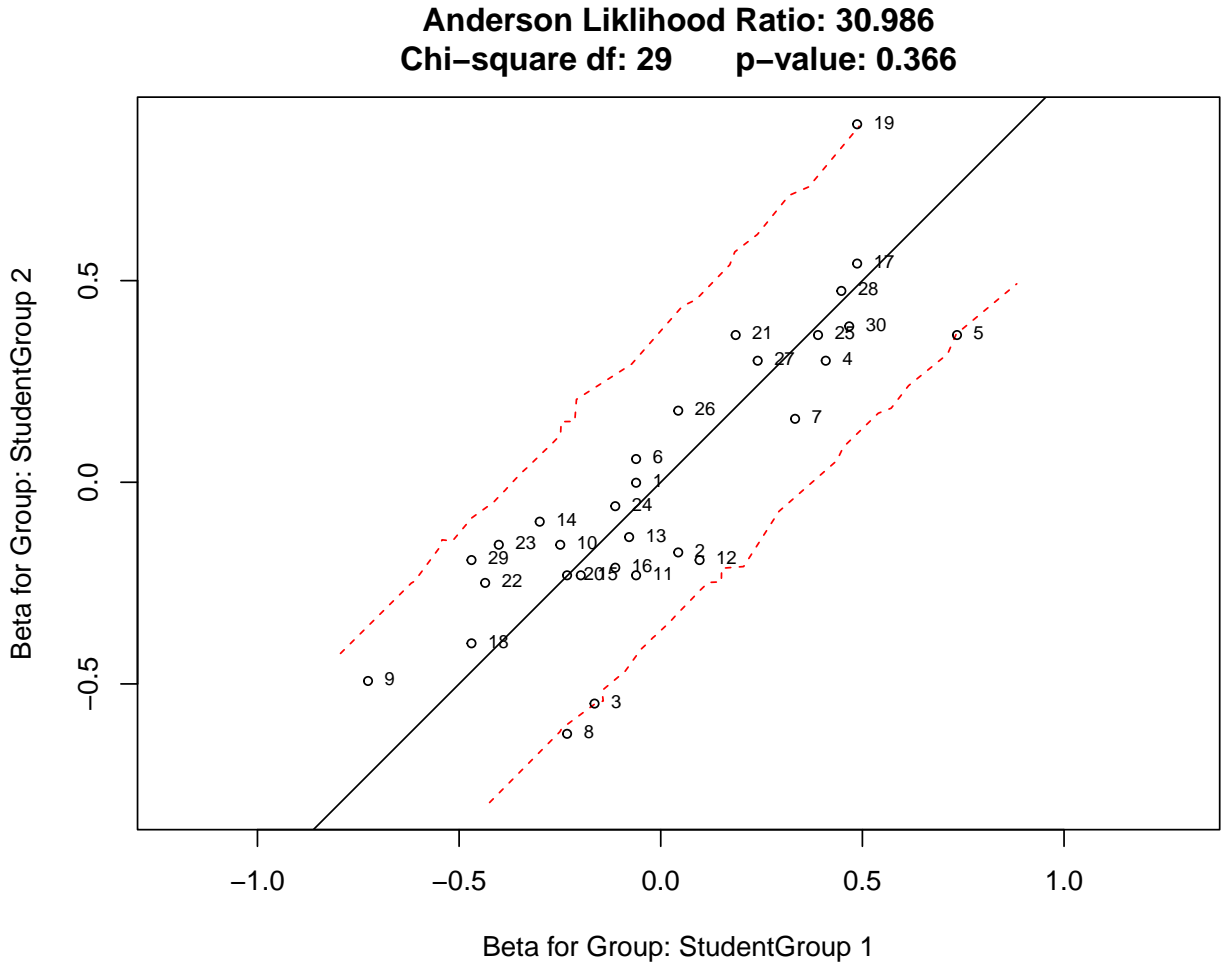


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Math 03 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	476	0.9180	0.9326
A2	476	0.9445	0.9563
A3	476	1.1069	1.0961
A4	476	0.9675	0.9899
A5	476	1.0845	1.0375
B1	476	0.8910	0.9117
B2	476	1.0016	0.9976
B3	476	0.9391	0.9494
B4	476	1.1123	1.0788
B5	476	0.9130	0.9306
C1	476	0.8725	0.8889
C2	476	0.8855	0.9032
C3	476	0.8772	0.8925
C4	476	1.0733	1.0729
C5	476	0.9156	0.9308
D1	476	0.8934	0.9099
D2	476	1.0420	1.0389
D3	476	1.0111	1.0181
D4	476	0.9906	1.0209
D5	476	1.0836	1.0860
E1	476	0.9545	0.9638
E2	476	0.9274	0.9335
E3	476	1.0480	1.0452
E4	476	1.0900	1.0852
E5	476	0.9594	0.9684
F1	476	0.9646	0.9694
F2	476	1.0188	1.0265
F3	476	1.0381	1.0362
F4	476	1.0483	1.0481
F5	476	1.0331	1.0303

Table 5: Math 03 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9868	0.0750
Infit	Infit	0.9916	0.0643

Table 6: Math 03 Raw to Theta Table

Raw Score	theta	SE
3	-1.7439	0.5804
4	-1.4521	0.5220
5	-1.2094	0.4818
6	-0.9989	0.4526
7	-0.8106	0.4305
8	-0.6384	0.4136
9	-0.4781	0.4005
10	-0.3268	0.3904
11	-0.1822	0.3827
12	-0.0425	0.3770
13	0.0937	0.3731
14	0.2278	0.3708
15	0.3607	0.3701
16	0.4937	0.3709
17	0.6278	0.3732
18	0.7642	0.3772
19	0.9040	0.3829
20	1.0489	0.3907
21	1.2005	0.4009
22	1.3612	0.4141
23	1.5338	0.4310
24	1.7226	0.4531
25	1.9337	0.4823
26	2.1768	0.5225
27	2.4693	0.5810
30	4.5311	1.4533

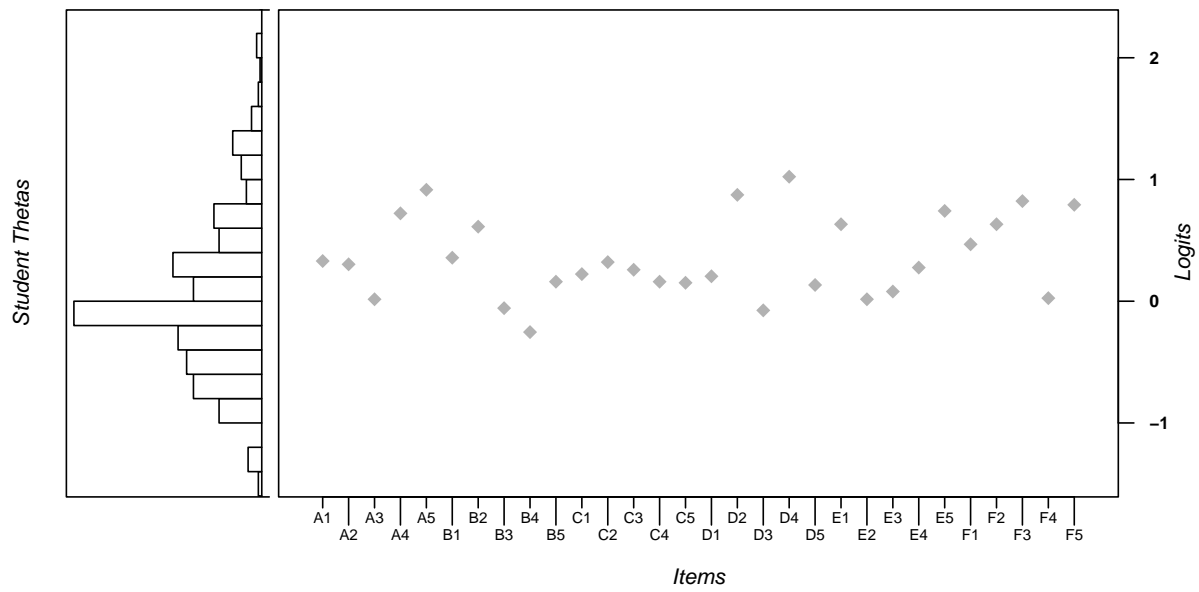


Figure 2: Student Ability - Item Difficulty Wright Map

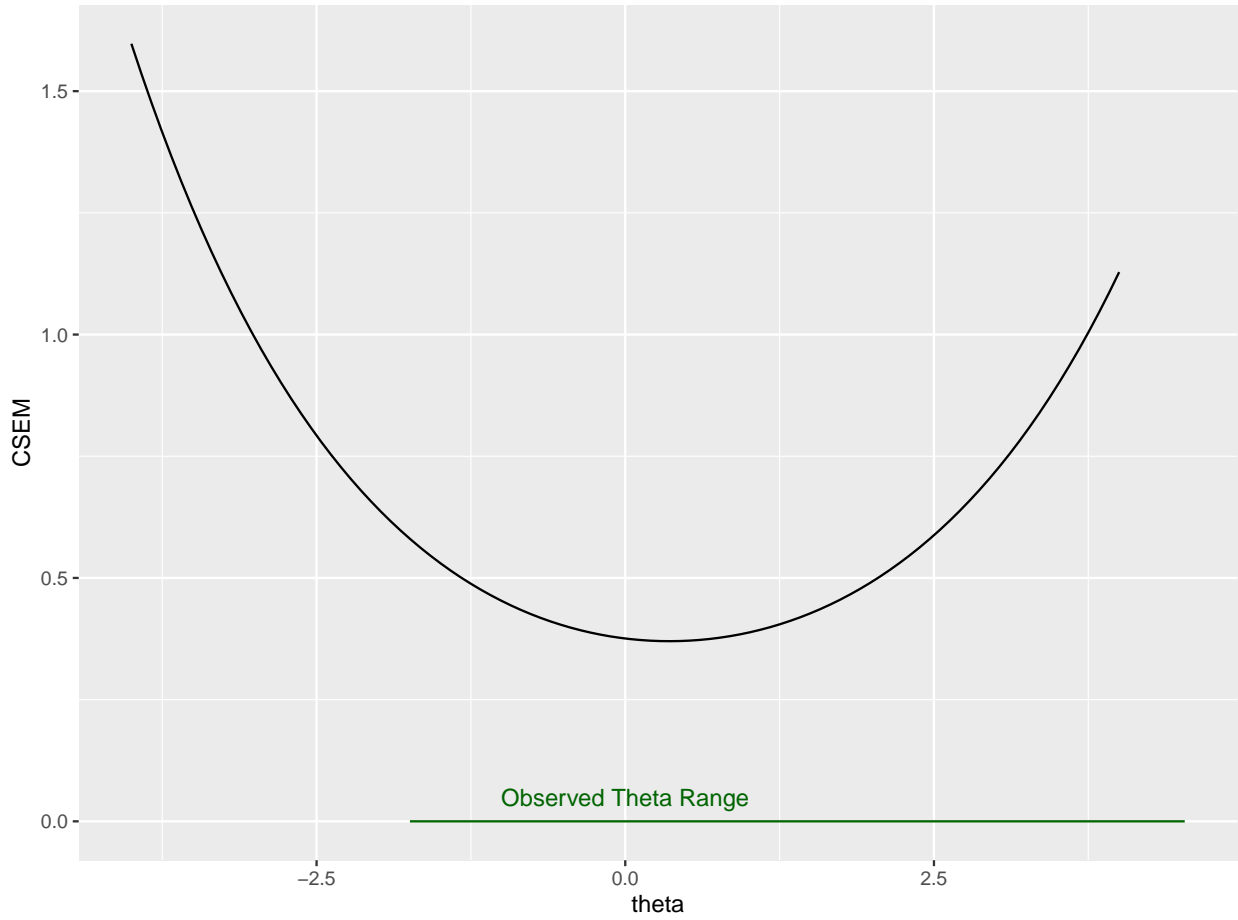


Figure 3: Math 03 Conditional Standard Error of Measure

Table 7: Math 03 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		476	0.63
Ethnic	Black	58	0.50
Ethnic	Hispanic	39	0.57
Ethnic	Other	26	0.62
Ethnic	White	348	0.66
Disadvantaged	No	341	0.67
Disadvantaged	Yes	135	0.47
LEP	No	450	0.64
LEP	Yes	26	0.42
Gender	Female	163	0.63
Gender	Male	313	0.64
Homeless	No	458	0.63
Homeless	Yes	18	0.70

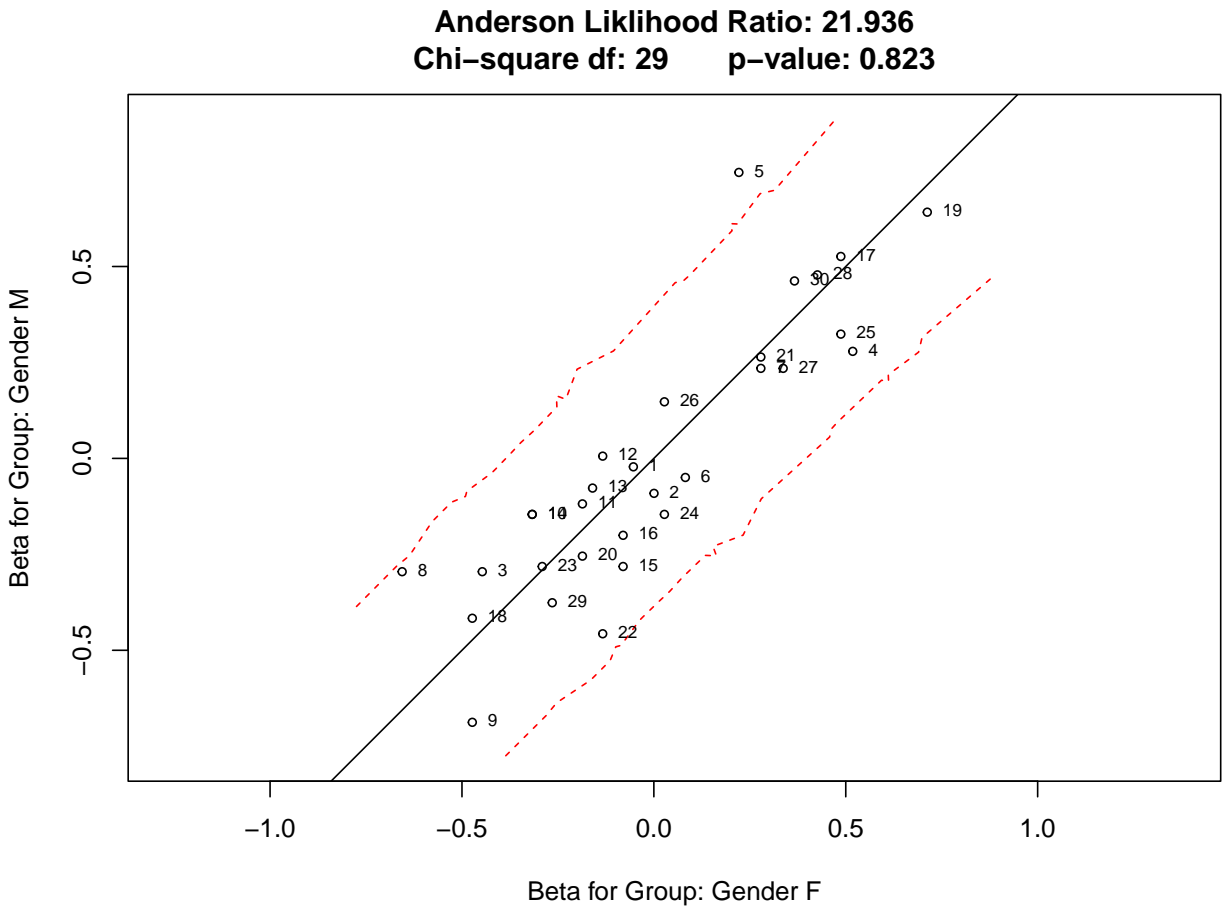


Figure 4: Math 03 Differential Item (DIF) and Test (DTF) Function for Gender

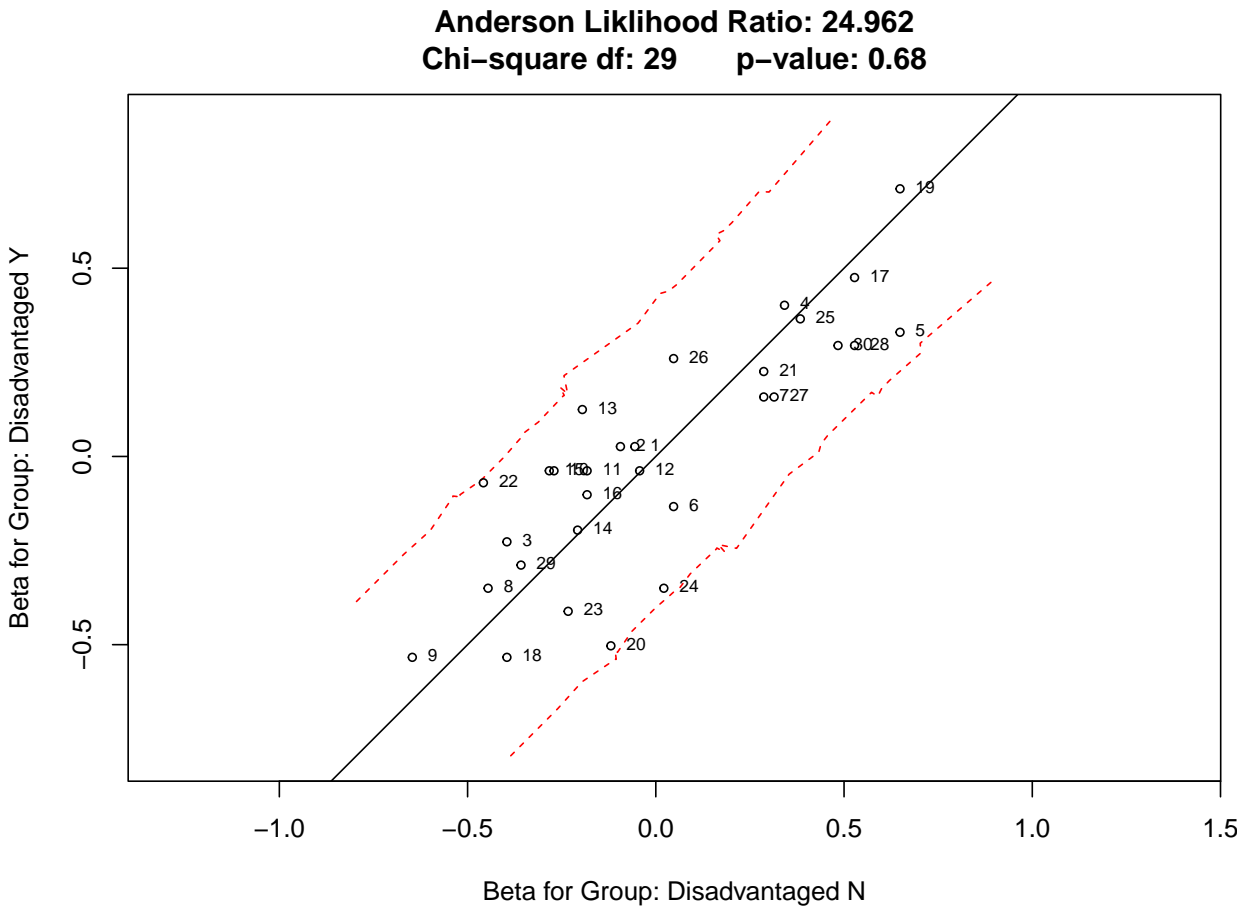


Figure 5: Math 03 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

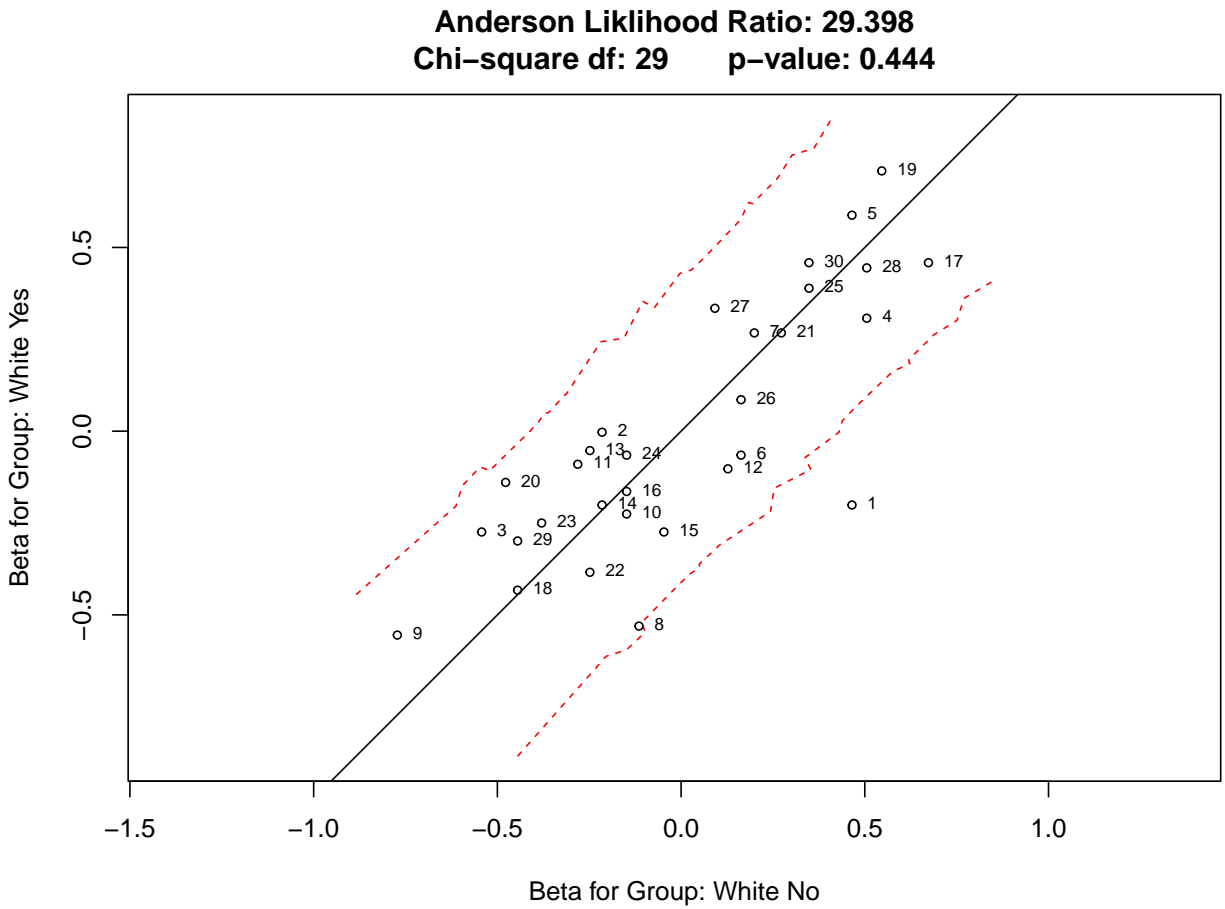


Figure 6: Math 03 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.7370	0.1228	0.8598
False	0.0443	0.0959	0.1402
Total	0.7813	0.2187	1.0000

Accuracy = 0.8598

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.6386	0.1427
j	0.0762	0.1425

Proportion of Consistent Classifications = 0.7811
Cohen's Kappa = 0.4226

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.1043	0.0653	0.7697	0.0607	0.6324	0.9218	0.8740	0.0844	0.0288	0.0572
Apprentice	0.5069	0.1047	0.2274	0.1610	0.7589	0.6847	0.7343	0.4331	0.3741	0.0943
Proficient	0.1177	0.0959	0.7373	0.0491	0.7058	0.8849	0.8550	0.1121	0.0456	0.0697
Distinguished	0.0002	0.0049	0.9948	0.0001	0.6801	0.9951	0.9950	0.0009	0.0000	0.0008

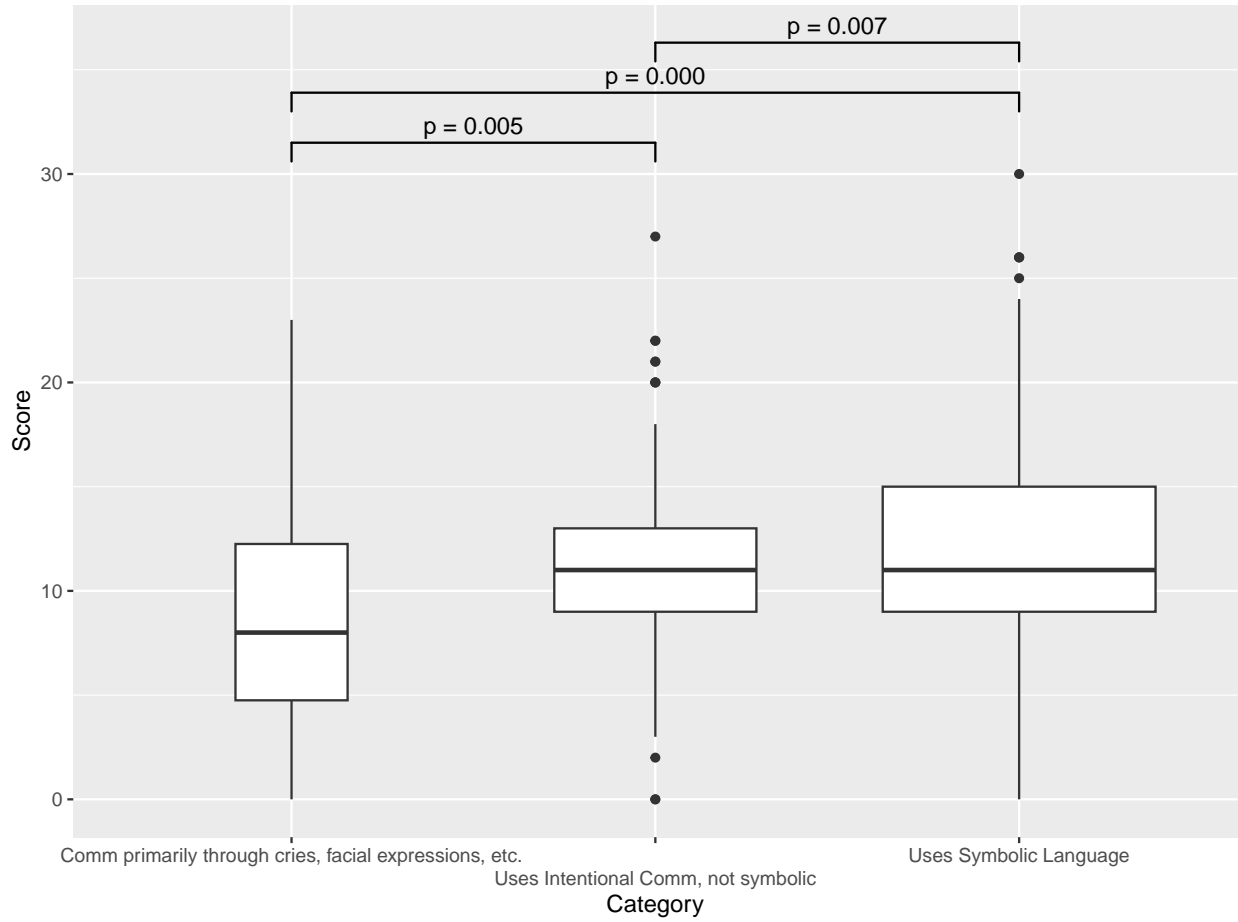


Figure 7: Math 03 Learner Characteristic: Expressive Communication

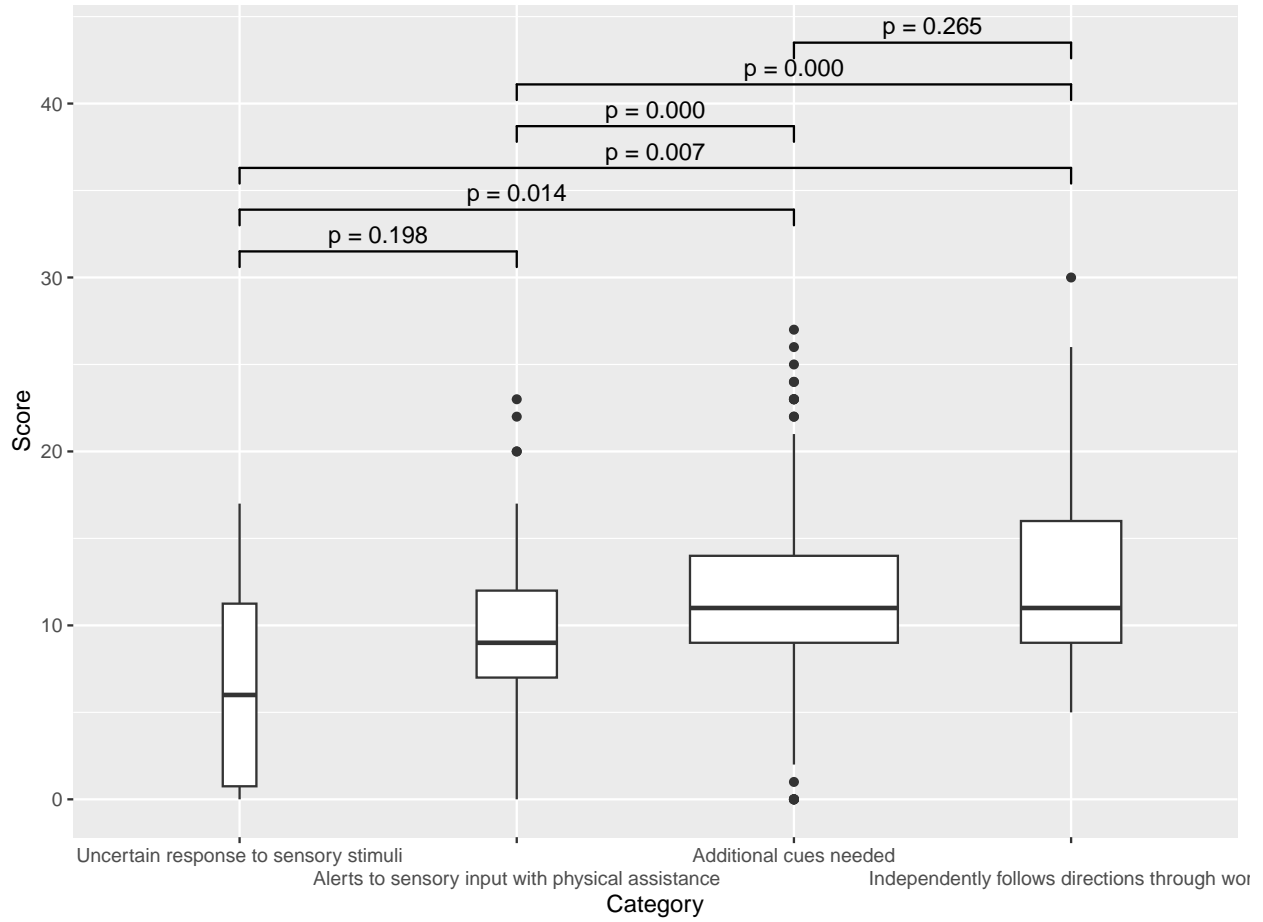


Figure 8: Math 03 Learner Characteristic: Receptive Language

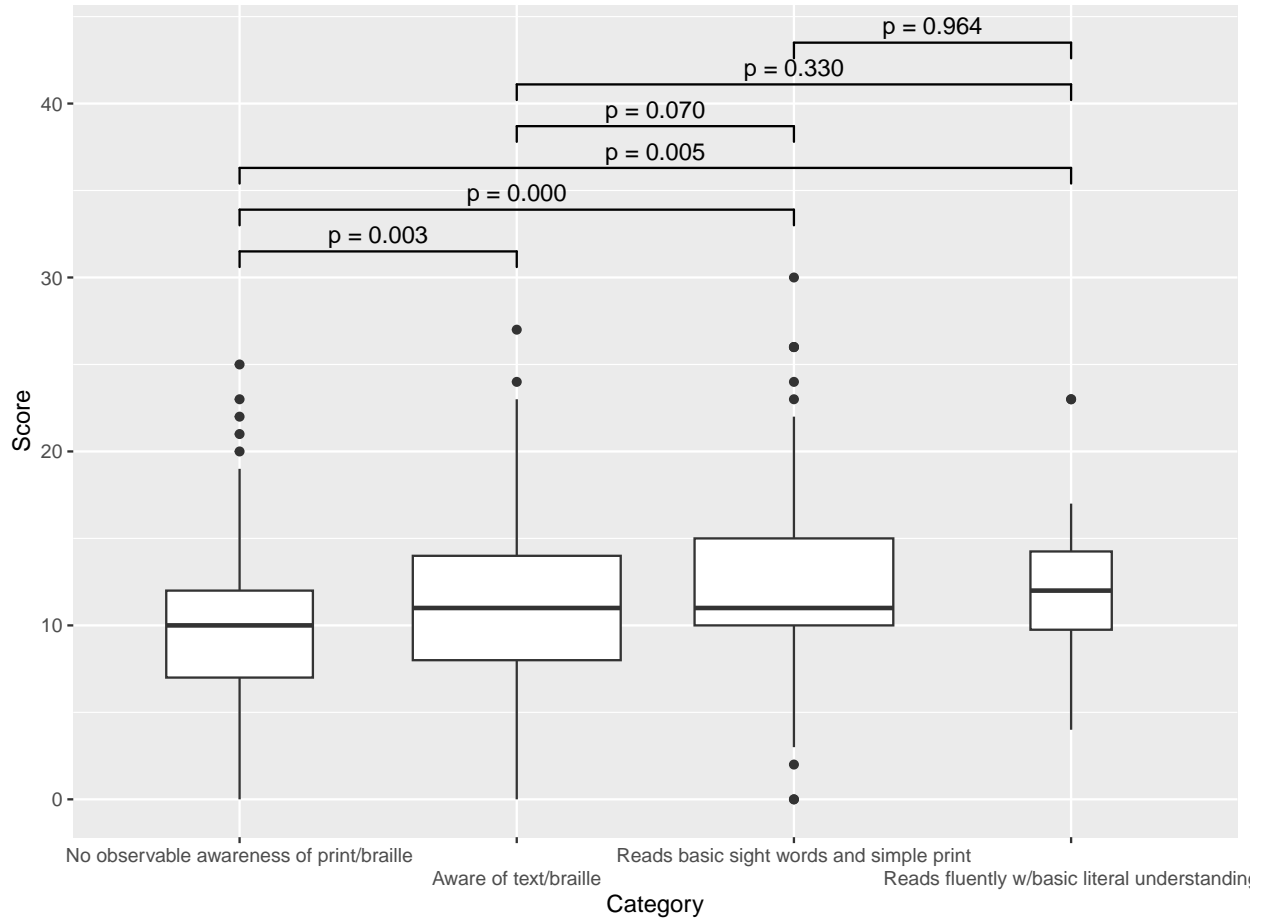


Figure 9: Math 03 Learner Characteristic: Reading

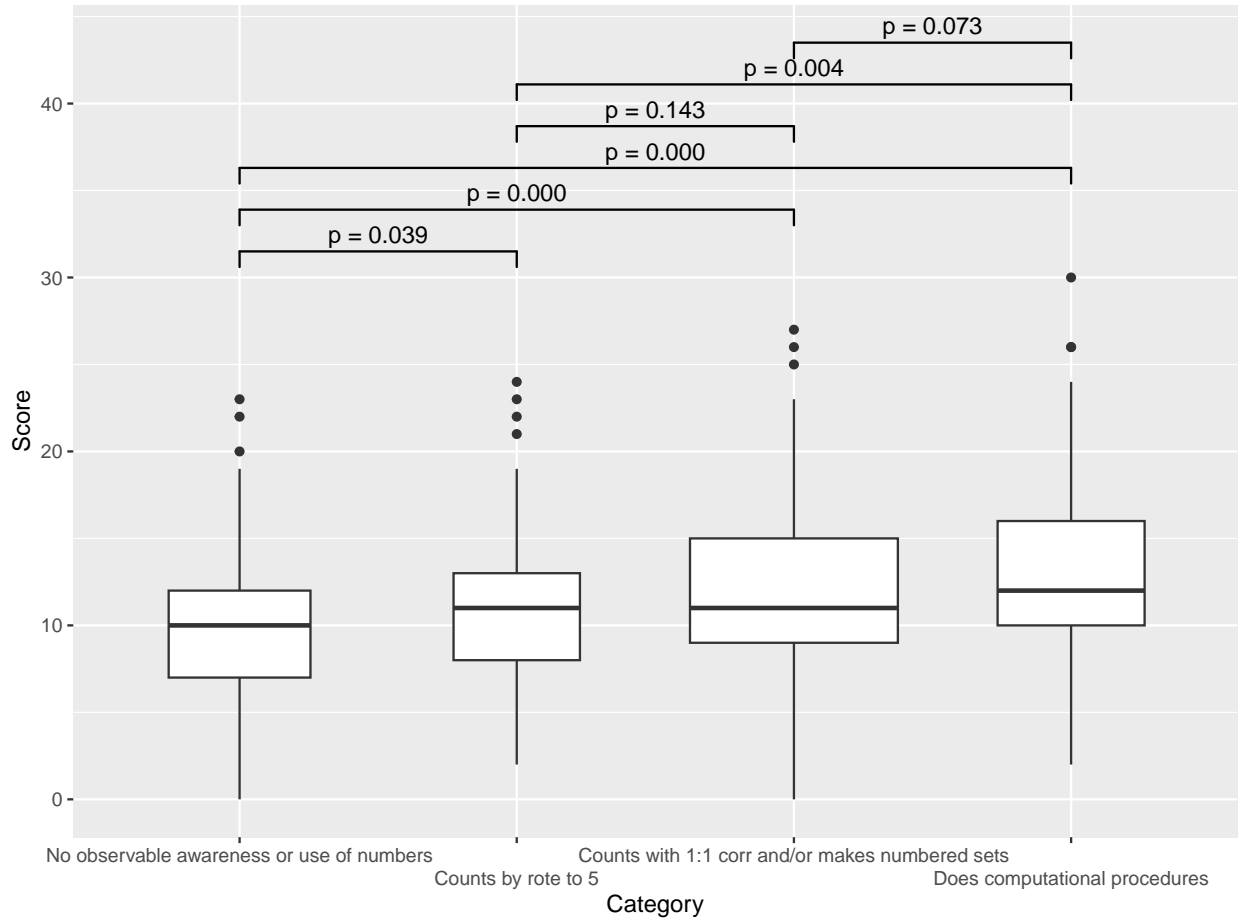


Figure 10: Math 03 Learner Characteristic: Mathematics

Science Grade 11

Table 1: Science 11 Item Statistics

	Item	n	mean	sd	se
A1	1	490	0.449	0.498	0.022
A2	2	490	0.496	0.500	0.023
A3	3	490	0.559	0.497	0.022
A4	4	490	0.267	0.443	0.020
A5	5	490	0.300	0.459	0.021
B1	6	490	0.531	0.500	0.023
B2	7	490	0.443	0.497	0.022
B3	8	490	0.504	0.500	0.023
B4	9	490	0.353	0.478	0.022
B5	10	490	0.522	0.500	0.023
C1	11	490	0.480	0.500	0.023
C2	12	490	0.378	0.485	0.022
C3	13	490	0.469	0.500	0.023
C4	14	490	0.441	0.497	0.022
C5	15	490	0.345	0.476	0.021
D1	16	490	0.512	0.500	0.023
D2	17	490	0.410	0.492	0.022
D3	18	490	0.318	0.466	0.021
D4	19	490	0.445	0.497	0.022
D5	20	490	0.410	0.492	0.022
E1	21	490	0.429	0.495	0.022
E2	22	490	0.327	0.469	0.021
E3	23	490	0.339	0.474	0.021
E4	24	490	0.418	0.494	0.022
E5	25	490	0.490	0.500	0.023
F1	26	490	0.329	0.470	0.021
F2	27	490	0.465	0.499	0.023
F3	28	490	0.347	0.476	0.022
F4	29	490	0.304	0.460	0.021
F5	30	490	0.455	0.498	0.023

Chronbach's Alpha: 0.6592

Table 2: Science 11 Raw Score Frequencies

Score	freq	pct	pct_cum
4	1	0.204	0.204
5	3	0.612	0.816
6	14	2.857	3.673
7	28	5.714	9.388
8	42	8.571	17.959
9	37	7.551	25.510
10	58	11.837	37.347
11	57	11.633	48.980
12	43	8.776	57.755
13	40	8.163	65.918
14	35	7.143	73.061
15	26	5.306	78.367
16	18	3.673	82.041
17	19	3.878	85.918
18	14	2.857	88.776
19	10	2.041	90.816
20	12	2.449	93.265
21	11	2.245	95.510
22	6	1.224	96.735
23	5	1.020	97.755
24	2	0.408	98.163
25	5	1.020	99.184
26	2	0.408	99.592
27	1	0.204	99.796
28	1	0.204	100.000

Table 3: Science 11 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A1	*	a	220	0.449	0.322	0.568	0.224	0.373	0.485	0.792
A1		b	187	0.382	-0.310	-0.259	0.448	0.437	0.416	0.189
A1		c	83	0.169	-0.361	-0.309	0.328	0.190	0.099	0.019
A2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A2		a	120	0.245	-0.309	-0.246	0.312	0.335	0.208	0.066
A2	*	b	243	0.496	0.365	0.610	0.248	0.367	0.624	0.858
A2		c	127	0.259	-0.395	-0.365	0.440	0.297	0.168	0.075
A3			3	0.006	-0.057	-0.007	0.016	0.000	0.000	0.009
A3		a	118	0.241	-0.212	-0.122	0.264	0.278	0.257	0.142
A3		b	95	0.194	-0.331	-0.241	0.288	0.259	0.129	0.047
A3	*	c	274	0.559	0.201	0.370	0.432	0.462	0.614	0.802
A4			5	0.010	-0.058	-0.015	0.024	0.006	0.000	0.009
A4	*	a	131	0.267	0.040	0.192	0.176	0.304	0.218	0.368
A4		b	163	0.333	-0.054	0.118	0.240	0.405	0.307	0.358
A4		c	191	0.390	-0.274	-0.296	0.560	0.285	0.475	0.264
A5			2	0.004	-0.037	0.001	0.008	0.000	0.000	0.009
A5		a	188	0.384	-0.231	-0.132	0.368	0.456	0.446	0.236
A5	*	b	147	0.300	0.184	0.316	0.184	0.234	0.337	0.500
A5		c	153	0.312	-0.245	-0.185	0.440	0.310	0.218	0.255
B1			2	0.004	-0.058	-0.008	0.008	0.006	0.000	0.000
B1		a	110	0.224	-0.289	-0.186	0.280	0.310	0.158	0.094
B1		b	118	0.241	-0.330	-0.253	0.328	0.323	0.178	0.075
B1	*	c	260	0.531	0.280	0.446	0.384	0.361	0.663	0.830
B2			2	0.004	-0.058	-0.008	0.008	0.006	0.000	0.000
B2	*	a	217	0.443	0.255	0.504	0.232	0.380	0.495	0.736
B2		b	146	0.298	-0.214	-0.093	0.272	0.380	0.327	0.179
B2		c	125	0.255	-0.369	-0.403	0.488	0.234	0.178	0.085
B3			2	0.004	-0.065	-0.016	0.016	0.000	0.000	0.000
B3		a	98	0.200	-0.239	-0.146	0.240	0.272	0.149	0.094
B3		b	143	0.292	-0.242	-0.107	0.296	0.354	0.297	0.189
B3	*	c	247	0.504	0.150	0.269	0.448	0.373	0.554	0.717
B4			2	0.004	-0.058	-0.008	0.008	0.006	0.000	0.000
B4		a	152	0.310	-0.173	-0.037	0.320	0.361	0.248	0.283
B4	*	b	173	0.353	0.152	0.327	0.192	0.329	0.416	0.519
B4		c	163	0.333	-0.284	-0.282	0.480	0.304	0.337	0.198
B5			1	0.002	-0.036	0.000	0.000	0.006	0.000	0.000
B5	*	a	256	0.522	0.243	0.446	0.328	0.424	0.653	0.774
B5		b	95	0.194	-0.235	-0.144	0.248	0.241	0.149	0.104
B5		c	138	0.282	-0.343	-0.301	0.424	0.329	0.198	0.123
C1			1	0.002	-0.087	-0.008	0.008	0.000	0.000	0.000
C1		a	110	0.224	-0.259	-0.163	0.248	0.329	0.178	0.085
C1		b	144	0.294	-0.229	-0.152	0.360	0.285	0.317	0.208
C1	*	c	235	0.480	0.159	0.324	0.384	0.386	0.505	0.708
C2			2	0.004	-0.015	0.000	0.000	0.006	0.010	0.000
C2		a	132	0.269	-0.196	-0.106	0.304	0.323	0.218	0.198
C2	*	b	185	0.378	0.204	0.379	0.168	0.354	0.495	0.547
C2		c	171	0.349	-0.320	-0.273	0.528	0.316	0.277	0.255
C3			2	0.004	0.000	0.009	0.000	0.006	0.000	0.009
C3		a	111	0.227	-0.202	-0.100	0.232	0.310	0.188	0.132

Table 3: Science 11 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3	*	b	230	0.469	0.271	0.486	0.240	0.380	0.624	0.726
C3		c	147	0.300	-0.397	-0.396	0.528	0.304	0.188	0.132
C4			1	0.002	-0.046	-0.008	0.008	0.000	0.000	0.000
C4	*	a	216	0.441	0.326	0.536	0.200	0.380	0.525	0.736
C4		b	135	0.276	-0.349	-0.319	0.432	0.278	0.248	0.113
C4		c	138	0.282	-0.302	-0.209	0.360	0.342	0.228	0.151
C5			3	0.006	-0.092	-0.016	0.016	0.000	0.010	0.000
C5		a	138	0.282	-0.170	-0.080	0.288	0.329	0.277	0.208
C5	*	b	169	0.345	0.193	0.399	0.176	0.272	0.426	0.575
C5		c	180	0.367	-0.313	-0.303	0.520	0.399	0.287	0.217
D1			1	0.002	-0.087	-0.008	0.008	0.000	0.000	0.000
D1	*	a	251	0.512	0.301	0.563	0.248	0.494	0.554	0.811
D1		b	142	0.290	-0.276	-0.193	0.344	0.316	0.327	0.151
D1		c	96	0.196	-0.370	-0.362	0.400	0.190	0.119	0.038
D2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D2		a	132	0.269	-0.287	-0.179	0.264	0.386	0.287	0.085
D2	*	b	201	0.410	0.253	0.462	0.264	0.342	0.366	0.726
D2		c	157	0.320	-0.289	-0.283	0.472	0.272	0.347	0.189
D3			2	0.004	-0.094	-0.016	0.016	0.000	0.000	0.000
D3		a	120	0.245	-0.126	-0.033	0.184	0.310	0.317	0.151
D3	*	b	156	0.318	0.199	0.416	0.112	0.342	0.317	0.528
D3		c	212	0.433	-0.345	-0.367	0.688	0.348	0.366	0.321
D4			2	0.004	-0.065	-0.008	0.008	0.006	0.000	0.000
D4		a	148	0.302	-0.123	-0.054	0.328	0.310	0.287	0.274
D4		b	122	0.249	-0.272	-0.181	0.304	0.310	0.218	0.123
D4	*	c	218	0.445	0.071	0.244	0.360	0.373	0.495	0.604
D5			1	0.002	-0.026	0.000	0.000	0.006	0.000	0.000
D5	*	a	201	0.410	0.248	0.460	0.144	0.418	0.525	0.604
D5		b	123	0.251	-0.252	-0.160	0.320	0.291	0.198	0.160
D5		c	165	0.337	-0.315	-0.300	0.536	0.285	0.277	0.236
E1			1	0.002	-0.036	0.000	0.000	0.006	0.000	0.000
E1		a	185	0.378	-0.217	-0.094	0.368	0.424	0.426	0.274
E1	*	b	210	0.429	0.242	0.466	0.232	0.399	0.436	0.698
E1		c	94	0.192	-0.373	-0.372	0.400	0.171	0.139	0.028
E2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E2	*	a	160	0.327	0.200	0.429	0.128	0.348	0.297	0.557
E2		b	123	0.251	-0.183	-0.088	0.248	0.285	0.297	0.160
E2		c	207	0.422	-0.310	-0.341	0.624	0.367	0.406	0.283
E3			1	0.002	0.087	0.009	0.000	0.000	0.000	0.009
E3	*	a	166	0.339	0.065	0.214	0.192	0.373	0.396	0.406
E3		b	134	0.273	-0.147	-0.012	0.304	0.285	0.198	0.292
E3		c	189	0.386	-0.236	-0.212	0.504	0.342	0.406	0.292
E4			1	0.002	-0.026	0.000	0.000	0.006	0.000	0.000
E4		a	109	0.222	-0.250	-0.164	0.296	0.228	0.218	0.132
E4		b	175	0.357	-0.117	-0.005	0.288	0.399	0.455	0.283
E4	*	c	205	0.418	0.035	0.169	0.416	0.367	0.327	0.585
E5			3	0.006	-0.027	0.000	0.000	0.013	0.010	0.000
E5	*	a	240	0.490	0.238	0.477	0.240	0.487	0.564	0.717
E5		b	90	0.184	-0.272	-0.171	0.256	0.215	0.149	0.085
E5		c	157	0.320	-0.304	-0.306	0.504	0.285	0.277	0.198

Table 3: Science 11 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.077	-0.008	0.008	0.000	0.000	0.000
F1		a	178	0.363	-0.231	-0.142	0.368	0.424	0.406	0.226
F1	*	b	161	0.329	0.196	0.391	0.184	0.285	0.317	0.575
F1		c	150	0.306	-0.262	-0.242	0.440	0.291	0.277	0.198
F2			1	0.002	-0.046	-0.008	0.008	0.000	0.000	0.000
F2		a	125	0.255	-0.246	-0.148	0.280	0.335	0.228	0.132
F2		b	136	0.278	-0.268	-0.161	0.312	0.342	0.267	0.151
F2	*	c	228	0.465	0.183	0.317	0.400	0.323	0.505	0.717
F3			2	0.004	-0.044	-0.008	0.008	0.006	0.000	0.000
F3	*	a	170	0.347	0.157	0.346	0.192	0.323	0.376	0.538
F3		b	144	0.294	-0.187	-0.080	0.288	0.329	0.337	0.208
F3		c	174	0.355	-0.274	-0.257	0.512	0.342	0.287	0.255
F4			2	0.004	-0.029	0.000	0.000	0.013	0.000	0.000
F4		a	158	0.322	-0.230	-0.158	0.384	0.354	0.297	0.226
F4	*	b	149	0.304	0.224	0.389	0.120	0.297	0.327	0.509
F4		c	181	0.369	-0.282	-0.232	0.496	0.335	0.376	0.264
F5			4	0.008	-0.062	-0.008	0.008	0.013	0.010	0.000
F5		a	130	0.265	-0.166	-0.056	0.264	0.278	0.307	0.208
F5		b	133	0.271	-0.151	-0.024	0.232	0.354	0.257	0.208
F5	*	c	223	0.455	0.002	0.089	0.496	0.354	0.426	0.585

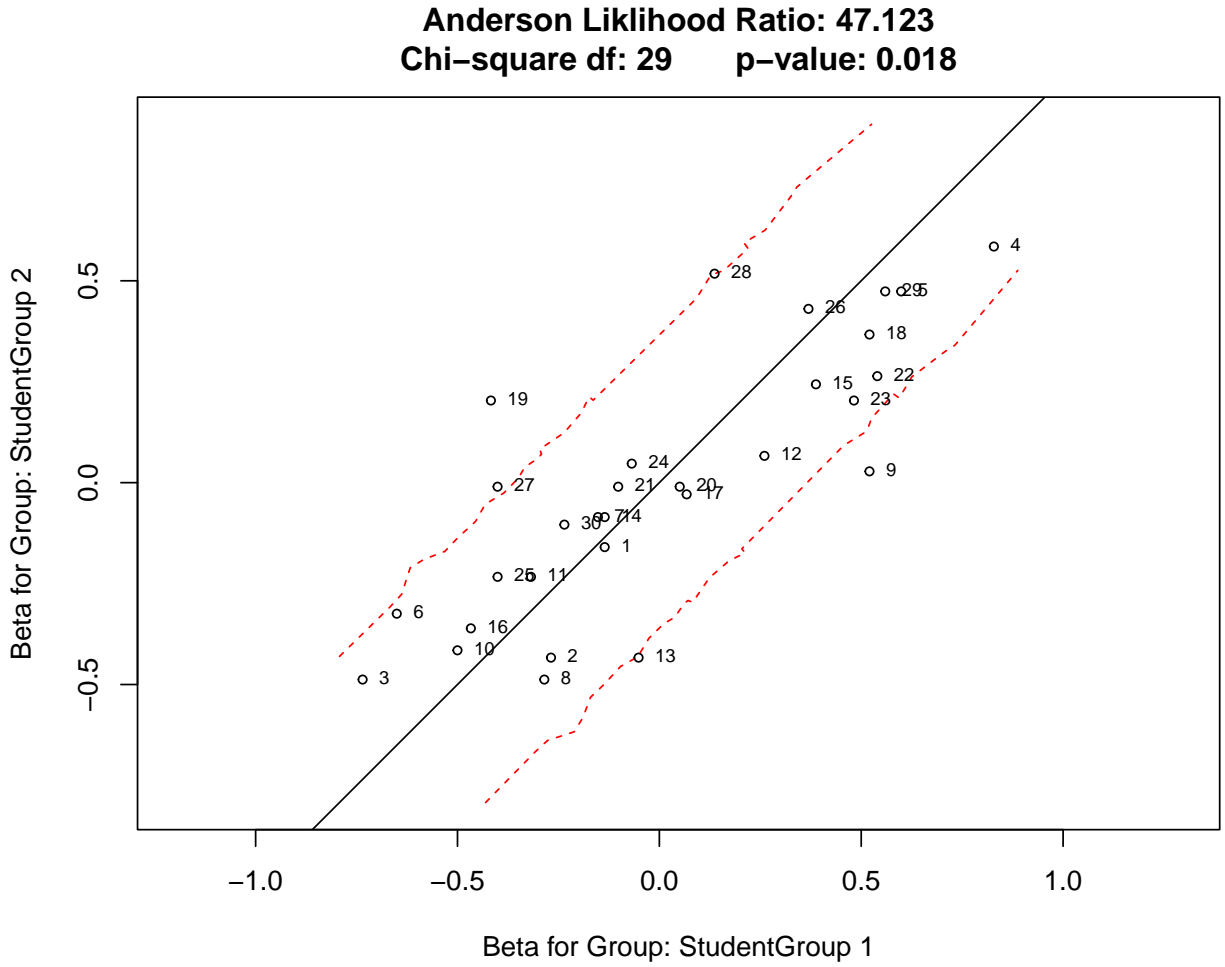


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Science 11 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	490	0.9042	0.9172
A2	490	0.8711	0.8909
A3	490	0.9658	0.9855
A4	490	1.1048	1.0848
A5	490	0.9965	0.9970
B1	490	0.9207	0.9422
B2	490	0.9492	0.9577
B3	490	1.0146	1.0212
B4	490	1.0164	1.0212
B5	490	0.9572	0.9590
C1	490	1.0146	1.0174
C2	490	0.9755	0.9908
C3	490	0.9426	0.9463
C4	490	0.8929	0.9152
C5	490	0.9906	0.9980
D1	490	0.9060	0.9257
D2	490	0.9606	0.9594
D3	490	0.9774	0.9907
D4	490	1.1140	1.0707
D5	490	0.9420	0.9633
E1	490	0.9733	0.9660
E2	490	0.9858	0.9901
E3	490	1.0782	1.0766
E4	490	1.1157	1.0961
E5	490	0.9503	0.9652
F1	490	0.9961	0.9942
F2	490	1.0010	1.0034
F3	490	1.0090	1.0205
F4	490	0.9667	0.9730
F5	490	1.1383	1.1167

Table 5: Science 11 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9877	0.0672
Infit	Infit	0.9919	0.0552

Table 6: Science 11 Raw to Theta Table

Raw Score	theta	SE
4	-1.4590	0.5224
5	-1.2160	0.4822
6	-1.0050	0.4530
7	-0.8163	0.4310
8	-0.6437	0.4141
9	-0.4830	0.4010
10	-0.3312	0.3909
11	-0.1862	0.3832
12	-0.0461	0.3775
13	0.0905	0.3736
14	0.2249	0.3714
15	0.3582	0.3706
16	0.4916	0.3714
17	0.6261	0.3737
18	0.7628	0.3777
19	0.9031	0.3834
20	1.0483	0.3912
21	1.2003	0.4013
22	1.3613	0.4145
23	1.5343	0.4314
24	1.7234	0.4535
25	1.9348	0.4827
26	2.1783	0.5229
27	2.4711	0.5813
28	2.8477	0.6747

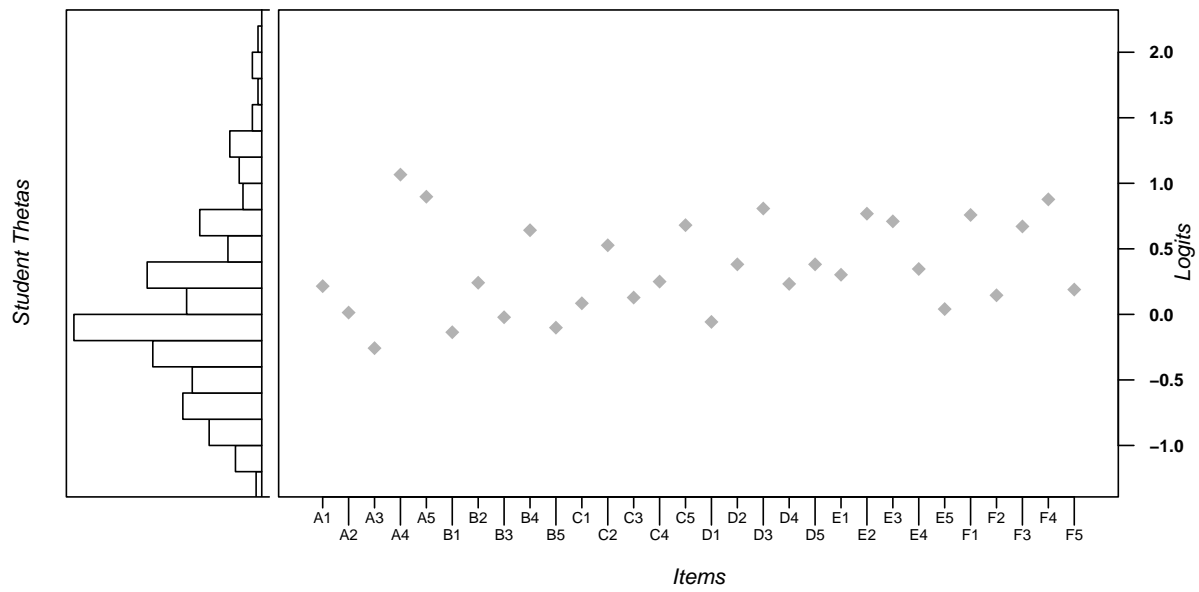


Figure 2: Student Ability - Item Difficulty Wright Map

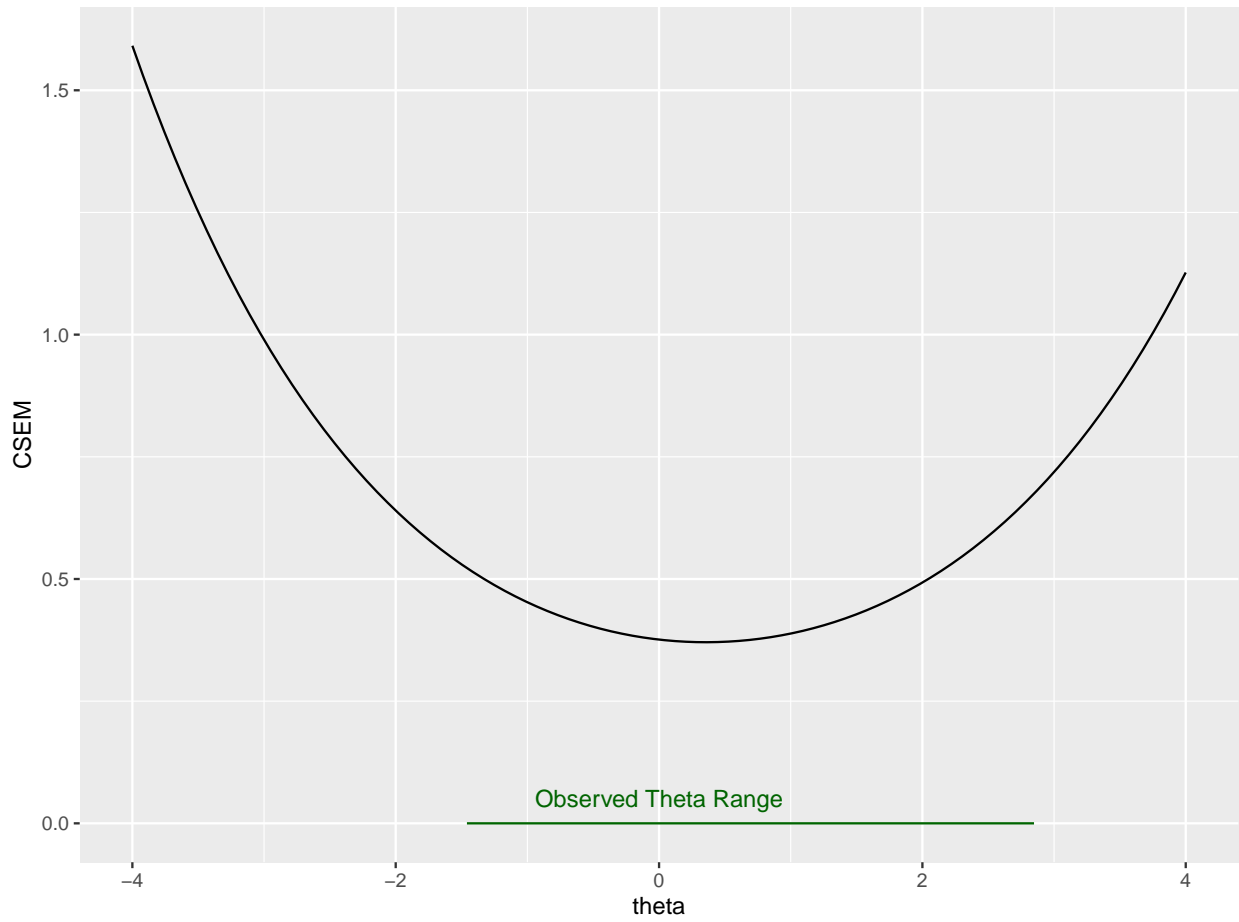


Figure 3: Science 11 Conditional Standard Error of Measure

Table 7: Science 11 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		490	0.63
Ethnic	Black	51	0.37
Ethnic	Hispanic	22	0.35
Ethnic	Other	18	0.61
Ethnic	White	391	0.66
Disadvantaged	No	361	0.64
Disadvantaged	Yes	129	0.60
LEP	No	462	0.63
LEP	Yes	28	0.44
Gender	Female	158	0.49
Gender	Male	332	0.67
Homeless	No	476	0.63
Homeless	Yes	14	0.37

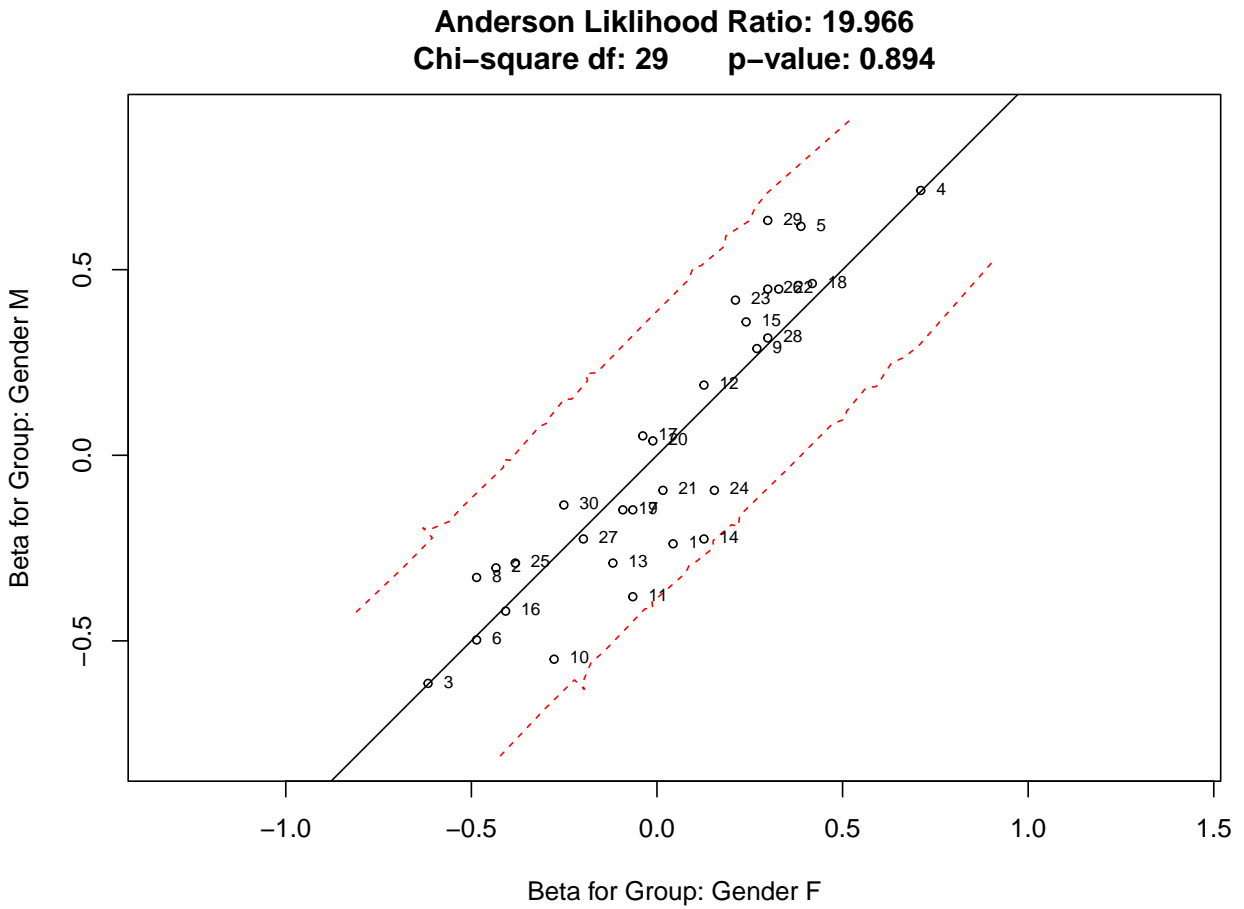


Figure 4: Science 11 Differential Item (DIF) and Test (DTF) Function for Gender

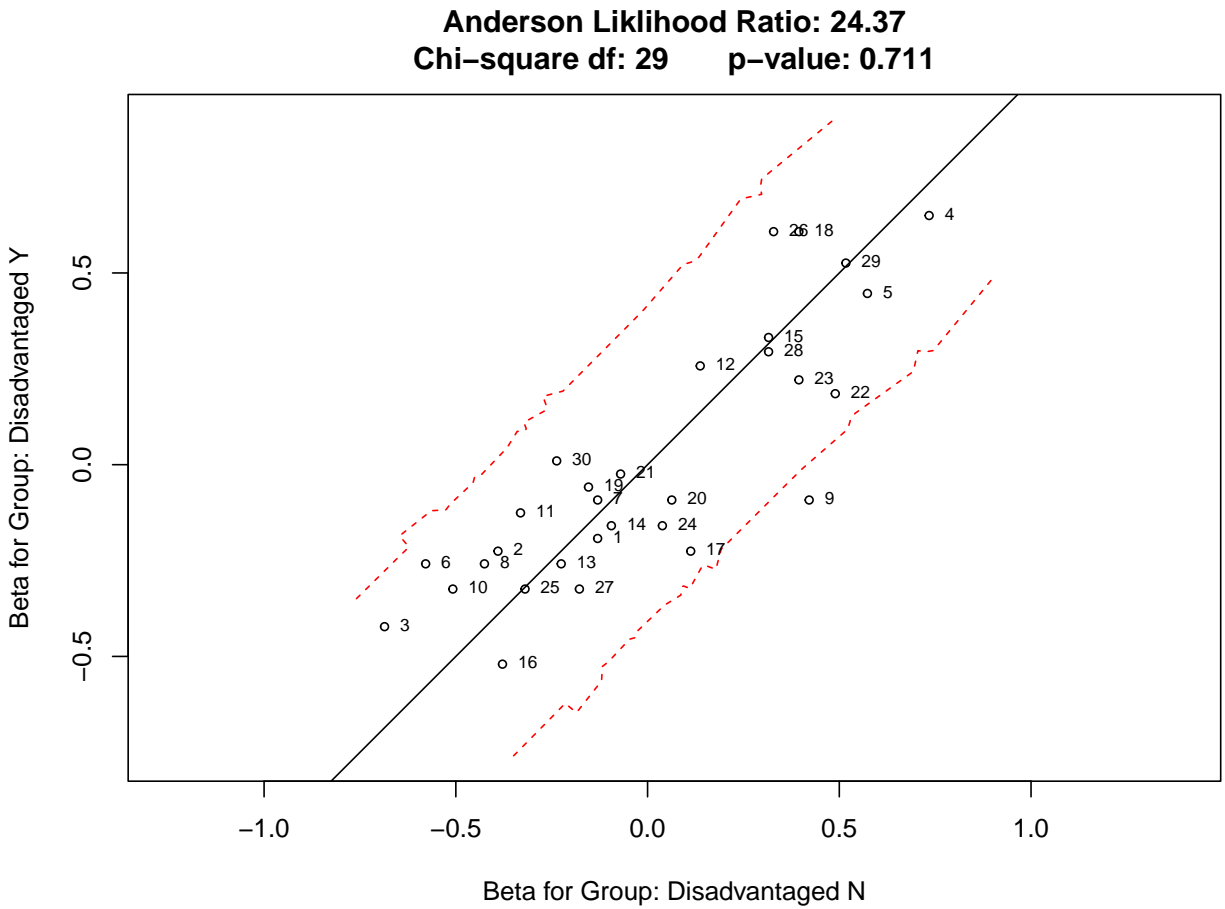


Figure 5: Science 11 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

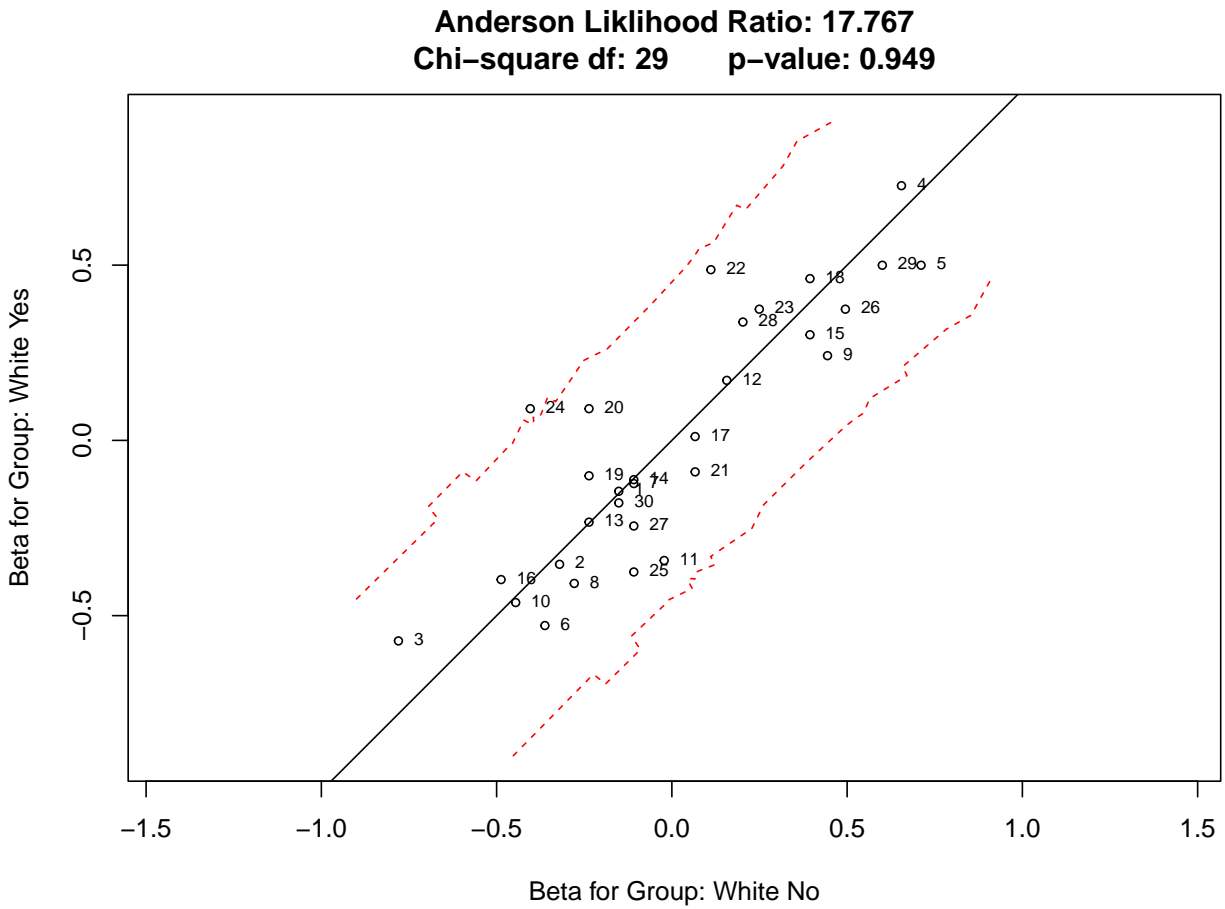


Figure 6: Science 11 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6491	0.1882	0.8373
False	0.0614	0.1013	0.1627
Total	0.7105	0.2895	1.0000

Accuracy = 0.8373

Table 9: Proficiency Decision Consistency

Contingency Matrix			
.	i	j	
i	0.5511	0.1594	
j	0.0855	0.2040	

Proportion of Consistent Classifications = 0.7551
Cohen's Kappa = 0.4465

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.1088	0.0642	0.7655	0.0615	0.6387	0.9227	0.8743	0.0880	0.0299	0.0598
Apprentice	0.4154	0.1222	0.2978	0.1647	0.7161	0.7090	0.7131	0.3490	0.2890	0.0844
Proficient	0.1669	0.1022	0.6524	0.0785	0.6801	0.8646	0.8193	0.1452	0.0724	0.0785
Distinguished	0.0029	0.0175	0.9783	0.0013	0.6901	0.9824	0.9812	0.0055	0.0004	0.0051

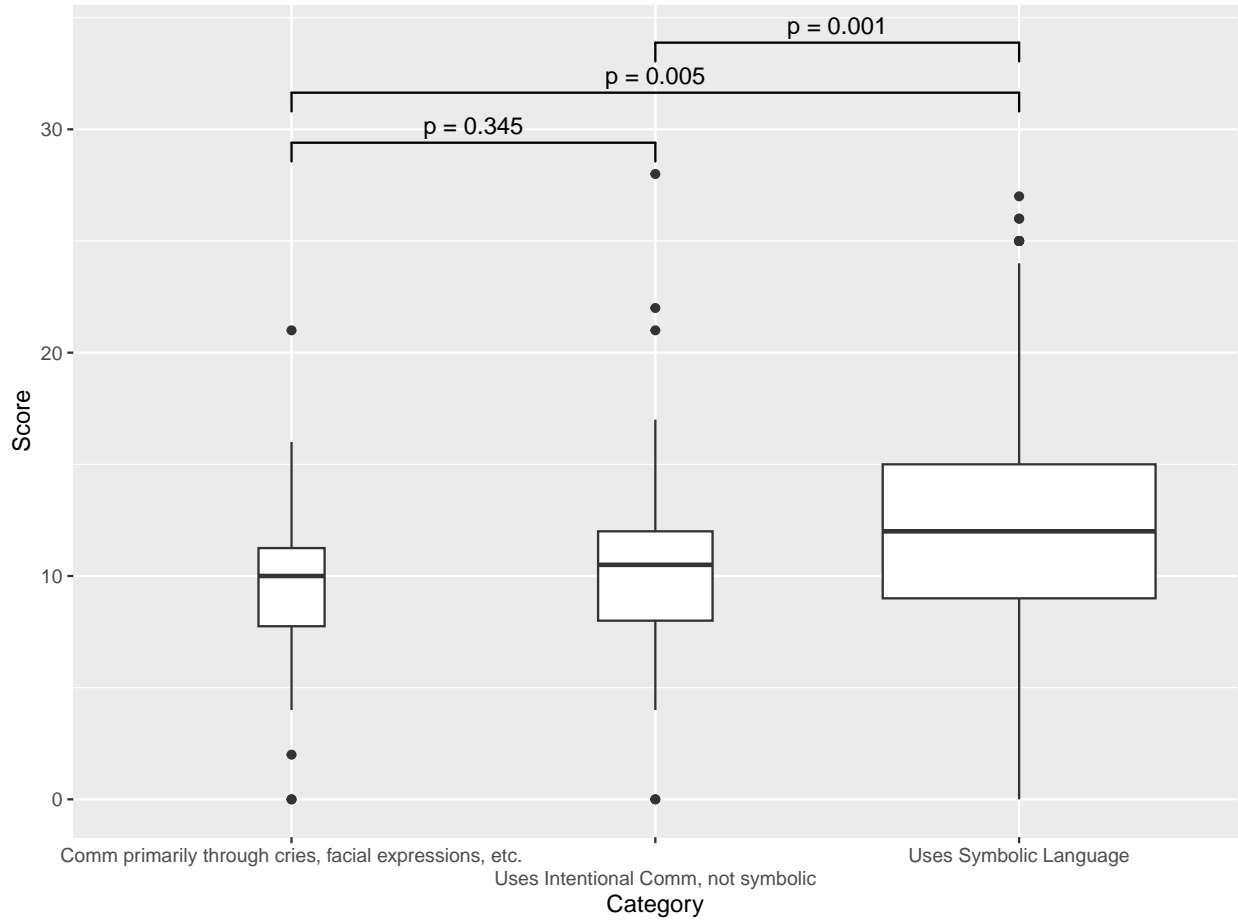


Figure 7: Science 11 Learner Characteristic: Expressive Communication

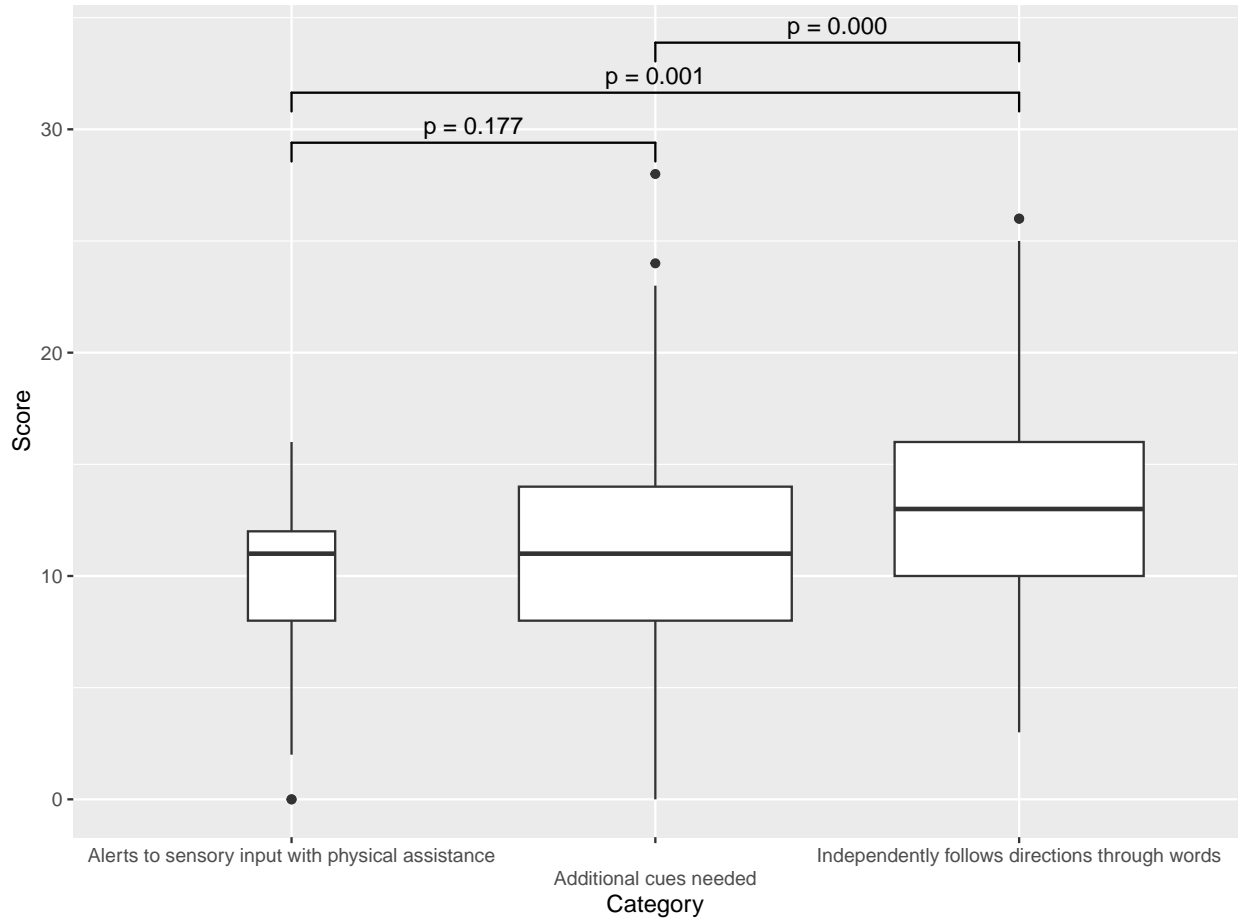


Figure 8: Science 11 Learner Characteristic: Receptive Language

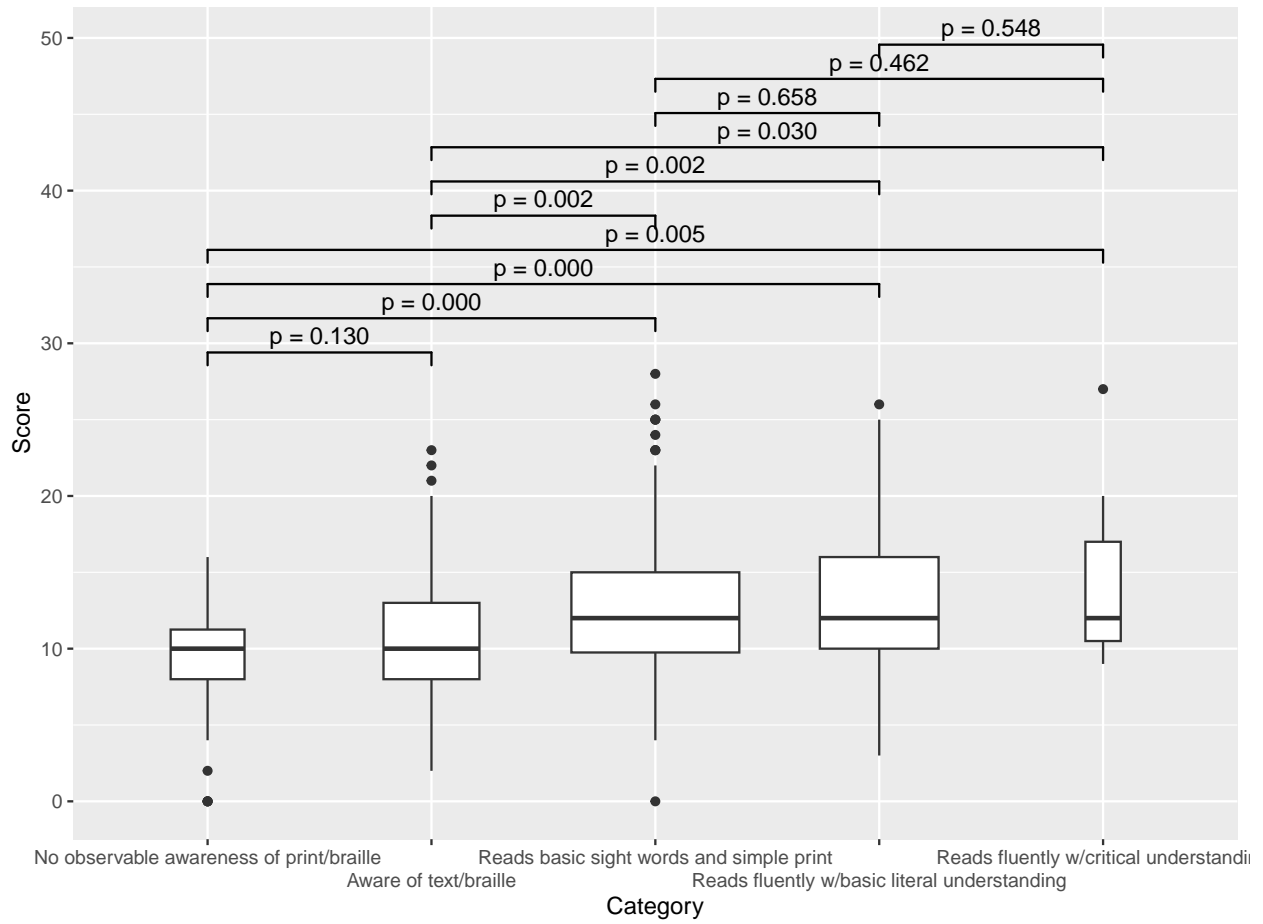


Figure 9: Science 11 Learner Characteristic: Reading

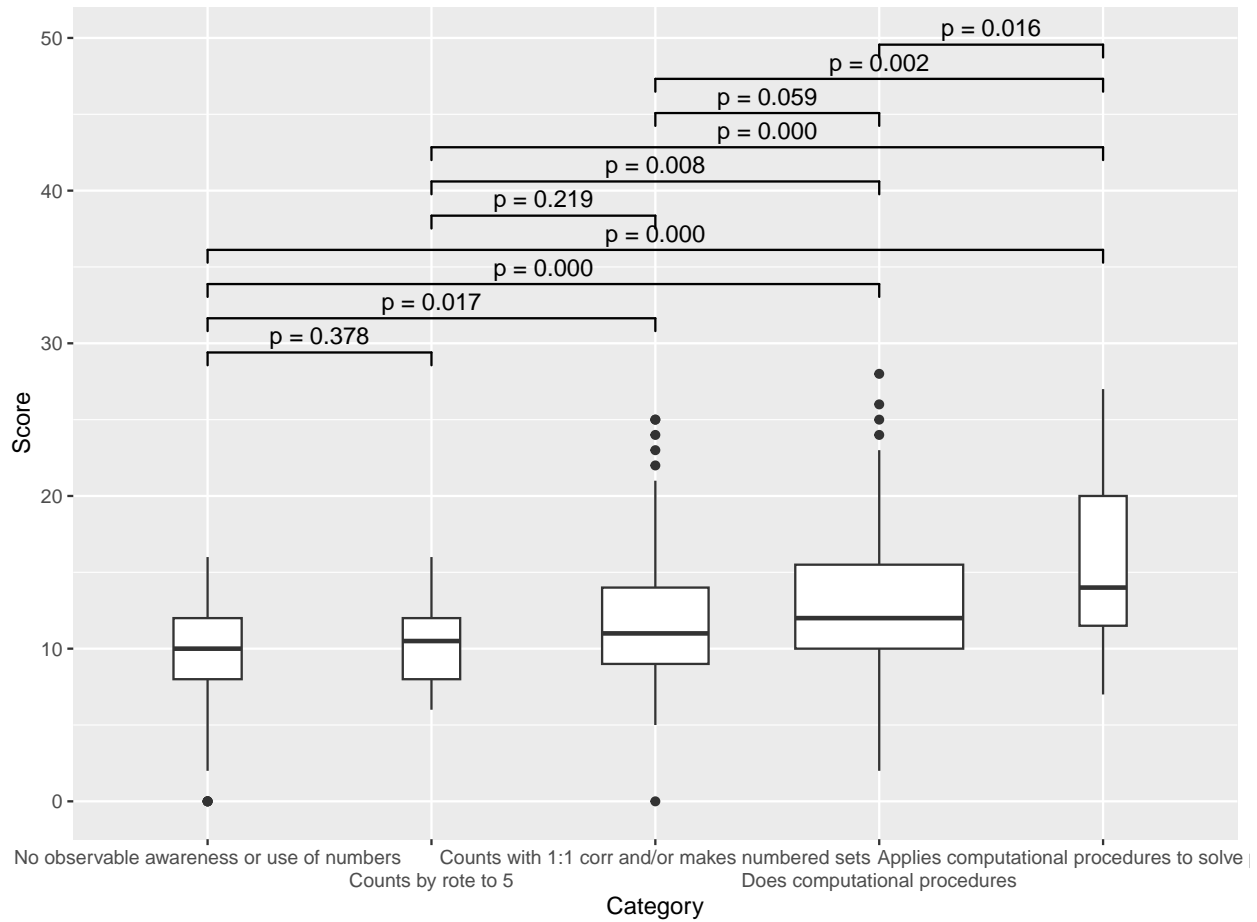


Figure 10: Science 11 Learner Characteristic: Mathematics

Science Grade 7

Table 1: Science 07 Item Statistics

	Item	n	mean	sd	se
A1	1	512	0.455	0.498	0.022
A2	2	512	0.578	0.494	0.022
A3	3	512	0.443	0.497	0.022
A4	4	512	0.367	0.483	0.021
A5	5	512	0.357	0.480	0.021
B1	6	512	0.635	0.482	0.021
B2	7	512	0.471	0.500	0.022
B3	8	512	0.619	0.486	0.021
B4	9	512	0.666	0.472	0.021
B5	10	512	0.361	0.481	0.021
C1	11	512	0.391	0.488	0.022
C2	12	512	0.525	0.500	0.022
C3	13	512	0.357	0.480	0.021
C4	14	512	0.463	0.499	0.022
C5	15	512	0.400	0.490	0.022
D1	16	512	0.371	0.484	0.021
D2	17	512	0.418	0.494	0.022
D3	18	512	0.492	0.500	0.022
D4	19	512	0.455	0.498	0.022
D5	20	512	0.344	0.475	0.021
E1	21	512	0.357	0.480	0.021
E2	22	512	0.387	0.487	0.022
E3	23	512	0.504	0.500	0.022
E4	24	512	0.285	0.452	0.020
E5	25	512	0.422	0.494	0.022
F1	26	512	0.578	0.494	0.022
F2	27	512	0.539	0.499	0.022
F3	28	512	0.324	0.469	0.021
F4	29	512	0.346	0.476	0.021
F5	30	512	0.502	0.500	0.022

Chronbach's Alpha: 0.7129

Table 2: Science 07 Raw Score Frequencies

Score	freq	pct	pct_cum
5	5	0.977	0.977
6	7	1.367	2.344
7	18	3.516	5.859
8	40	7.812	13.672
9	37	7.227	20.898
10	45	8.789	29.688
11	64	12.500	42.188
12	43	8.398	50.586
13	41	8.008	58.594
14	38	7.422	66.016
15	40	7.812	73.828
16	14	2.734	76.562
17	15	2.930	79.492
18	25	4.883	84.375
19	12	2.344	86.719
20	17	3.320	90.039
21	15	2.930	92.969
22	10	1.953	94.922
23	8	1.562	96.484
24	7	1.367	97.852
25	1	0.195	98.047
26	3	0.586	98.633
27	1	0.195	98.828
28	1	0.195	99.023
29	5	0.977	100.000

Table 3: Science 07 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			1	0.002	0.005	0.000	0.000	0.000	0.008	0.000
A1	*	a	150	0.293	-0.294	-0.234	0.342	0.411	0.308	0.108
A1		b	233	0.455	0.400	0.628	0.197	0.336	0.511	0.825
A1		c	128	0.250	-0.419	-0.394	0.461	0.252	0.173	0.067
A2			2	0.004	-0.045	-0.007	0.007	0.000	0.008	0.000
A2	*	a	95	0.186	-0.238	-0.155	0.230	0.252	0.180	0.075
A2		b	296	0.578	0.290	0.521	0.329	0.551	0.639	0.850
A2		c	119	0.232	-0.372	-0.359	0.434	0.196	0.173	0.075
A3			3	0.006	-0.065	-0.013	0.013	0.000	0.008	0.000
A3	*	a	181	0.354	-0.085	0.041	0.309	0.393	0.376	0.350
A3		b	101	0.197	-0.253	-0.137	0.237	0.271	0.180	0.100
A3		c	227	0.443	0.030	0.109	0.441	0.336	0.436	0.550
A4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A4	*	a	188	0.367	0.196	0.346	0.204	0.336	0.414	0.550
A4		b	147	0.287	-0.214	-0.107	0.316	0.346	0.278	0.208
A4		c	177	0.346	-0.272	-0.239	0.480	0.318	0.308	0.242
A5			2	0.004	0.027	0.008	0.000	0.000	0.008	0.008
A5	*	a	183	0.357	0.237	0.407	0.151	0.318	0.444	0.558
A5		b	109	0.213	-0.259	-0.204	0.296	0.252	0.195	0.092
A5		c	218	0.426	-0.274	-0.211	0.553	0.430	0.353	0.342
B1			1	0.002	-0.041	-0.007	0.007	0.000	0.000	0.000
B1	*	a	103	0.201	-0.303	-0.225	0.283	0.290	0.165	0.058
B1		b	83	0.162	-0.294	-0.223	0.257	0.178	0.158	0.033
B1		c	325	0.635	0.269	0.454	0.454	0.533	0.677	0.908
B2			2	0.004	-0.090	-0.013	0.013	0.000	0.000	0.000
B2	*	a	119	0.232	-0.275	-0.173	0.257	0.355	0.241	0.083
B2		b	241	0.471	0.321	0.501	0.316	0.299	0.474	0.817
B2		c	150	0.293	-0.348	-0.314	0.414	0.346	0.286	0.100
B3			1	0.002	-0.059	-0.007	0.007	0.000	0.000	0.000
B3	*	a	317	0.619	0.351	0.589	0.336	0.579	0.699	0.925
B3		b	86	0.168	-0.272	-0.190	0.224	0.252	0.158	0.033
B3		c	108	0.211	-0.406	-0.393	0.434	0.168	0.143	0.042
B4			4	0.008	-0.109	-0.020	0.020	0.009	0.000	0.000
B4	*	a	81	0.158	-0.275	-0.184	0.217	0.243	0.135	0.033
B4		b	86	0.168	-0.281	-0.218	0.243	0.196	0.188	0.025
B4		c	341	0.666	0.248	0.422	0.520	0.551	0.677	0.942
B5			1	0.002	-0.068	-0.007	0.007	0.000	0.000	0.000
B5	*	a	185	0.361	0.254	0.396	0.204	0.299	0.376	0.600
B5		b	157	0.307	-0.245	-0.182	0.349	0.336	0.361	0.167
B5		c	169	0.330	-0.289	-0.207	0.441	0.364	0.263	0.233
C1			1	0.002	0.005	0.000	0.000	0.000	0.008	0.000
C1	*	a	200	0.391	0.245	0.429	0.204	0.364	0.406	0.633
C1		b	143	0.279	-0.181	-0.114	0.289	0.290	0.353	0.175
C1		c	168	0.328	-0.356	-0.315	0.507	0.346	0.233	0.192
C2			1	0.002	-0.059	-0.007	0.007	0.000	0.000	0.000
C2	*	a	98	0.191	-0.239	-0.139	0.230	0.308	0.143	0.092
C2		b	269	0.525	0.353	0.555	0.270	0.364	0.677	0.825
C2		c	144	0.281	-0.424	-0.410	0.493	0.327	0.180	0.083
C3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C3	*	a	183	0.357	0.168	0.295	0.230	0.355	0.353	0.525

Table 3: Science 07 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	147	0.287	-0.140	-0.033	0.283	0.308	0.308	0.250
C3		c	182	0.355	-0.313	-0.262	0.487	0.336	0.338	0.225
C4			1	0.002	-0.068	-0.007	0.007	0.000	0.000	0.000
C4		a	147	0.287	-0.233	-0.169	0.303	0.383	0.331	0.133
C4		b	127	0.248	-0.283	-0.182	0.316	0.280	0.248	0.133
C4	*	c	237	0.463	0.208	0.358	0.375	0.336	0.421	0.733
C5			1	0.002	-0.022	0.000	0.000	0.009	0.000	0.000
C5		a	131	0.256	-0.213	-0.151	0.309	0.252	0.286	0.158
C5	*	b	205	0.400	0.255	0.436	0.230	0.364	0.383	0.667
C5		c	175	0.342	-0.334	-0.286	0.461	0.374	0.331	0.175
D1			2	0.004	-0.038	-0.007	0.007	0.000	0.008	0.000
D1		a	134	0.262	-0.241	-0.161	0.303	0.327	0.271	0.142
D1	*	b	190	0.371	0.303	0.461	0.197	0.280	0.383	0.658
D1		c	186	0.363	-0.341	-0.293	0.493	0.393	0.338	0.200
D2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D2	*	a	214	0.418	0.304	0.537	0.171	0.374	0.474	0.708
D2		b	126	0.246	-0.260	-0.182	0.316	0.308	0.218	0.133
D2		c	172	0.336	-0.343	-0.355	0.513	0.318	0.308	0.158
D3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D3		a	117	0.229	-0.223	-0.115	0.257	0.299	0.218	0.142
D3		b	143	0.279	-0.162	-0.050	0.283	0.308	0.293	0.233
D3	*	c	252	0.492	0.077	0.164	0.461	0.393	0.489	0.625
D4			2	0.004	-0.058	-0.007	0.007	0.000	0.008	0.000
D4	*	a	233	0.455	0.166	0.347	0.270	0.458	0.519	0.617
D4		b	111	0.217	-0.239	-0.130	0.230	0.318	0.226	0.100
D4		c	166	0.324	-0.232	-0.210	0.493	0.224	0.248	0.283
D5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D5		a	157	0.307	-0.089	0.032	0.243	0.364	0.361	0.275
D5	*	b	176	0.344	0.141	0.270	0.230	0.336	0.338	0.500
D5		c	179	0.350	-0.333	-0.301	0.526	0.299	0.301	0.225
E1			4	0.008	-0.063	-0.011	0.020	0.000	0.000	0.008
E1	*	a	183	0.357	0.145	0.285	0.224	0.336	0.391	0.508
E1		b	154	0.301	-0.132	0.002	0.257	0.355	0.346	0.258
E1		c	171	0.334	-0.293	-0.275	0.500	0.308	0.263	0.225
E2			1	0.002	-0.078	-0.007	0.007	0.000	0.000	0.000
E2		a	141	0.275	-0.245	-0.147	0.322	0.355	0.248	0.175
E2	*	b	198	0.387	0.328	0.509	0.158	0.308	0.459	0.667
E2		c	172	0.336	-0.363	-0.355	0.513	0.336	0.293	0.158
E3			1	0.002	-0.050	-0.007	0.007	0.000	0.000	0.000
E3	*	a	258	0.504	0.405	0.655	0.237	0.402	0.541	0.892
E3		b	130	0.254	-0.314	-0.269	0.336	0.308	0.286	0.067
E3		c	123	0.240	-0.410	-0.379	0.421	0.290	0.173	0.042
E4			2	0.004	-0.071	-0.013	0.013	0.000	0.000	0.000
E4		a	139	0.271	-0.226	-0.101	0.276	0.374	0.271	0.175
E4	*	b	146	0.285	0.097	0.197	0.178	0.308	0.308	0.375
E4		c	225	0.439	-0.145	-0.083	0.533	0.318	0.421	0.450
E5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E5		a	104	0.203	-0.255	-0.164	0.230	0.271	0.241	0.067
E5		b	192	0.375	-0.167	-0.039	0.355	0.458	0.383	0.317
E5	*	c	216	0.422	0.108	0.202	0.414	0.271	0.376	0.617

Table 3: Science 07 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.050	-0.007	0.007	0.000	0.000	0.000
F1		a	107	0.209	-0.285	-0.208	0.283	0.318	0.158	0.075
F1		b	108	0.211	-0.304	-0.225	0.283	0.262	0.226	0.058
F1	*	c	296	0.578	0.265	0.439	0.428	0.421	0.617	0.867
F2			1	0.002	-0.013	0.000	0.000	0.000	0.008	0.000
F2	*	a	276	0.539	0.260	0.466	0.342	0.486	0.564	0.808
F2		b	93	0.182	-0.244	-0.144	0.211	0.290	0.165	0.067
F2		c	142	0.277	-0.336	-0.322	0.447	0.224	0.263	0.125
F3			2	0.004	-0.018	0.000	0.000	0.009	0.008	0.000
F3		a	190	0.371	-0.131	0.010	0.349	0.374	0.406	0.358
F3	*	b	166	0.324	0.157	0.293	0.191	0.318	0.338	0.483
F3		c	154	0.301	-0.312	-0.302	0.461	0.299	0.248	0.158
F4			3	0.006	-0.044	-0.013	0.013	0.000	0.008	0.000
F4		a	139	0.271	-0.165	-0.081	0.289	0.262	0.316	0.208
F4	*	b	177	0.346	0.264	0.447	0.145	0.364	0.338	0.592
F4		c	193	0.377	-0.366	-0.353	0.553	0.374	0.338	0.200
F5			2	0.004	-0.045	-0.007	0.007	0.000	0.008	0.000
F5		a	133	0.260	-0.234	-0.154	0.329	0.318	0.211	0.175
F5		b	120	0.234	-0.211	-0.118	0.243	0.262	0.301	0.125
F5	*	c	257	0.502	0.138	0.279	0.421	0.421	0.481	0.700

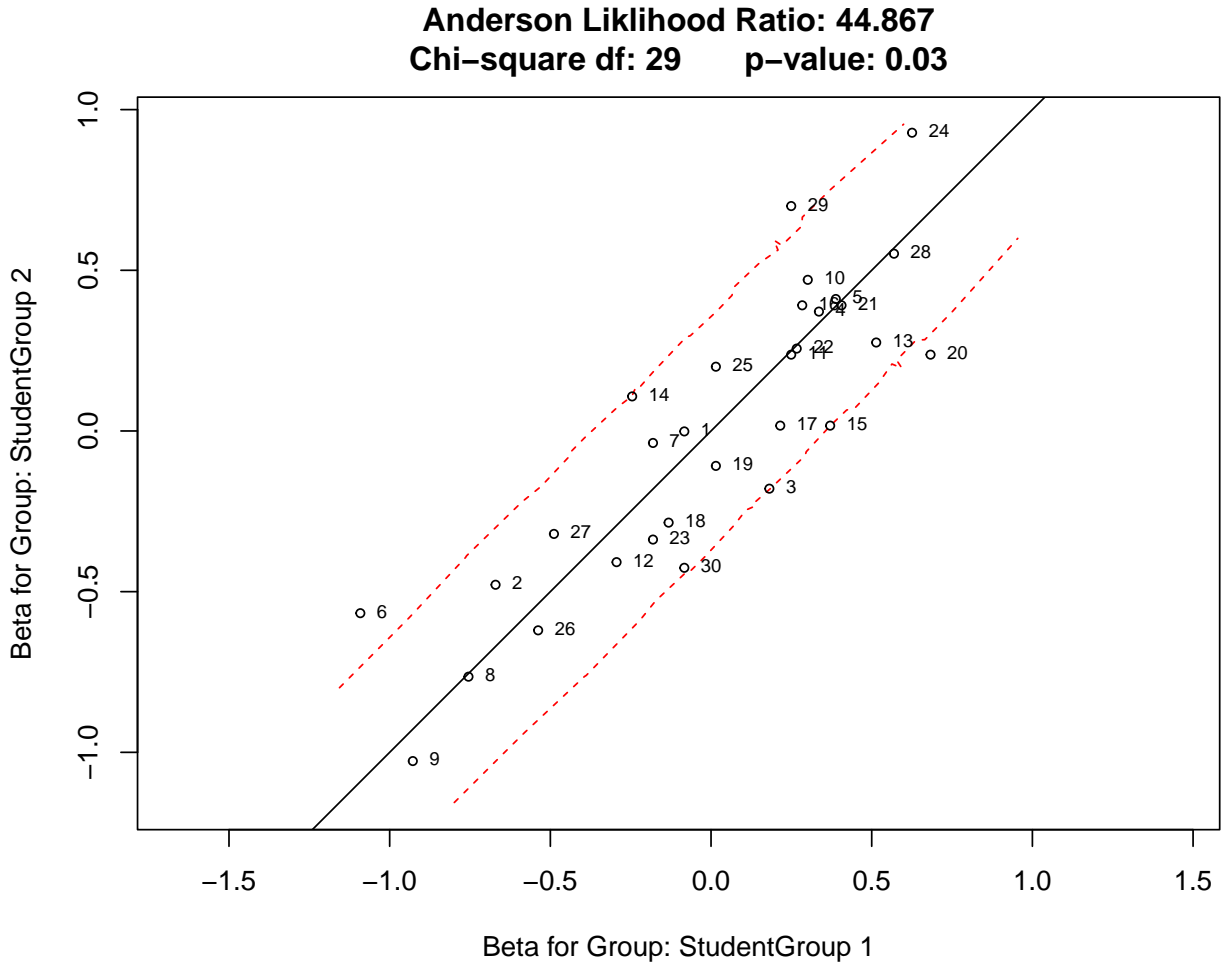


Figure 1: Anderson’s LR-test (Student Groups Randomly Selected)

Table 4: Science 07 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	512	0.8582	0.8812
A2	512	0.9272	0.9383
A3	512	1.1460	1.1357
A4	512	1.0151	1.0232
A5	512	0.9923	0.9994
B1	512	0.9064	0.9496
B2	512	0.9131	0.9335
B3	512	0.8508	0.8944
B4	512	0.9099	0.9624
B5	512	0.9719	0.9794
C1	512	0.9714	0.9890
C2	512	0.8846	0.9051
C3	512	1.0287	1.0407
C4	512	1.0005	1.0101
C5	512	0.9738	0.9793
D1	512	0.9278	0.9475
D2	512	0.9335	0.9470
D3	512	1.0995	1.0980
D4	512	1.0252	1.0392
D5	512	1.0590	1.0596
E1	512	1.0610	1.0585
E2	512	0.9135	0.9323
E3	512	0.8453	0.8760
E4	512	1.1330	1.0936
E5	512	1.1230	1.0800
F1	512	0.9300	0.9620
F2	512	0.9471	0.9681
F3	512	1.0604	1.0432
F4	512	0.9639	0.9745
F5	512	1.0513	1.0548

Table 5: Science 07 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9808	0.0843
Infit	Infit	0.9919	0.0677

Table 6: Science 07 Raw to Theta Table

Raw Score	theta	SE
5	-1.3710	0.4861
6	-1.1564	0.4569
7	-0.9643	0.4348
8	-0.7884	0.4179
9	-0.6246	0.4047
10	-0.4698	0.3945
11	-0.3220	0.3866
12	-0.1792	0.3808
13	-0.0400	0.3768
14	0.0968	0.3744
15	0.2324	0.3736
16	0.3680	0.3742
17	0.5045	0.3764
18	0.6432	0.3801
19	0.7853	0.3857
20	0.9322	0.3933
21	1.0858	0.4034
22	1.2483	0.4163
23	1.4227	0.4331
24	1.6131	0.4550
25	1.8258	0.4841
26	2.0705	0.5241
27	2.3643	0.5824
28	2.7419	0.6756
29	3.2926	0.8557

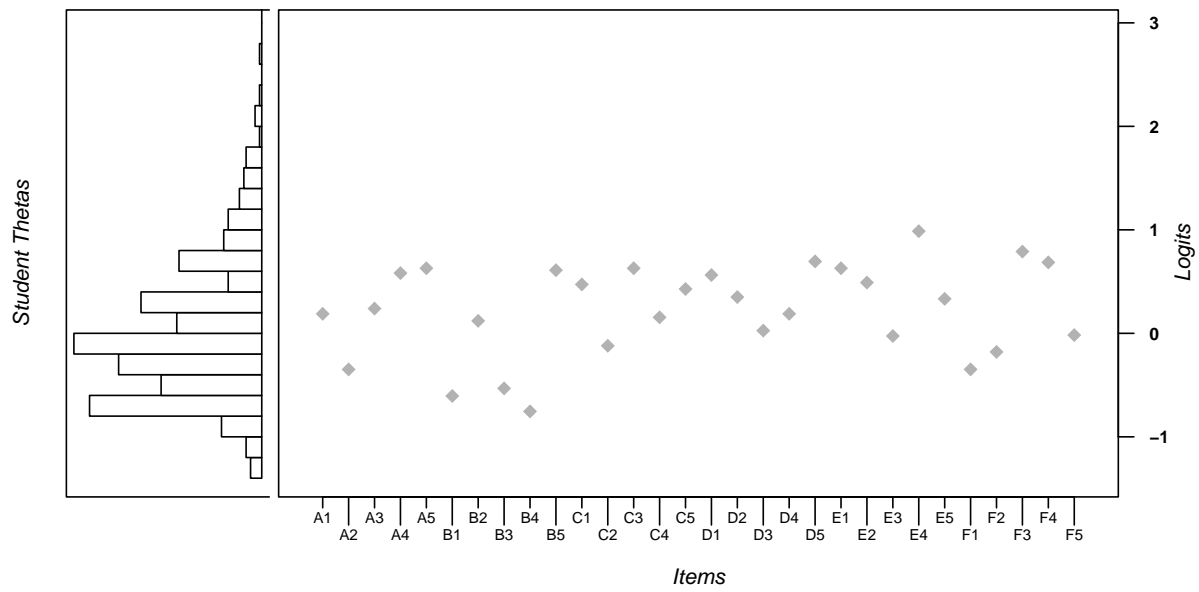


Figure 2: Student Ability - Item Difficulty Wright Map

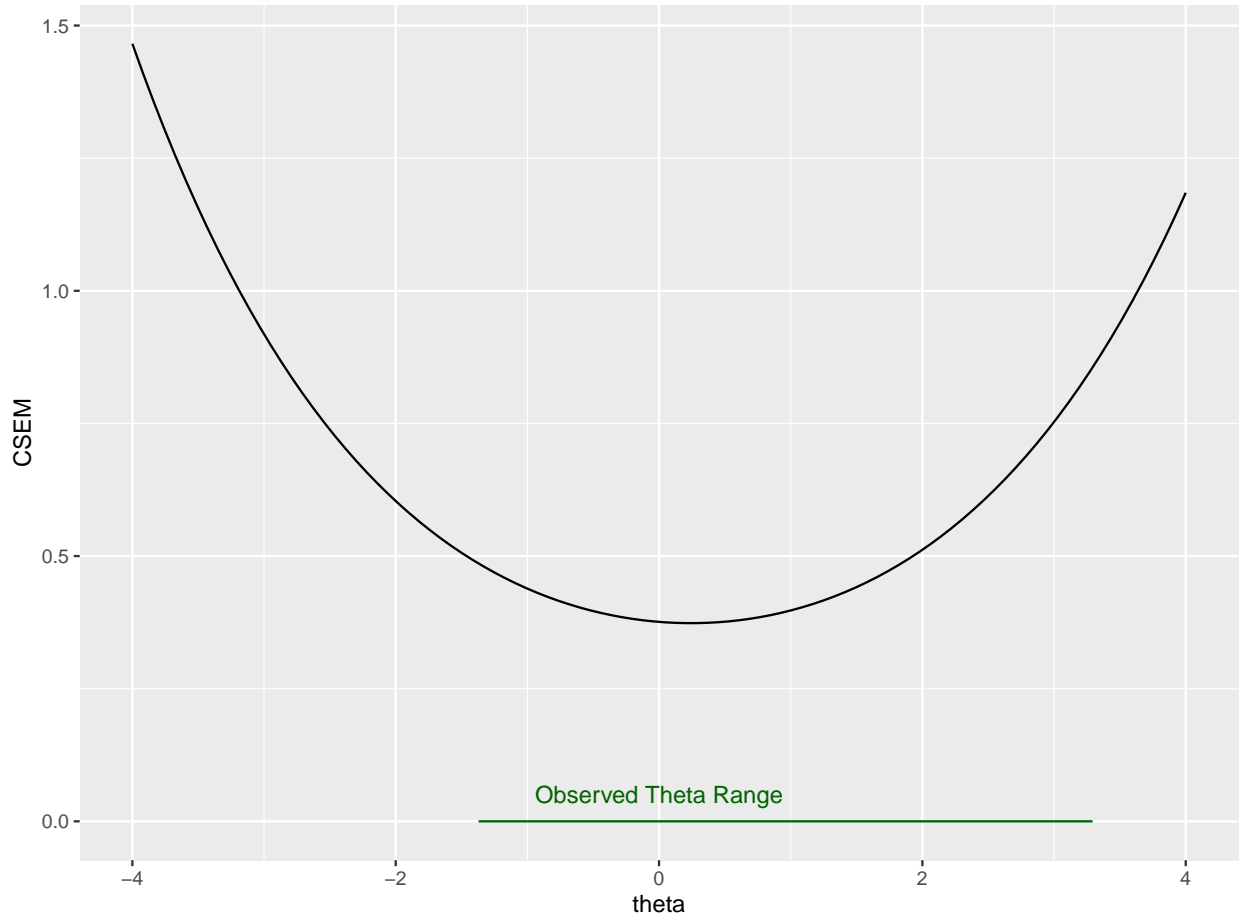


Figure 3: Science 07 Conditional Standard Error of Measure

Table 7: Science 07 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		512	0.71
Ethnic	Black	69	0.40
Ethnic	Hispanic	24	0.41
Ethnic	Other	23	0.79
Ethnic	White	385	0.72
Disadvantaged	No	368	0.69
Disadvantaged	Yes	144	0.74
LEP	No	486	0.71
LEP	Yes	26	0.29
Gender	Female	178	0.71
Gender	Male	334	0.71
Homeless	No	495	0.71
Homeless	Yes	17	0.61

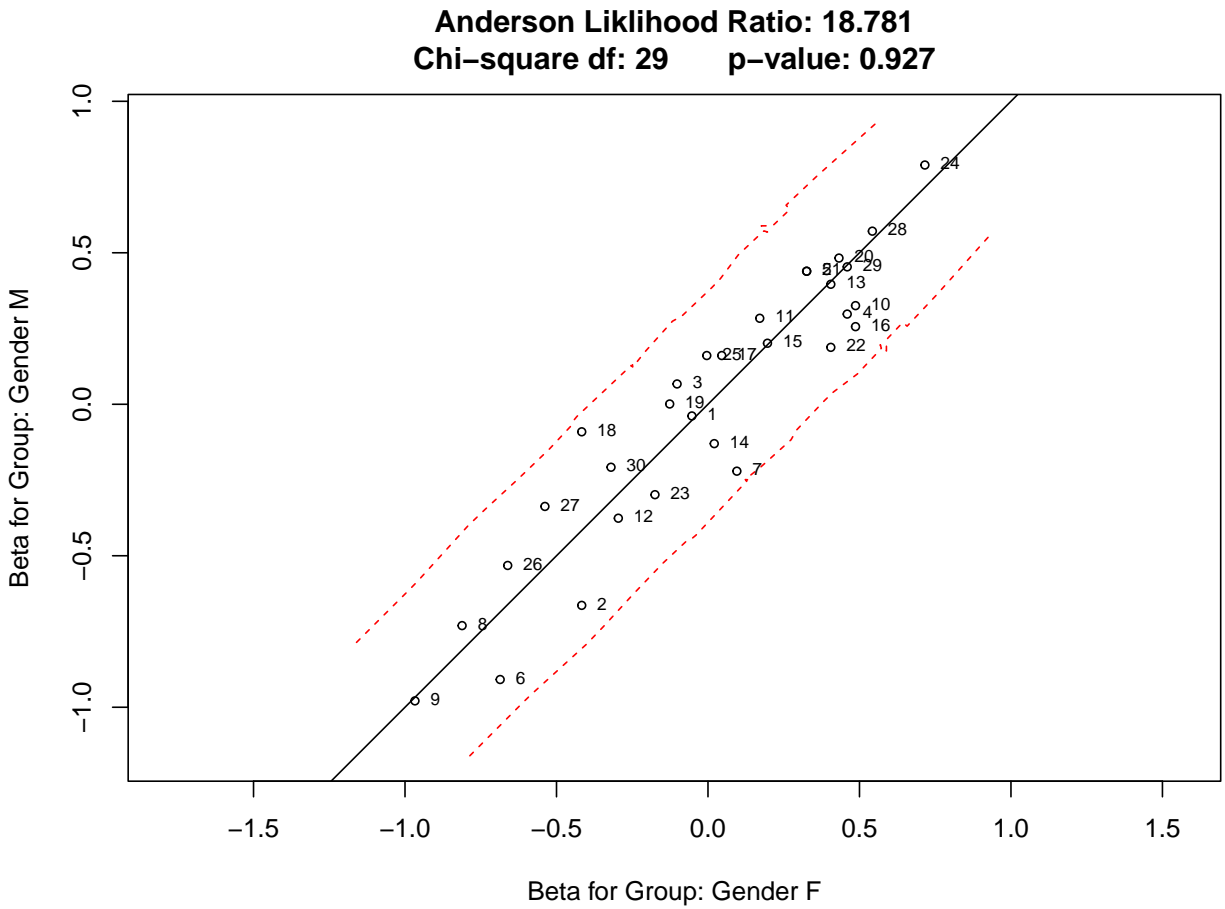


Figure 4: Science 07 Differential Item (DIF) and Test (DTF) Function for Gender

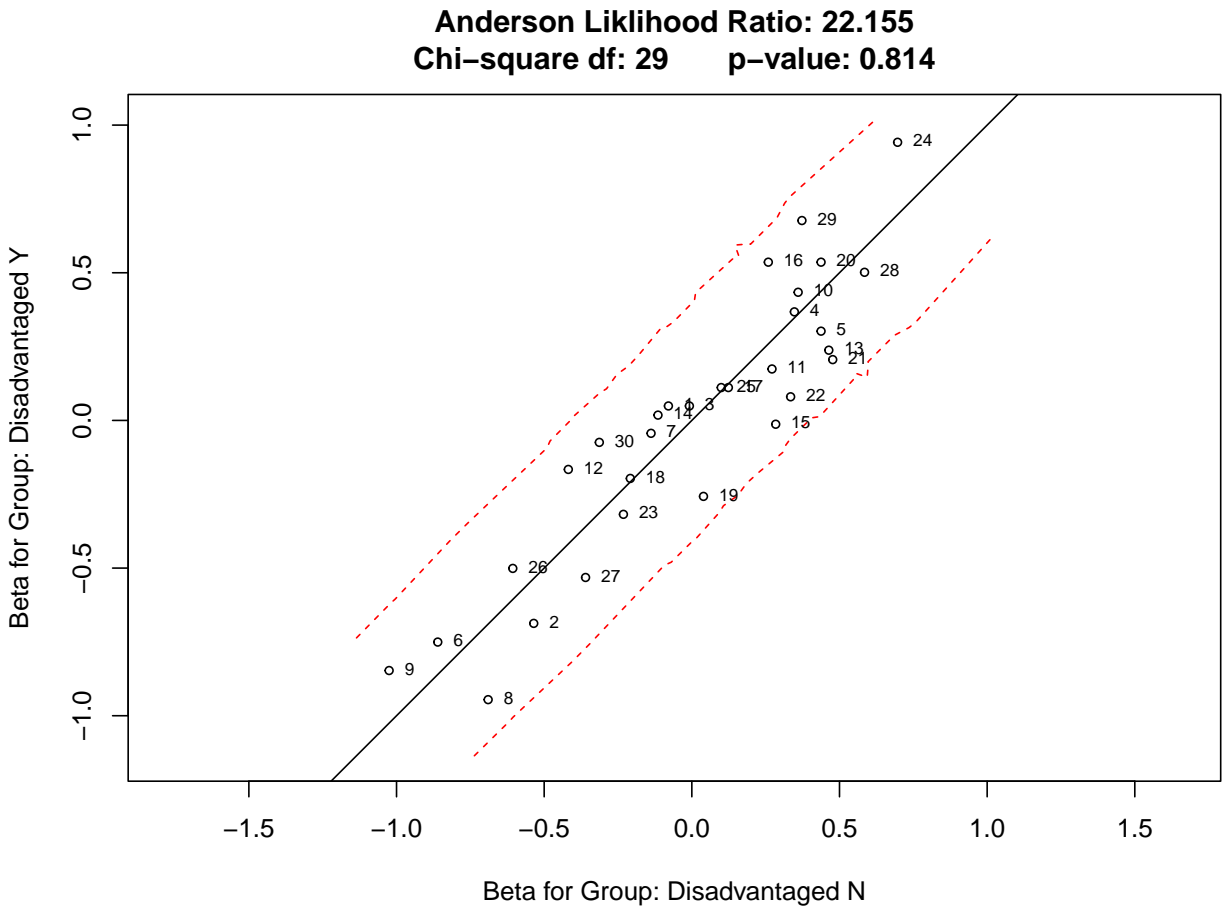


Figure 5: Science 07 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

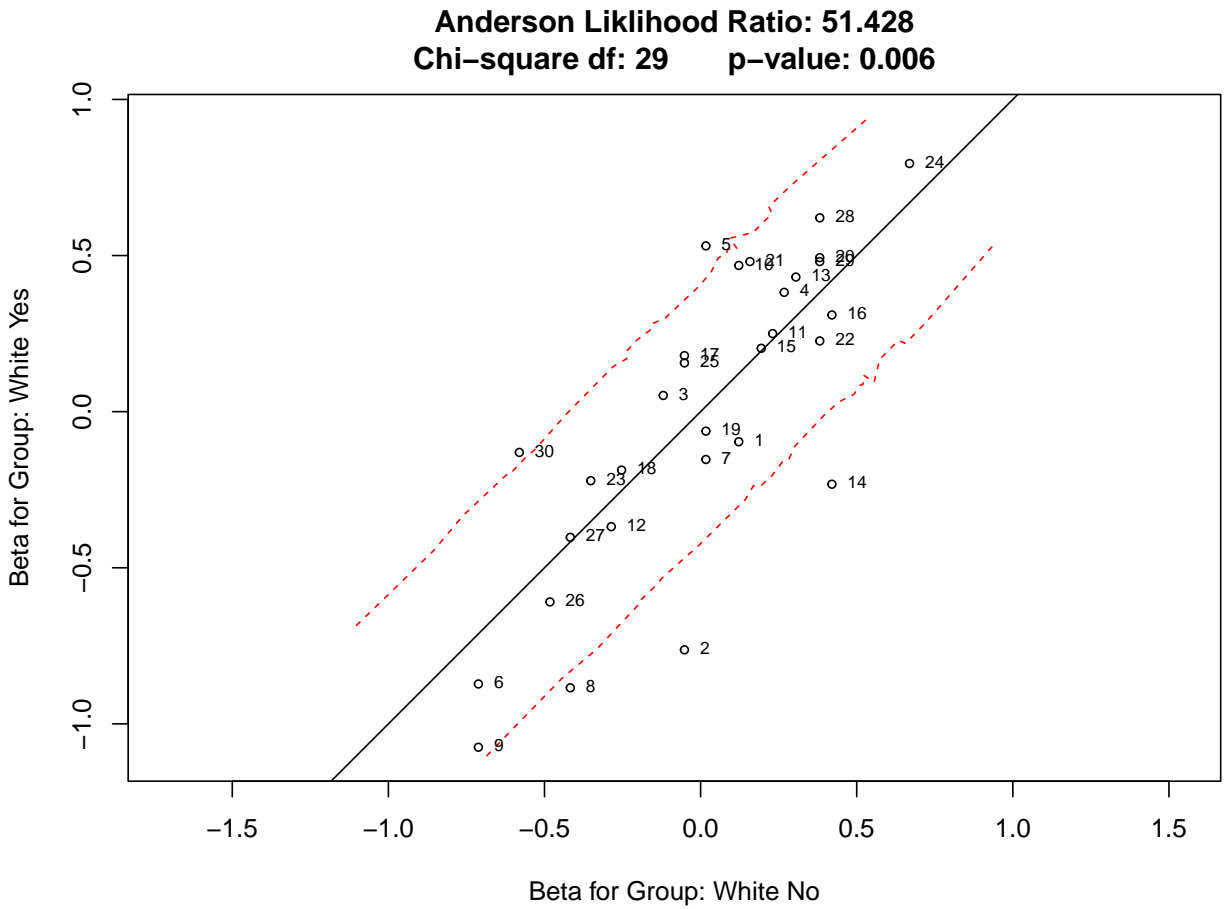


Figure 6: Science 07 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.5574	0.2765	0.8339
False	0.0723	0.0938	0.1661
Total	0.6297	0.3703	1.0000

Accuracy = 0.8339

Table 9: Proficiency Decision Consistency

Contingency Matrix			
.	i	j	
i	0.4716	0.1581	
j	0.0848	0.2856	

Proportion of Consistent Classifications = 0.7572
Cohen's Kappa = 0.4997

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0944	0.0529	0.8023	0.0504	0.6517	0.9382	0.8967	0.0770	0.0217	0.0565
Apprentice	0.3604	0.1220	0.3716	0.1460	0.7117	0.7528	0.7320	0.3053	0.2327	0.0946
Proficient	0.2283	0.0981	0.5701	0.1035	0.6882	0.8532	0.7984	0.1895	0.1066	0.0928
Distinguished	0.0122	0.0316	0.9514	0.0047	0.7221	0.9678	0.9637	0.0167	0.0019	0.0148

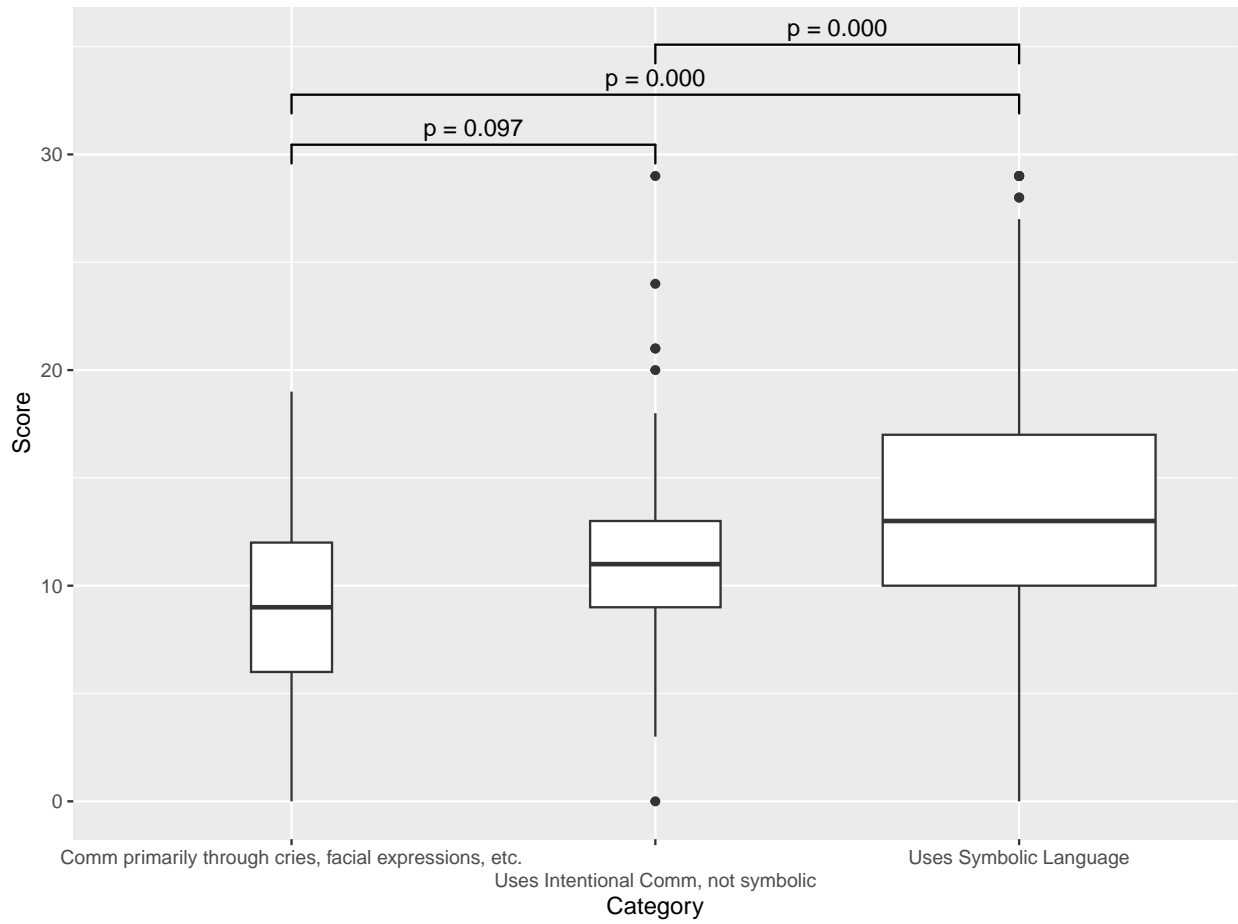


Figure 7: Science 07 Learner Characteristic: Expressive Communication

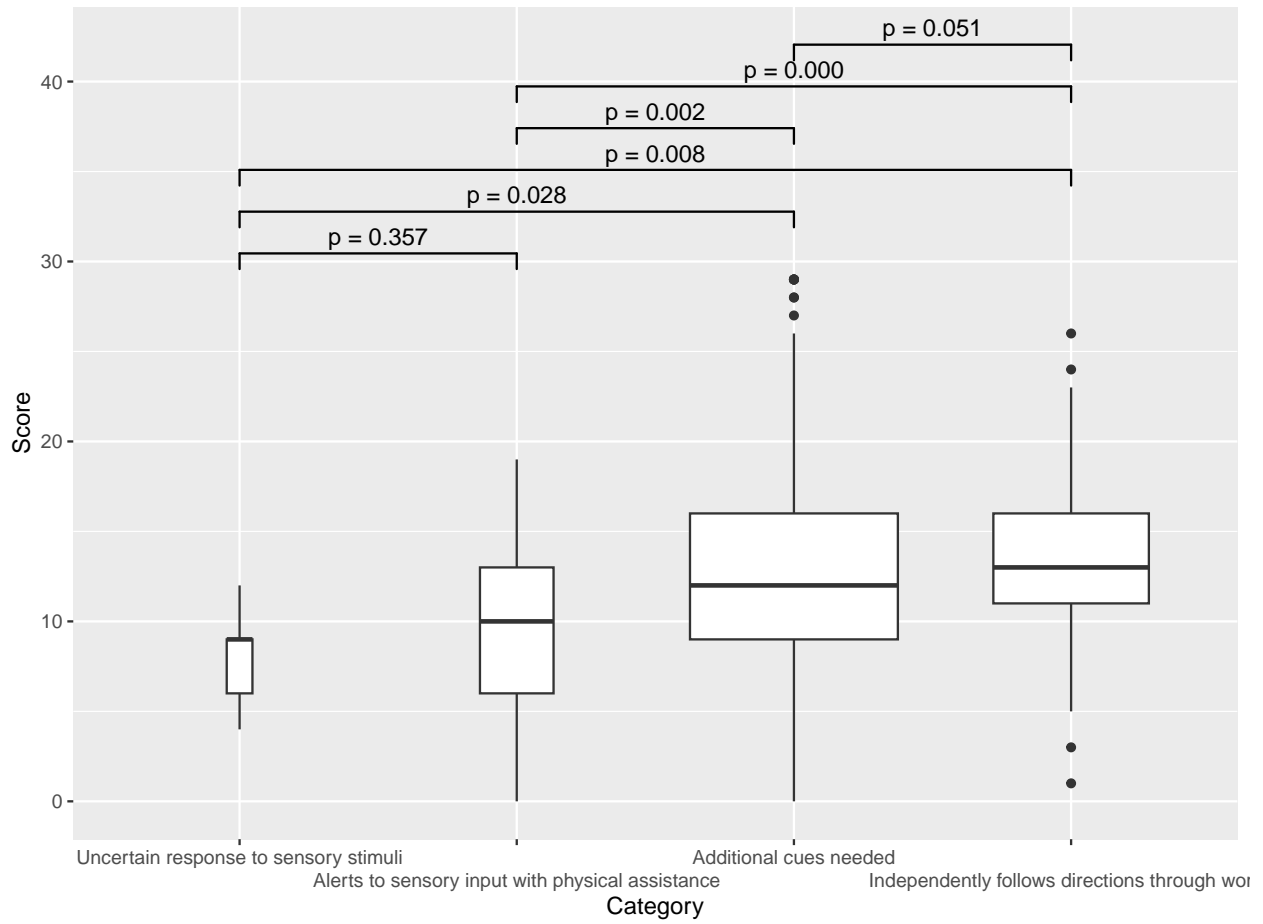


Figure 8: Science 07 Learner Characteristic: Receptive Language

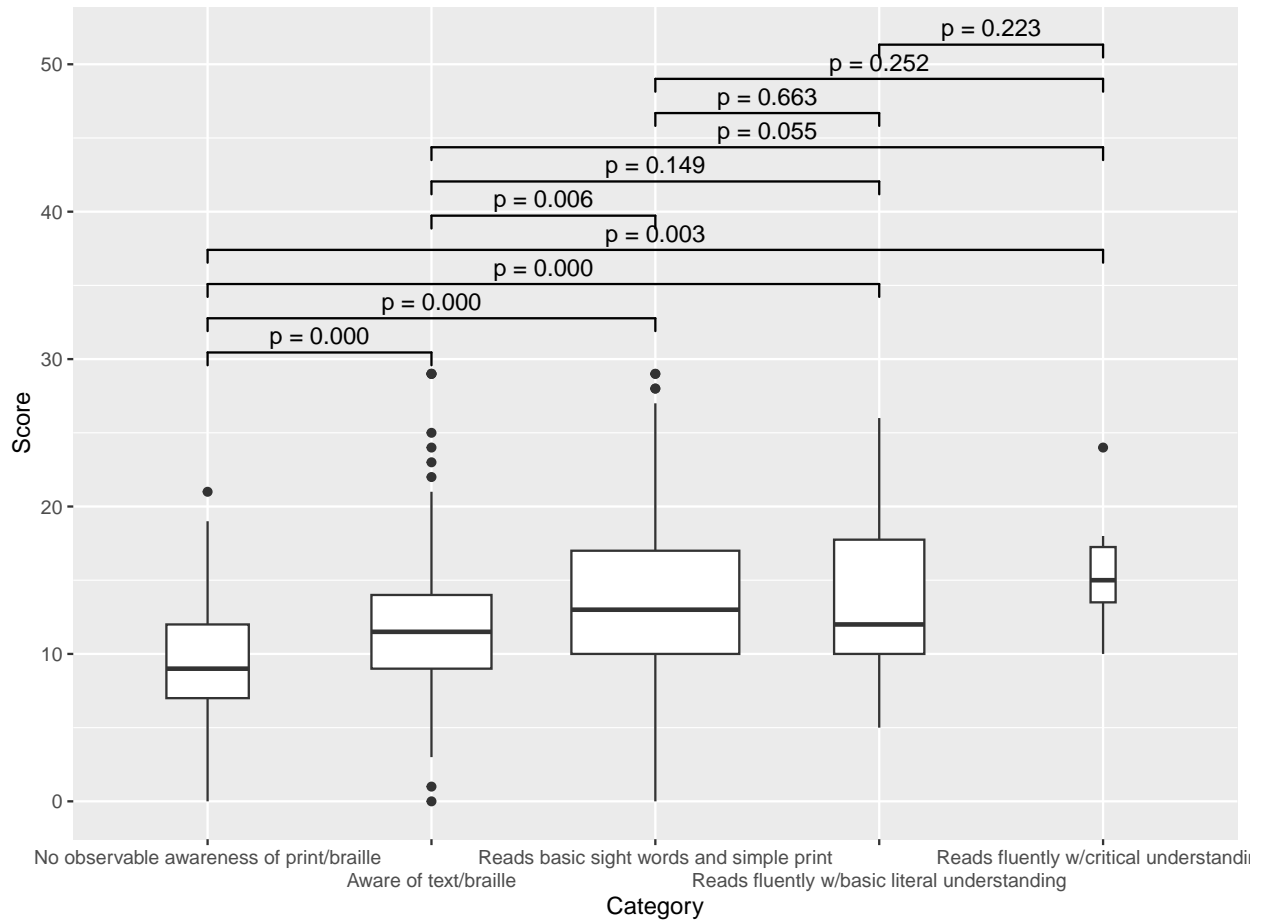


Figure 9: Science 07 Learner Characteristic: Reading

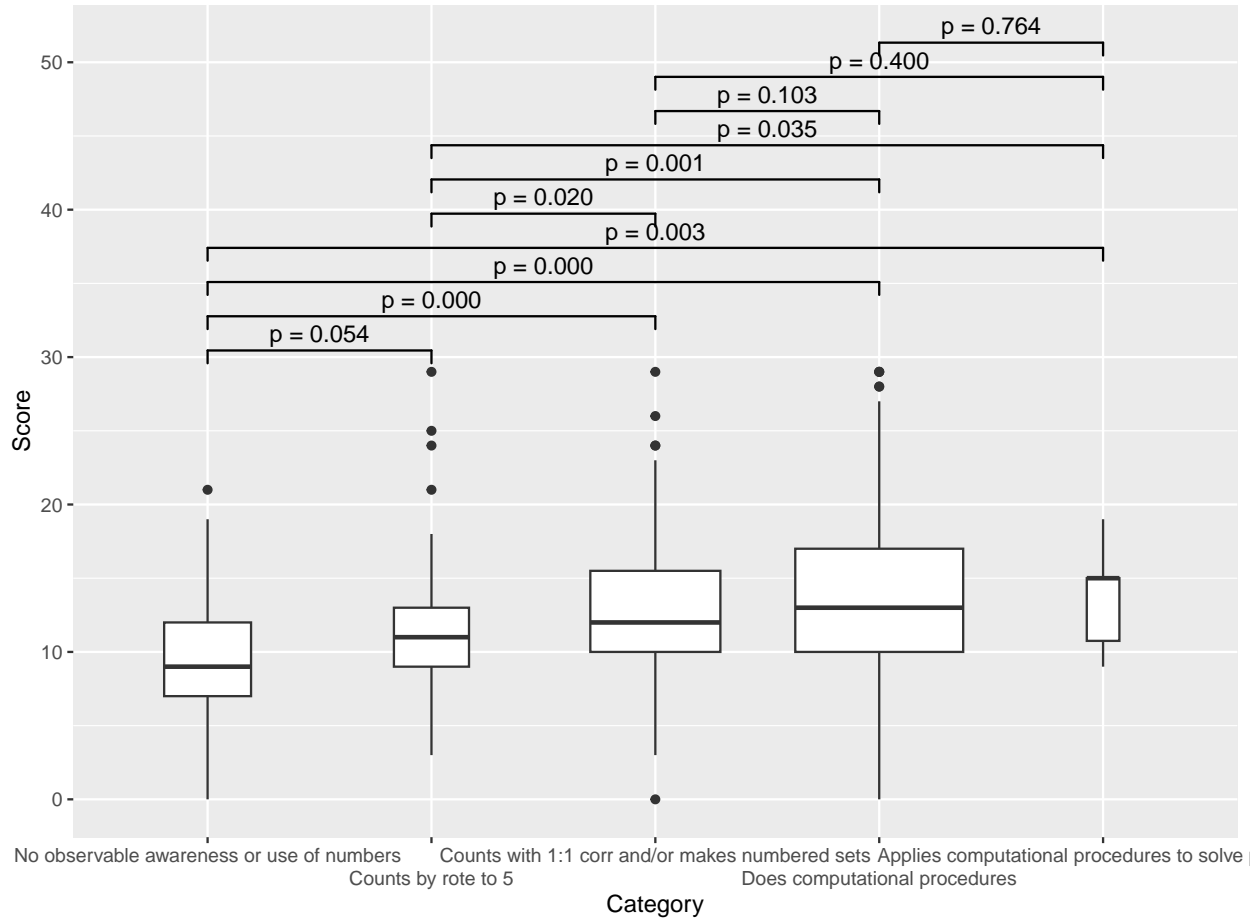


Figure 10: Science 07 Learner Characteristic: Mathematics

Science Grade 4

Table 1: Science 04 Item Statistics

	Item	n	mean	sd	se
	A1	1 475	0.459	0.499	0.023
	A2	2 475	0.472	0.500	0.023
	A3	3 475	0.467	0.499	0.023
	A4	4 475	0.461	0.499	0.023
	A5	5 475	0.358	0.480	0.022
	B1	6 475	0.398	0.490	0.022
	B2	7 475	0.482	0.500	0.023
	B3	8 475	0.507	0.500	0.023
	B4	9 475	0.339	0.474	0.022
	B5	10 475	0.425	0.495	0.023
	C1	11 475	0.345	0.476	0.022
	C2	12 475	0.480	0.500	0.023
	C3	13 475	0.478	0.500	0.023
	C4	14 475	0.533	0.499	0.023
	C5	15 475	0.465	0.499	0.023
	D1	16 475	0.383	0.487	0.022
	D2	17 475	0.400	0.490	0.023
	D3	18 475	0.299	0.458	0.021
	D4	19 475	0.469	0.500	0.023
	D5	20 475	0.349	0.477	0.022
	E1	21 475	0.528	0.500	0.023
	E2	22 475	0.347	0.477	0.022
	E3	23 475	0.554	0.498	0.023
	E4	24 475	0.387	0.488	0.022
	E5	25 475	0.461	0.499	0.023
	F1	26 475	0.579	0.494	0.023
	F2	27 475	0.402	0.491	0.023
	F3	28 475	0.632	0.483	0.022
	F4	29 475	0.573	0.495	0.023
	F5	30 475	0.307	0.462	0.021

Chronbach's Alpha: 0.6098

Table 2: Science 04 Raw Score Frequencies

Score	freq	pct	pct_cum
5	1	0.211	0.211
6	8	1.684	1.895
7	14	2.947	4.842
8	28	5.895	10.737
9	26	5.474	16.211
10	50	10.526	26.737
11	51	10.737	37.474
12	56	11.789	49.263
13	48	10.105	59.368
14	32	6.737	66.105
15	33	6.947	73.053
16	22	4.632	77.684
17	25	5.263	82.947
18	20	4.211	87.158
19	18	3.789	90.947
20	9	1.895	92.842
21	14	2.947	95.789
22	5	1.053	96.842
23	6	1.263	98.105
24	2	0.421	98.526
25	3	0.632	99.158
26	4	0.842	100.000

Table 3: Science 04 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	0.003	0.009	0.000	0.006	0.000	0.009
A1	*	a	218	0.459	0.266	0.463	0.244	0.394	0.586	0.708
A1		b	83	0.175	-0.242	-0.183	0.315	0.110	0.138	0.132
A1		c	172	0.362	-0.370	-0.290	0.441	0.490	0.276	0.151
A2			3	0.006	-0.019	-0.008	0.008	0.000	0.023	0.000
A2		a	142	0.299	-0.154	-0.059	0.323	0.310	0.287	0.264
A2		b	106	0.223	-0.351	-0.313	0.370	0.213	0.230	0.057
A2	*	c	224	0.472	0.146	0.380	0.299	0.477	0.460	0.679
A3			5	0.011	-0.072	-0.006	0.016	0.000	0.023	0.009
A3		a	121	0.255	-0.255	-0.183	0.315	0.284	0.264	0.132
A3	*	b	222	0.467	0.238	0.393	0.315	0.348	0.609	0.708
A3		c	127	0.267	-0.325	-0.203	0.354	0.368	0.103	0.151
A4			2	0.004	-0.106	-0.016	0.016	0.000	0.000	0.000
A4	*	a	219	0.461	0.170	0.375	0.276	0.432	0.552	0.651
A4		b	104	0.219	-0.249	-0.191	0.323	0.213	0.184	0.132
A4		c	150	0.316	-0.260	-0.169	0.386	0.355	0.264	0.217
A5			3	0.006	-0.044	0.000	0.000	0.019	0.000	0.000
A5		a	156	0.328	-0.228	-0.131	0.386	0.348	0.299	0.255
A5		b	146	0.307	-0.181	-0.068	0.370	0.252	0.322	0.302
A5	*	c	170	0.358	0.080	0.199	0.244	0.381	0.379	0.443
B1			6	0.013	-0.099	-0.031	0.031	0.006	0.011	0.000
B1		a	168	0.354	-0.295	-0.248	0.465	0.342	0.379	0.217
B1		b	112	0.236	-0.217	-0.090	0.260	0.265	0.230	0.170
B1	*	c	189	0.398	0.194	0.369	0.244	0.387	0.379	0.613
B2			3	0.006	-0.082	-0.016	0.016	0.000	0.011	0.000
B2	*	a	229	0.482	0.294	0.539	0.244	0.439	0.540	0.783
B2		b	125	0.263	-0.358	-0.331	0.425	0.252	0.253	0.094
B2		c	118	0.248	-0.279	-0.192	0.315	0.310	0.195	0.123
B3			3	0.006	-0.044	0.002	0.008	0.006	0.000	0.009
B3		a	114	0.240	-0.278	-0.224	0.299	0.297	0.253	0.075
B3		b	117	0.246	-0.280	-0.246	0.378	0.187	0.299	0.132
B3	*	c	241	0.507	0.206	0.468	0.315	0.510	0.448	0.783
B4			5	0.011	-0.077	-0.014	0.024	0.000	0.011	0.009
B4		a	145	0.305	-0.195	-0.112	0.339	0.323	0.322	0.226
B4	*	b	161	0.339	0.233	0.372	0.213	0.226	0.425	0.585
B4		c	164	0.345	-0.343	-0.246	0.425	0.452	0.241	0.179
B5			3	0.006	-0.108	-0.016	0.016	0.006	0.000	0.000
B5		a	157	0.331	-0.154	-0.046	0.339	0.355	0.322	0.292
B5		b	113	0.238	-0.236	-0.191	0.370	0.206	0.172	0.179
B5	*	c	202	0.425	0.058	0.253	0.276	0.432	0.506	0.528
C1			1	0.002	-0.102	-0.008	0.008	0.000	0.000	0.000
C1		a	186	0.392	-0.217	-0.145	0.409	0.452	0.414	0.264
C1	*	b	164	0.345	0.197	0.358	0.236	0.219	0.425	0.594
C1		c	124	0.261	-0.301	-0.205	0.346	0.329	0.161	0.142
C2			1	0.002	-0.048	-0.008	0.008	0.000	0.000	0.000
C2		a	138	0.291	-0.202	-0.126	0.362	0.265	0.299	0.236
C2		b	108	0.227	-0.318	-0.284	0.378	0.213	0.195	0.094
C2	*	c	228	0.480	0.166	0.418	0.252	0.523	0.506	0.670
C3			2	0.004	-0.083	-0.016	0.016	0.000	0.000	0.000
C3	*	a	227	0.478	0.101	0.297	0.354	0.458	0.483	0.651

Table 3: Science 04 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	90	0.189	-0.157	-0.121	0.244	0.129	0.299	0.123
C3		c	156	0.328	-0.274	-0.159	0.386	0.413	0.218	0.226
C4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C4	*	a	253	0.533	0.308	0.495	0.307	0.419	0.736	0.802
C4		b	110	0.232	-0.304	-0.218	0.331	0.271	0.161	0.113
C4		c	112	0.236	-0.366	-0.277	0.362	0.310	0.103	0.085
C5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C5	*	a	221	0.465	0.212	0.437	0.299	0.426	0.448	0.736
C5		b	115	0.242	-0.208	-0.180	0.331	0.168	0.356	0.151
C5		c	139	0.293	-0.350	-0.257	0.370	0.406	0.195	0.113
D1			4	0.008	-0.051	-0.006	0.016	0.006	0.000	0.009
D1	*	a	182	0.383	0.130	0.284	0.291	0.335	0.368	0.575
D1		b	140	0.295	-0.186	-0.095	0.331	0.303	0.299	0.236
D1		c	149	0.314	-0.274	-0.183	0.362	0.355	0.333	0.179
D2			1	0.002	-0.026	0.000	0.000	0.006	0.000	0.000
D2		a	147	0.309	-0.138	-0.037	0.339	0.297	0.299	0.302
D2		b	137	0.288	-0.205	-0.122	0.339	0.303	0.276	0.217
D2	*	c	190	0.400	0.004	0.158	0.323	0.394	0.425	0.481
D3			4	0.008	-0.139	-0.031	0.031	0.000	0.000	0.000
D3		a	132	0.278	-0.122	-0.041	0.315	0.239	0.299	0.274
D3	*	b	142	0.299	-0.025	0.096	0.244	0.310	0.310	0.340
D3		c	197	0.415	-0.158	-0.023	0.409	0.452	0.391	0.387
D4			1	0.002	0.007	0.000	0.000	0.000	0.011	0.000
D4		a	122	0.257	-0.204	-0.093	0.291	0.310	0.184	0.198
D4		b	129	0.272	-0.308	-0.246	0.378	0.277	0.276	0.132
D4	*	c	223	0.469	0.161	0.339	0.331	0.413	0.529	0.670
D5			2	0.004	-0.013	0.002	0.008	0.000	0.000	0.009
D5	*	a	166	0.349	0.133	0.289	0.220	0.316	0.402	0.509
D5		b	133	0.280	-0.201	-0.103	0.339	0.277	0.253	0.236
D5		c	174	0.366	-0.260	-0.188	0.433	0.406	0.345	0.245
E1			1	0.002	-0.037	0.000	0.000	0.006	0.000	0.000
E1		a	77	0.162	-0.230	-0.143	0.228	0.142	0.195	0.085
E1	*	b	251	0.528	0.219	0.426	0.339	0.490	0.586	0.764
E1		c	146	0.307	-0.338	-0.282	0.433	0.361	0.218	0.151
E2			3	0.006	-0.032	0.002	0.008	0.006	0.000	0.009
E2	*	a	165	0.347	0.199	0.374	0.220	0.258	0.391	0.594
E2		b	178	0.375	-0.174	-0.048	0.378	0.406	0.368	0.330
E2		c	129	0.272	-0.355	-0.328	0.394	0.329	0.241	0.066
E3			2	0.004	-0.029	0.000	0.000	0.013	0.000	0.000
E3		a	115	0.242	-0.315	-0.258	0.362	0.252	0.218	0.104
E3		b	95	0.200	-0.217	-0.158	0.252	0.206	0.241	0.094
E3	*	c	263	0.554	0.179	0.416	0.386	0.529	0.540	0.802
E4			1	0.002	0.051	0.009	0.000	0.000	0.000	0.009
E4		a	116	0.244	-0.256	-0.158	0.299	0.284	0.218	0.142
E4	*	b	184	0.387	0.109	0.262	0.276	0.355	0.425	0.538
E4		c	174	0.366	-0.202	-0.114	0.425	0.361	0.356	0.311
E5			4	0.008	-0.068	-0.016	0.016	0.006	0.011	0.000
E5		a	118	0.248	-0.239	-0.118	0.307	0.290	0.161	0.189
E5		b	134	0.282	-0.170	-0.103	0.339	0.271	0.276	0.236
E5	*	c	219	0.461	0.071	0.237	0.339	0.432	0.552	0.575

Table 3: Science 04 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.026	0.000	0.000	0.006	0.000	0.000
F1	*	a	275	0.579	0.323	0.614	0.339	0.497	0.621	0.953
F1		b	99	0.208	-0.336	-0.284	0.331	0.258	0.138	0.047
F1		c	100	0.211	-0.354	-0.331	0.331	0.239	0.241	0.000
F2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F2		a	128	0.269	-0.255	-0.166	0.307	0.342	0.241	0.142
F2	*	b	191	0.402	0.236	0.377	0.283	0.226	0.575	0.660
F2		c	156	0.328	-0.317	-0.211	0.409	0.432	0.184	0.198
F3			1	0.002	-0.015	0.000	0.000	0.006	0.000	0.000
F3		a	84	0.177	-0.210	-0.128	0.213	0.200	0.195	0.085
F3		b	90	0.189	-0.341	-0.277	0.315	0.219	0.138	0.038
F3	*	c	300	0.632	0.197	0.405	0.472	0.574	0.667	0.877
F4			1	0.002	-0.059	-0.008	0.008	0.000	0.000	0.000
F4		a	79	0.166	-0.241	-0.164	0.220	0.200	0.161	0.057
F4	*	b	272	0.573	0.287	0.514	0.354	0.490	0.678	0.868
F4		c	123	0.259	-0.396	-0.342	0.417	0.310	0.161	0.075
F5			1	0.002	0.029	0.009	0.000	0.000	0.000	0.009
F5	*	a	146	0.307	0.092	0.247	0.197	0.290	0.333	0.443
F5		b	146	0.307	-0.244	-0.167	0.394	0.290	0.310	0.226
F5		c	182	0.383	-0.176	-0.089	0.409	0.419	0.356	0.321

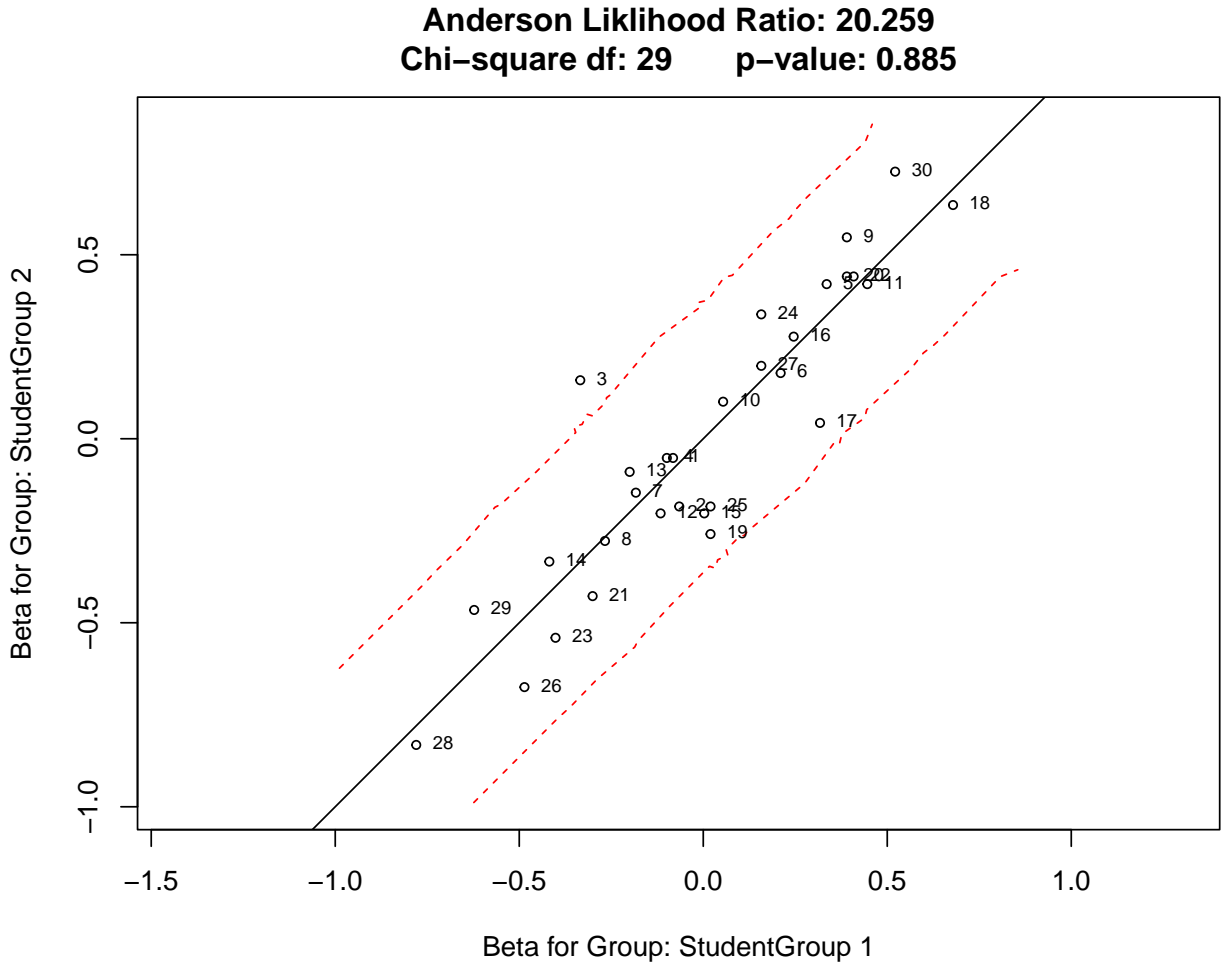


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Science 04 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	475	0.9318	0.9411
A2	475	1.0117	1.0091
A3	475	0.9474	0.9575
A4	475	0.9968	0.9951
A5	475	1.0448	1.0457
B1	475	0.9699	0.9815
B2	475	0.9110	0.9250
B3	475	0.9648	0.9736
B4	475	0.9633	0.9528
B5	475	1.0703	1.0628
C1	475	0.9870	0.9757
C2	475	1.0063	0.9973
C3	475	1.0409	1.0357
C4	475	0.9027	0.9138
C5	475	0.9625	0.9722
D1	475	1.0206	1.0171
D2	475	1.1082	1.0956
D3	475	1.1449	1.1023
D4	475	0.9911	1.0010
D5	475	1.0112	1.0173
E1	475	0.9551	0.9662
E2	475	0.9720	0.9782
E3	475	0.9765	0.9867
E4	475	1.0426	1.0304
E5	475	1.0603	1.0537
F1	475	0.8806	0.9084
F2	475	0.9576	0.9579
F3	475	0.9458	0.9728
F4	475	0.8979	0.9270
F5	475	1.0484	1.0381

Table 5: Science 04 Summary of Fit Statistics

fit		M	SD
Outfit	Outfit	0.9908	0.0616
Infit	Infit	0.9931	0.0500

Table 6: Science 04 Raw to Theta Table

Raw Score	theta	SE
5	-1.3370	0.4830
6	-1.1253	0.4537
7	-0.9360	0.4317
8	-0.7628	0.4147
9	-0.6016	0.4016
10	-0.4494	0.3914
11	-0.3039	0.3837
12	-0.1635	0.3780
13	-0.0265	0.3740
14	0.1082	0.3717
15	0.2418	0.3710
16	0.3755	0.3717
17	0.5101	0.3740
18	0.6470	0.3779
19	0.7874	0.3836
20	0.9328	0.3913
21	1.0848	0.4014
22	1.2459	0.4146
23	1.4189	0.4315
24	1.6080	0.4535
25	1.8194	0.4827
26	2.0629	0.5229

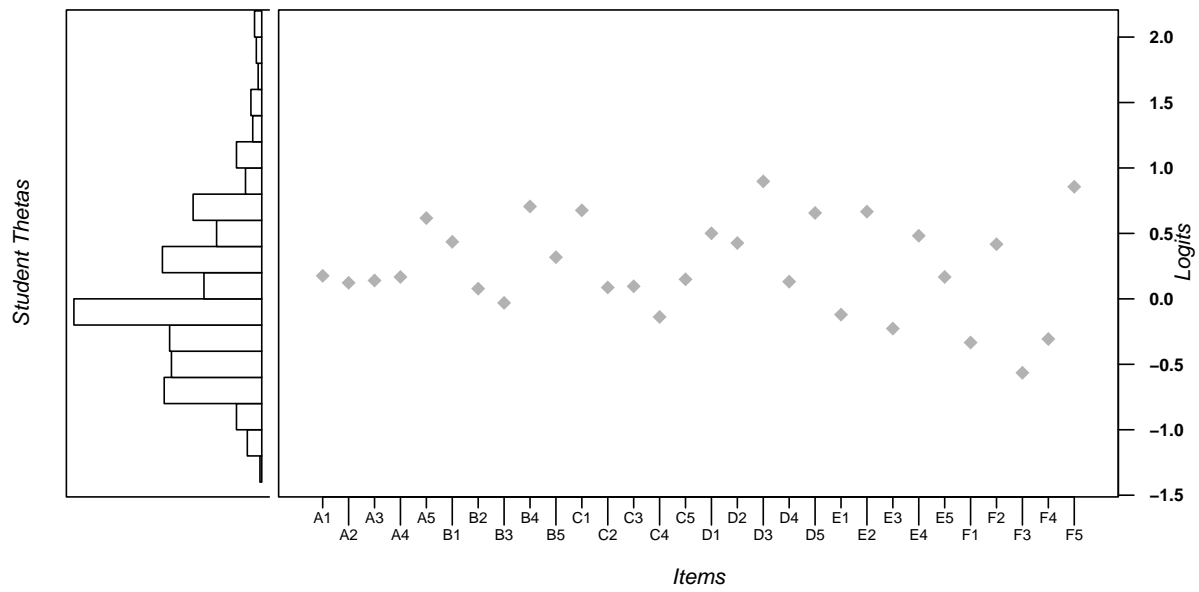


Figure 2: Student Ability - Item Difficulty Wright Map

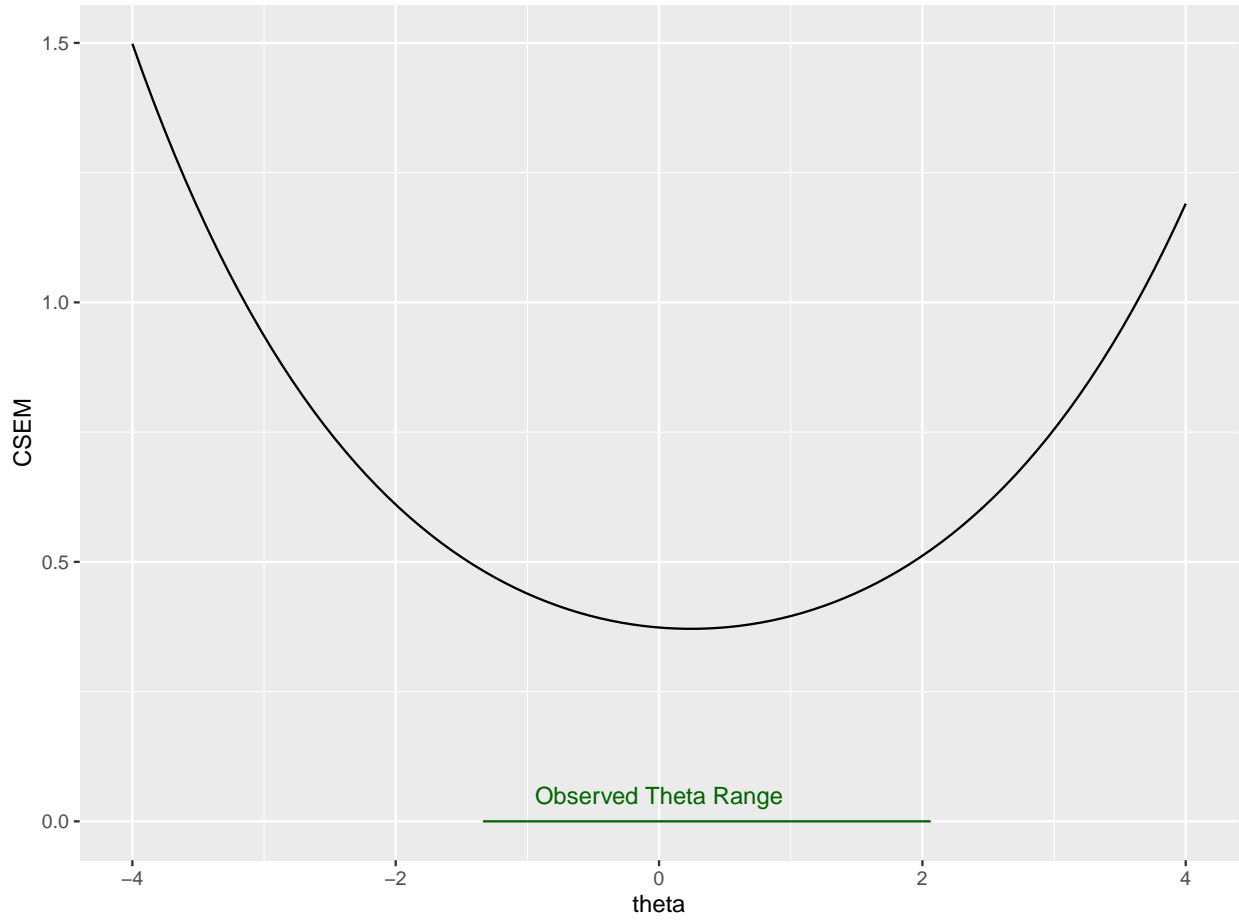


Figure 3: Science 04 Conditional Standard Error of Measure

Table 7: Science 04 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		475	0.59
Ethnic		11	0.30
Ethnic	Black	52	0.45
Ethnic	Hispanic	31	0.57
Ethnic	Other	22	0.42
Ethnic	White	357	0.61
Disadvantaged	No	369	0.59
Disadvantaged	Yes	106	0.58
LEP	No	447	0.59
LEP	Yes	28	0.44
Gender	Female	158	0.58
Gender	Male	317	0.59
Homeless	No	462	0.59
Homeless	Yes	13	0.01

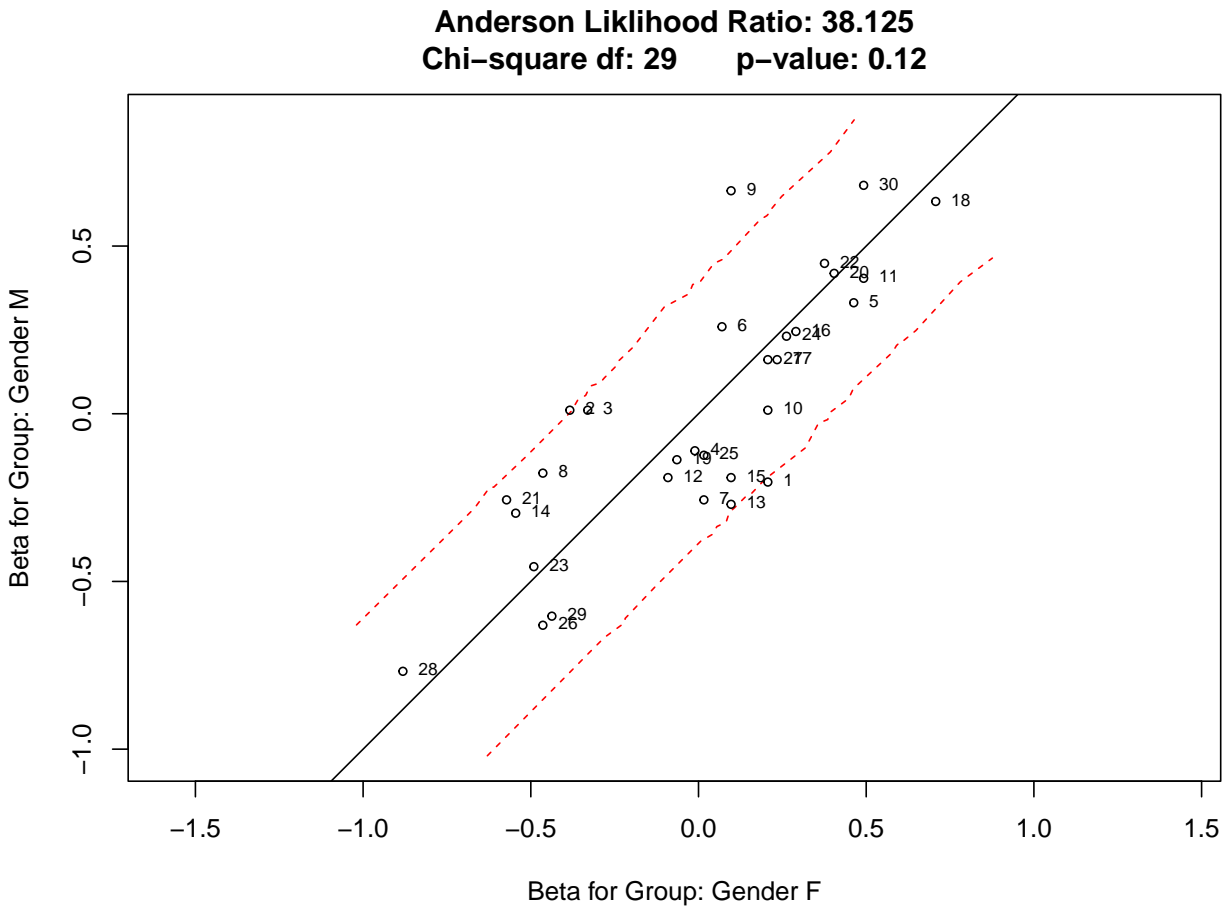


Figure 4: Science 04 Differential Item (DIF) and Test (DTF) Function for Gender

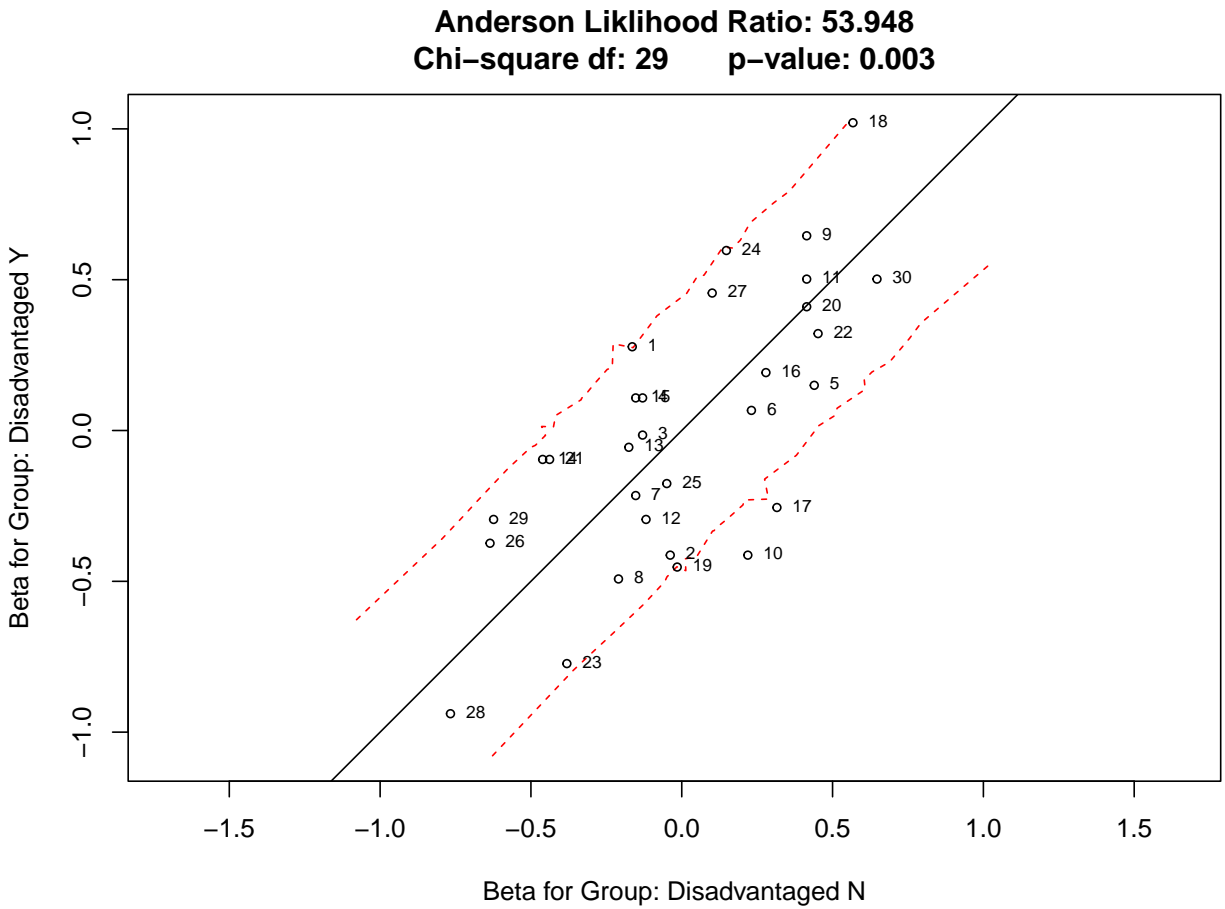


Figure 5: Science 04 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

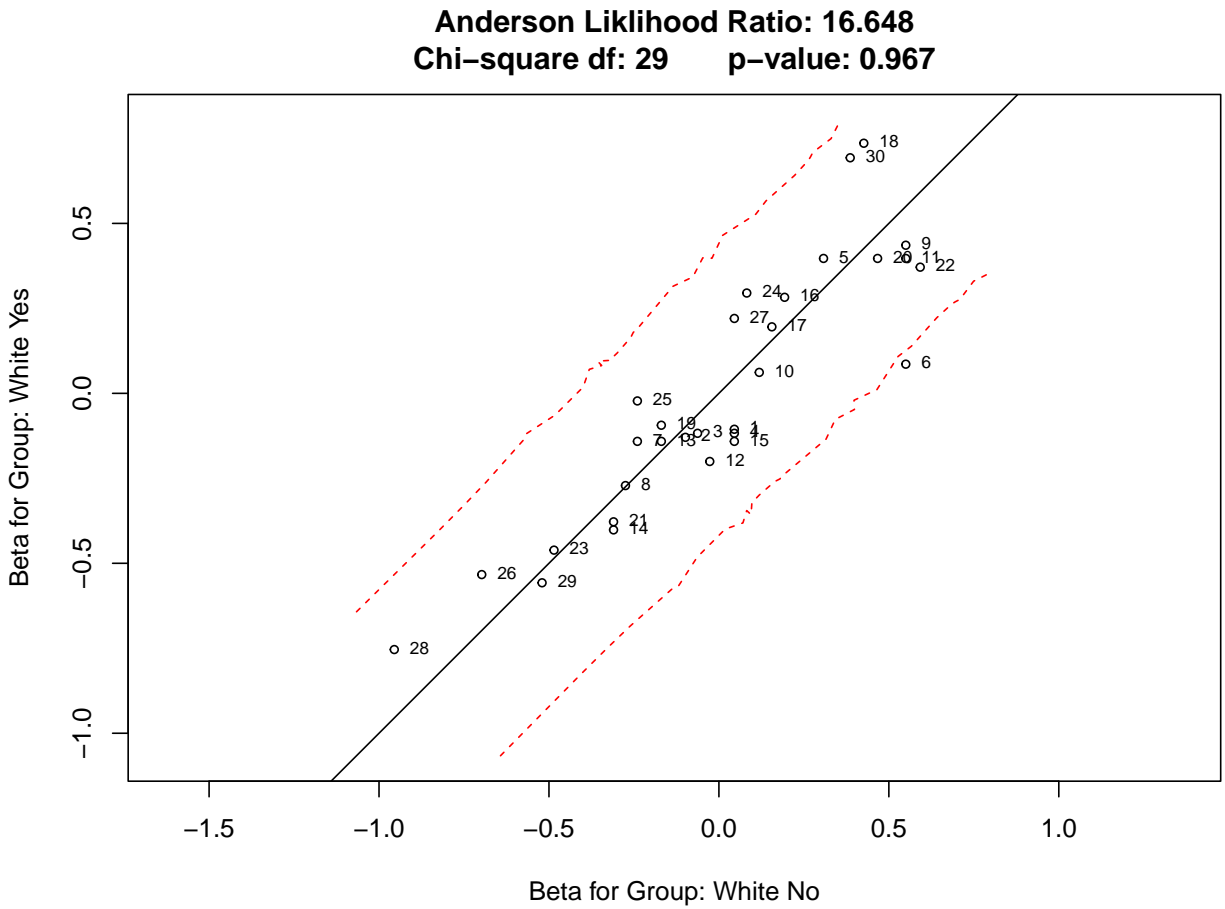


Figure 6: Science 04 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6750	0.1561	0.8311
False	0.0568	0.1121	0.1689
Total	0.7318	0.2682	1.0000

Accuracy = 0.8311

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5645	0.1672
j	0.0898	0.1784

Proportion of Consistent Classifications = 0.7429
Cohen's Kappa = 0.4

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0976	0.0694	0.7716	0.0614	0.6140	0.9175	0.8693	0.0785	0.0279	0.0521
Apprentice	0.4475	0.1173	0.2546	0.1806	0.7124	0.6846	0.7021	0.3698	0.3190	0.0747
Proficient	0.1438	0.1121	0.6762	0.0679	0.6792	0.8578	0.8200	0.1320	0.0655	0.0712
Distinguished	0.0008	0.0116	0.9873	0.0004	0.6737	0.9884	0.9881	0.0024	0.0002	0.0022

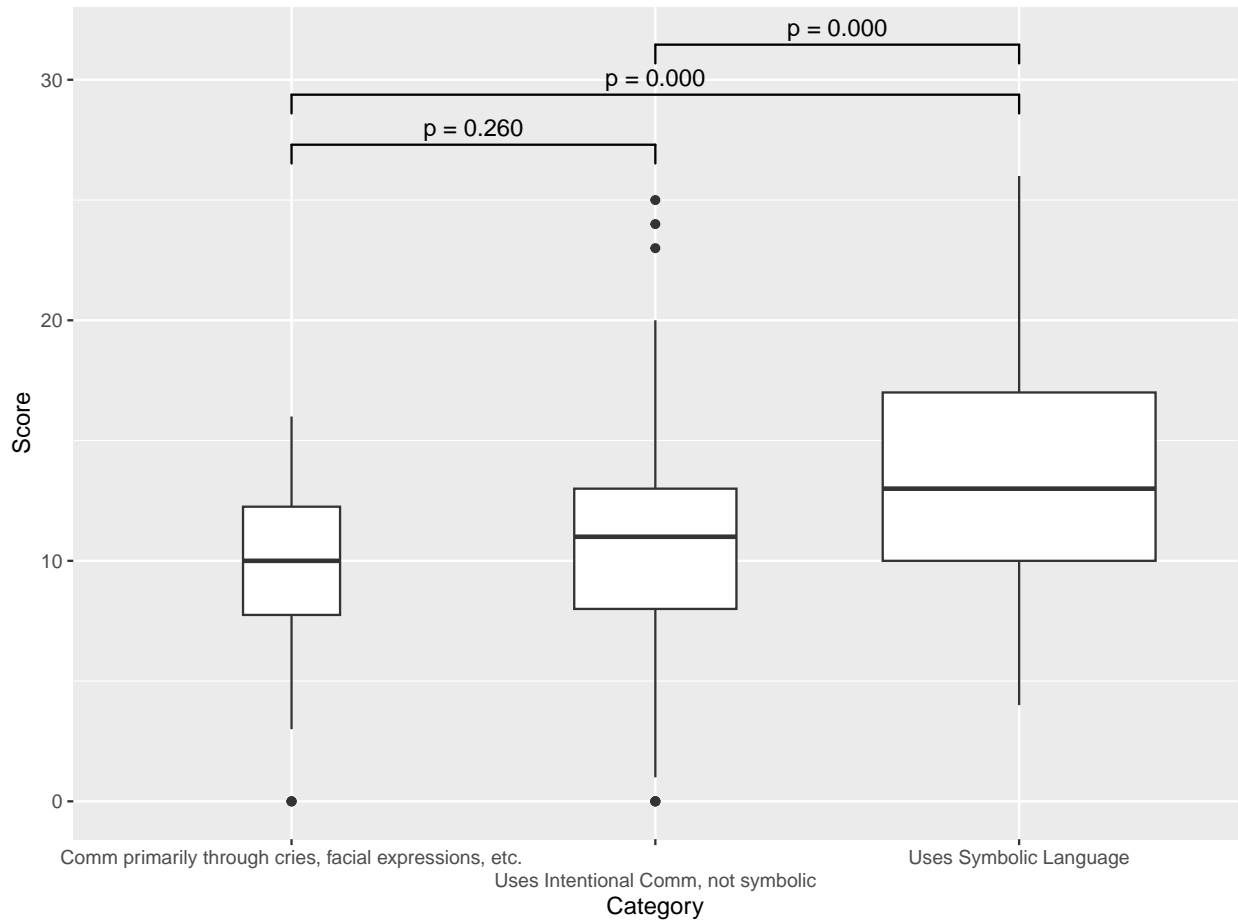


Figure 7: Science 04 Learner Characteristic: Expressive Communication

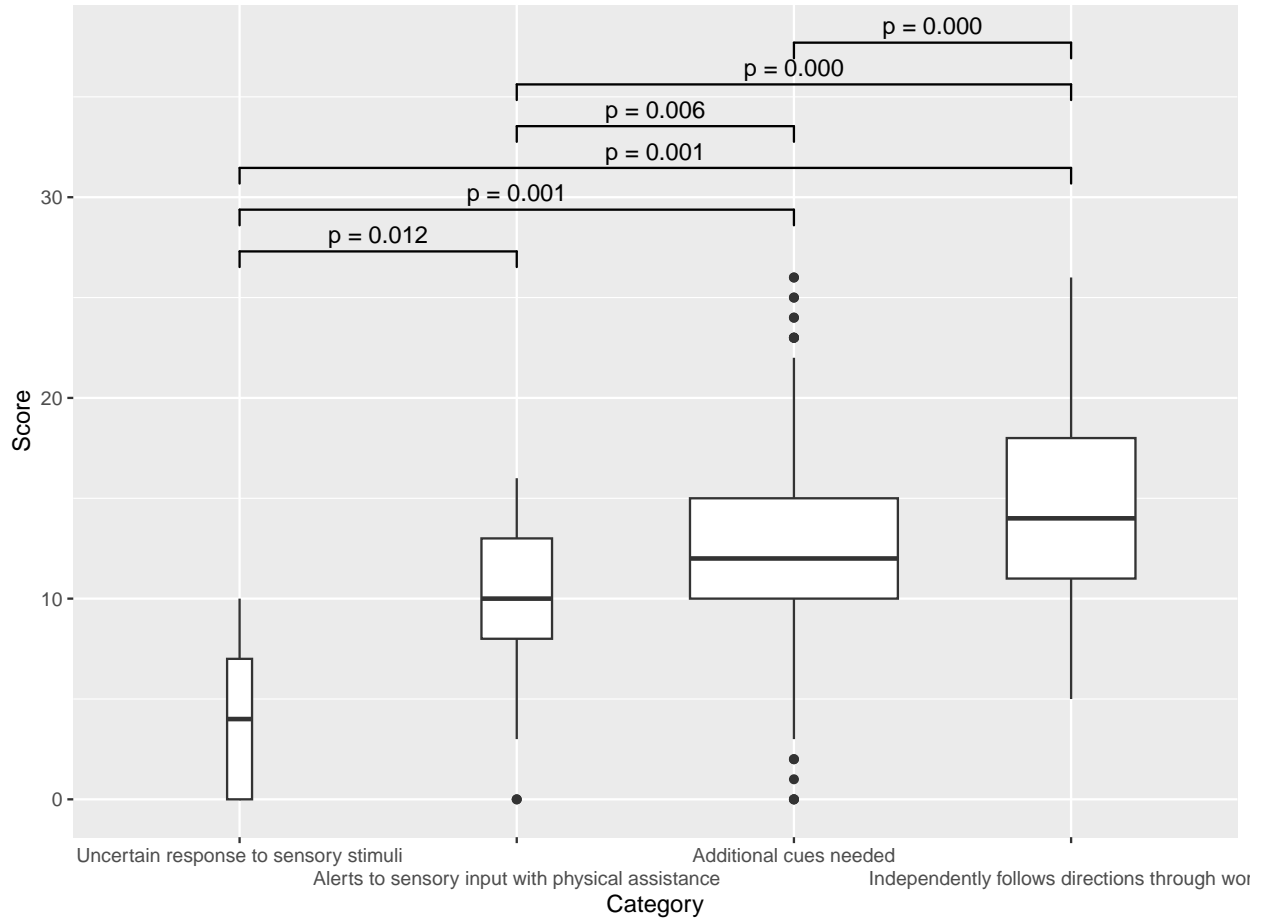


Figure 8: Science 04 Learner Characteristic: Receptive Language

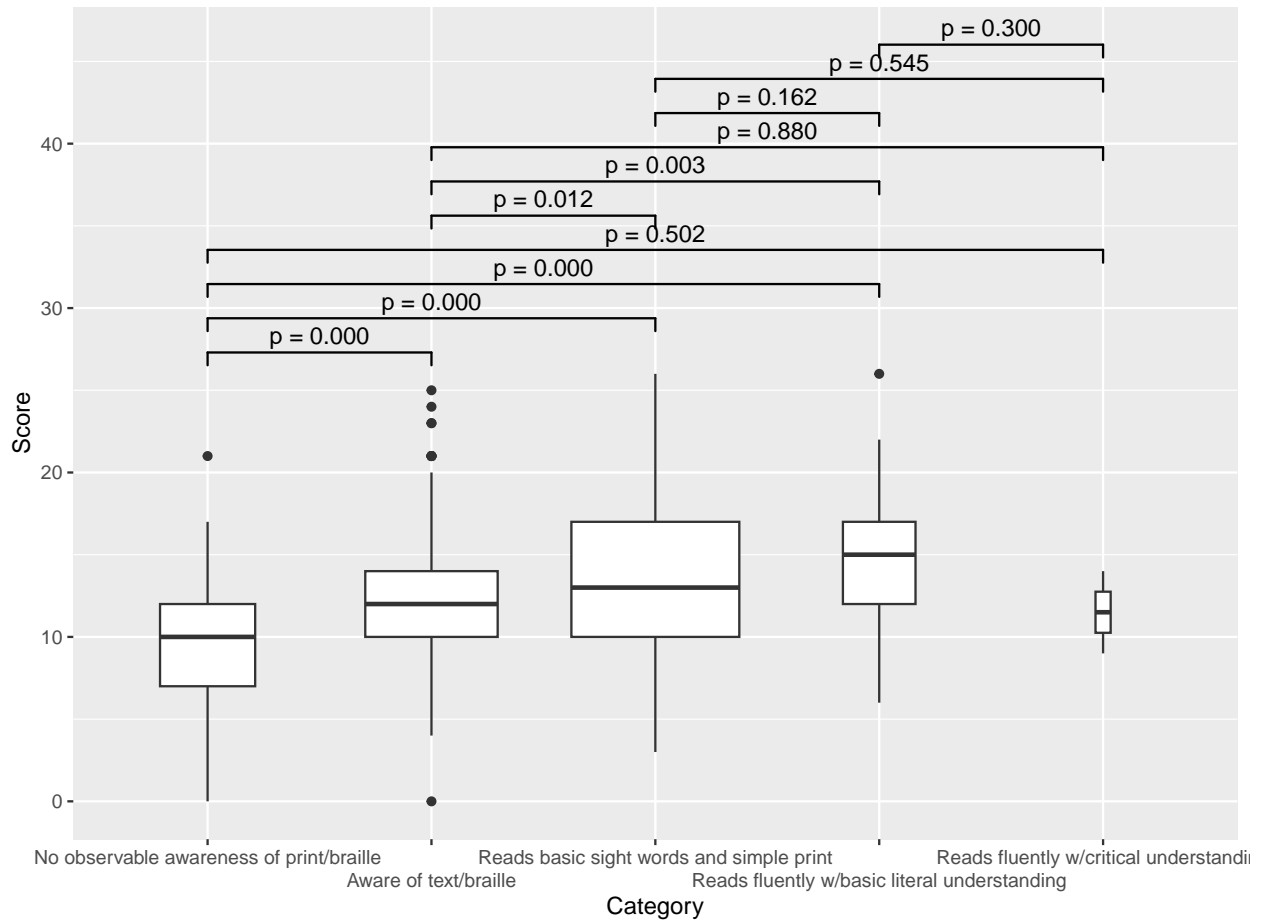


Figure 9: Science 04 Learner Characteristic: Reading

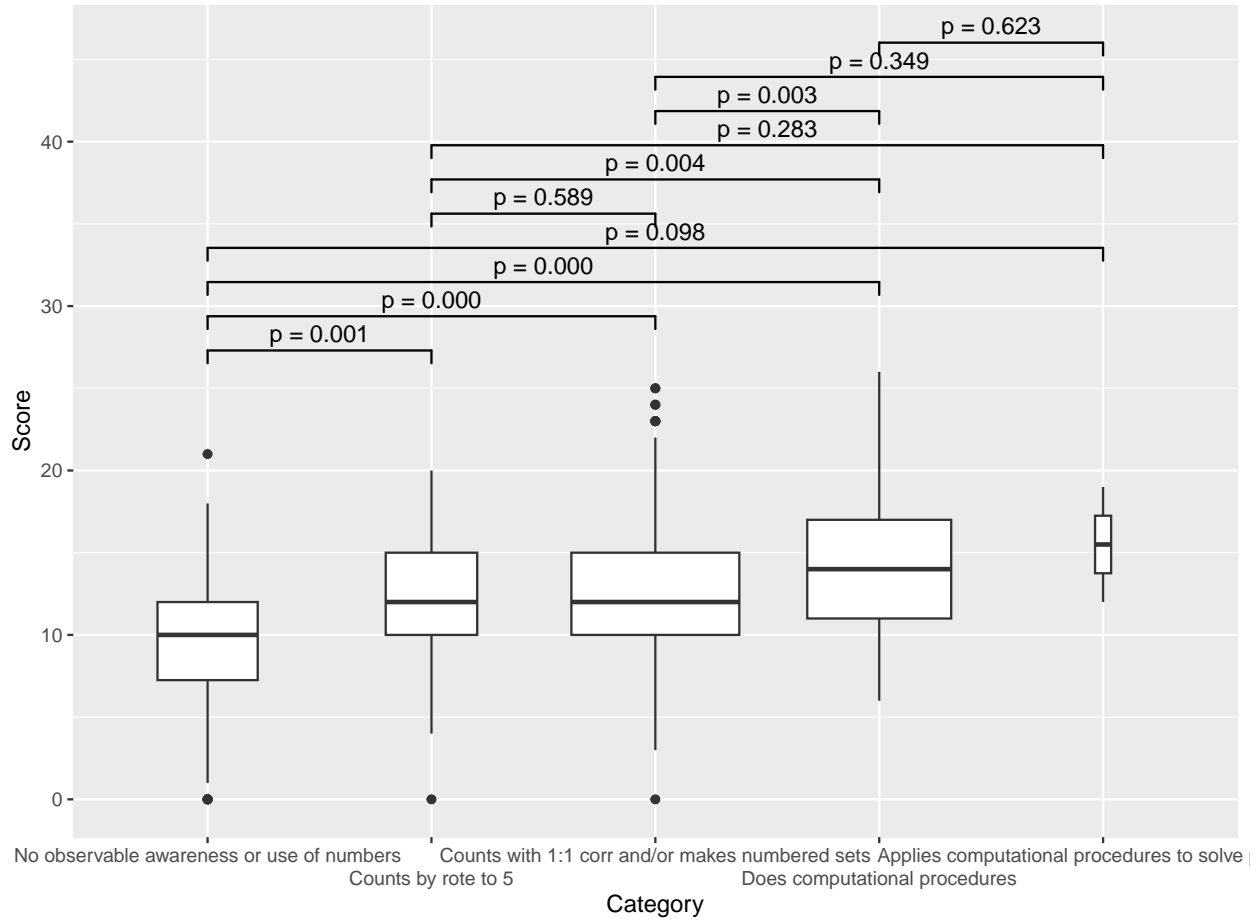


Figure 10: Science 04 Learner Characteristic: Mathematics

Social Studies Grade 11

Table 1: SocialStudies 11 Item Statistics

	Item	n	mean	sd	se
A1	1	483	0.369	0.483	0.022
A2	2	483	0.427	0.495	0.023
A3	3	483	0.453	0.498	0.023
A4	4	483	0.590	0.492	0.022
A5	5	483	0.284	0.451	0.021
B1	6	483	0.484	0.500	0.023
B2	7	483	0.371	0.483	0.022
B3	8	483	0.393	0.489	0.022
B4	9	483	0.567	0.496	0.023
B5	10	483	0.439	0.497	0.023
C1	11	483	0.607	0.489	0.022
C2	12	483	0.518	0.500	0.023
C3	13	483	0.435	0.496	0.023
C4	14	483	0.573	0.495	0.023
C5	15	483	0.402	0.491	0.022
D1	16	483	0.557	0.497	0.023
D2	17	483	0.491	0.500	0.023
D3	18	483	0.441	0.497	0.023
D4	19	483	0.516	0.500	0.023
D5	20	483	0.487	0.500	0.023
E1	21	483	0.445	0.497	0.023
E2	22	483	0.429	0.495	0.023
E3	23	483	0.356	0.479	0.022
E4	24	483	0.462	0.499	0.023
E5	25	483	0.441	0.497	0.023
F1	26	483	0.350	0.477	0.022
F2	27	483	0.286	0.452	0.021
F3	28	483	0.613	0.488	0.022
F4	29	483	0.445	0.497	0.023
F5	30	483	0.395	0.489	0.022

Chronbach's Alpha: 0.722

Table 2: SocialStudies 11 Raw Score Frequencies

Score	freq	pct	pct_cum
5	2	0.414	0.414
6	7	1.449	1.863
7	16	3.313	5.176
8	32	6.625	11.801
9	48	9.938	21.739
10	53	10.973	32.712
11	37	7.660	40.373
12	47	9.731	50.104
13	28	5.797	55.901
14	33	6.832	62.733
15	32	6.625	69.358
16	27	5.590	74.948
17	25	5.176	80.124
18	14	2.899	83.023
19	14	2.899	85.921
20	11	2.277	88.199
21	12	2.484	90.683
22	13	2.692	93.375
23	11	2.277	95.652
24	8	1.656	97.308
25	4	0.828	98.137
26	5	1.035	99.172
27	1	0.207	99.379
28	1	0.207	99.586
29	2	0.414	100.000

Table 3: SocialStudies 11 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.087	-0.013	0.013	0.000	0.000	0.000
A1		a	157	0.325	-0.232	-0.134	0.373	0.393	0.300	0.240
A1	*	b	178	0.369	0.176	0.271	0.266	0.274	0.400	0.537
A1		c	146	0.302	-0.221	-0.125	0.348	0.333	0.300	0.223
A2			2	0.004	-0.094	-0.013	0.013	0.000	0.000	0.000
A2		a	144	0.298	-0.154	-0.075	0.323	0.369	0.267	0.248
A2		b	131	0.271	-0.334	-0.287	0.386	0.345	0.242	0.099
A2	*	c	206	0.427	0.198	0.374	0.278	0.286	0.492	0.653
A3			1	0.002	-0.080	-0.006	0.006	0.000	0.000	0.000
A3	*	a	219	0.453	0.347	0.501	0.234	0.345	0.533	0.736
A3		b	102	0.211	-0.290	-0.213	0.304	0.226	0.200	0.091
A3		c	161	0.333	-0.355	-0.282	0.456	0.429	0.267	0.174
A4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A4		a	113	0.234	-0.274	-0.155	0.278	0.369	0.192	0.124
A4		b	85	0.176	-0.284	-0.193	0.259	0.238	0.133	0.066
A4	*	c	285	0.590	0.235	0.348	0.462	0.393	0.675	0.810
A5			1	0.002	-0.080	-0.006	0.006	0.000	0.000	0.000
A5	*	a	137	0.284	0.097	0.221	0.184	0.357	0.242	0.405
A5		b	86	0.178	-0.302	-0.242	0.291	0.179	0.158	0.050
A5		c	259	0.536	-0.088	0.026	0.519	0.464	0.600	0.545
B1			1	0.002	-0.043	-0.006	0.006	0.000	0.000	0.000
B1		a	115	0.238	-0.219	-0.111	0.259	0.345	0.225	0.149
B1		b	133	0.275	-0.256	-0.194	0.367	0.238	0.283	0.174
B1	*	c	234	0.484	0.171	0.311	0.367	0.417	0.492	0.678
B2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B2	*	a	179	0.371	0.153	0.313	0.241	0.429	0.317	0.554
B2		b	175	0.362	-0.158	-0.062	0.392	0.298	0.400	0.331
B2		c	129	0.267	-0.288	-0.251	0.367	0.274	0.283	0.116
B3			1	0.002	-0.071	-0.006	0.006	0.000	0.000	0.000
B3		a	108	0.224	-0.169	-0.058	0.215	0.333	0.225	0.157
B3	*	b	190	0.393	0.214	0.354	0.266	0.345	0.367	0.620
B3		c	184	0.381	-0.321	-0.290	0.513	0.321	0.408	0.223
B4			3	0.006	-0.085	-0.013	0.013	0.000	0.008	0.000
B4		a	86	0.178	-0.281	-0.190	0.215	0.310	0.192	0.025
B4		b	120	0.248	-0.287	-0.174	0.323	0.321	0.200	0.149
B4	*	c	274	0.567	0.256	0.377	0.449	0.369	0.600	0.826
B5			2	0.004	-0.021	0.000	0.000	0.012	0.008	0.000
B5	*	a	212	0.439	0.309	0.516	0.228	0.440	0.408	0.744
B5		b	103	0.213	-0.271	-0.191	0.323	0.179	0.175	0.132
B5		c	166	0.344	-0.338	-0.325	0.449	0.369	0.408	0.124
C1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C1		a	110	0.228	-0.325	-0.251	0.342	0.298	0.167	0.091
C1		b	80	0.166	-0.243	-0.151	0.209	0.214	0.183	0.058
C1	*	c	293	0.607	0.249	0.402	0.449	0.488	0.650	0.851
C2			1	0.002	-0.052	-0.006	0.006	0.000	0.000	0.000
C2		a	108	0.224	-0.318	-0.236	0.310	0.333	0.183	0.074
C2	*	b	250	0.518	0.437	0.648	0.253	0.357	0.592	0.901
C2		c	124	0.257	-0.433	-0.406	0.430	0.310	0.225	0.025
C3			1	0.002	-0.043	-0.006	0.006	0.000	0.000	0.000
C3	*	a	210	0.435	0.435	0.687	0.165	0.393	0.400	0.851

Table 3: SocialStudies 11 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	120	0.248	-0.329	-0.276	0.367	0.310	0.208	0.091
C3		c	152	0.315	-0.397	-0.404	0.462	0.298	0.392	0.058
C4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C4	*	a	277	0.573	0.328	0.507	0.361	0.440	0.650	0.868
C4		b	58	0.120	-0.227	-0.125	0.158	0.202	0.100	0.033
C4		c	148	0.306	-0.412	-0.382	0.481	0.357	0.250	0.099
C5			1	0.002	0.078	0.008	0.000	0.000	0.000	0.008
C5		a	138	0.286	-0.244	-0.141	0.323	0.393	0.267	0.182
C5	*	b	194	0.402	0.293	0.456	0.222	0.274	0.450	0.678
C5		c	150	0.311	-0.348	-0.323	0.456	0.333	0.283	0.132
D1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D1		a	142	0.294	-0.341	-0.300	0.399	0.417	0.267	0.099
D1		b	72	0.149	-0.227	-0.120	0.203	0.179	0.125	0.083
D1	*	c	269	0.557	0.254	0.419	0.399	0.405	0.608	0.818
D2			1	0.002	-0.034	0.000	0.000	0.012	0.000	0.000
D2		a	132	0.273	-0.215	-0.126	0.291	0.369	0.292	0.165
D2	*	b	237	0.491	0.235	0.371	0.348	0.357	0.542	0.719
D2		c	113	0.234	-0.332	-0.245	0.361	0.262	0.167	0.116
D3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D3	*	a	213	0.441	0.252	0.423	0.247	0.452	0.458	0.669
D3		b	163	0.337	-0.220	-0.140	0.354	0.357	0.425	0.215
D3		c	107	0.222	-0.345	-0.283	0.399	0.190	0.117	0.116
D4			1	0.002	-0.062	-0.006	0.006	0.000	0.000	0.000
D4		a	85	0.176	-0.325	-0.201	0.234	0.405	0.083	0.033
D4		b	148	0.306	-0.101	0.003	0.335	0.238	0.283	0.339
D4	*	c	249	0.516	0.105	0.204	0.424	0.357	0.633	0.628
D5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D5	*	a	235	0.487	0.254	0.411	0.291	0.464	0.542	0.702
D5		b	127	0.263	-0.225	-0.133	0.323	0.238	0.275	0.190
D5		c	121	0.251	-0.341	-0.279	0.386	0.298	0.183	0.107
E1			4	0.008	-0.086	-0.019	0.019	0.000	0.008	0.000
E1		a	115	0.238	-0.202	-0.088	0.253	0.298	0.250	0.165
E1	*	b	215	0.445	0.272	0.426	0.259	0.405	0.475	0.686
E1		c	149	0.308	-0.354	-0.320	0.468	0.298	0.267	0.149
E2			1	0.002	-0.043	-0.006	0.006	0.000	0.000	0.000
E2		a	124	0.257	-0.253	-0.176	0.316	0.345	0.233	0.140
E2		b	151	0.313	-0.207	-0.146	0.361	0.298	0.358	0.215
E2	*	c	207	0.429	0.162	0.328	0.316	0.357	0.408	0.645
E3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E3	*	a	172	0.356	0.133	0.297	0.215	0.440	0.325	0.512
E3		b	171	0.354	-0.171	-0.108	0.405	0.274	0.400	0.298
E3		c	140	0.290	-0.251	-0.190	0.380	0.286	0.275	0.190
E4			1	0.002	-0.052	-0.006	0.006	0.000	0.000	0.000
E4		a	135	0.280	-0.311	-0.210	0.342	0.405	0.258	0.132
E4	*	b	223	0.462	0.313	0.478	0.266	0.381	0.492	0.744
E4		c	124	0.257	-0.305	-0.262	0.386	0.214	0.250	0.124
E5			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E5	*	a	213	0.441	0.269	0.435	0.234	0.417	0.500	0.669
E5		b	156	0.323	-0.198	-0.103	0.392	0.310	0.275	0.289
E5		c	114	0.236	-0.383	-0.332	0.373	0.274	0.225	0.041

Table 3: SocialStudies 11 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.052	-0.006	0.006	0.000	0.000	0.000
F1		a	139	0.288	-0.227	-0.109	0.291	0.405	0.308	0.182
F1	*	b	169	0.350	0.148	0.282	0.247	0.298	0.342	0.529
F1		c	174	0.360	-0.202	-0.166	0.456	0.298	0.350	0.289
F2			3	0.006	-0.080	-0.019	0.019	0.000	0.000	0.000
F2	*	a	138	0.286	0.131	0.220	0.152	0.345	0.333	0.372
F2		b	210	0.435	-0.092	0.036	0.468	0.286	0.425	0.504
F2		c	132	0.273	-0.307	-0.237	0.361	0.369	0.242	0.124
F3			4	0.008	-0.058	-0.013	0.013	0.012	0.008	0.000
F3		a	105	0.217	-0.251	-0.148	0.272	0.298	0.183	0.124
F3		b	78	0.161	-0.250	-0.152	0.234	0.179	0.133	0.083
F3	*	c	296	0.613	0.192	0.312	0.481	0.512	0.675	0.793
F4			2	0.004	-0.054	-0.006	0.006	0.012	0.000	0.000
F4	*	a	215	0.445	0.248	0.427	0.234	0.393	0.542	0.661
F4		b	126	0.261	-0.239	-0.173	0.354	0.226	0.242	0.182
F4		c	140	0.290	-0.307	-0.248	0.405	0.369	0.217	0.157
F5			3	0.006	-0.096	-0.019	0.019	0.000	0.000	0.000
F5		a	112	0.232	-0.300	-0.269	0.310	0.321	0.258	0.041
F5	*	b	191	0.395	0.283	0.502	0.209	0.369	0.342	0.711
F5		c	177	0.366	-0.265	-0.214	0.462	0.310	0.400	0.248

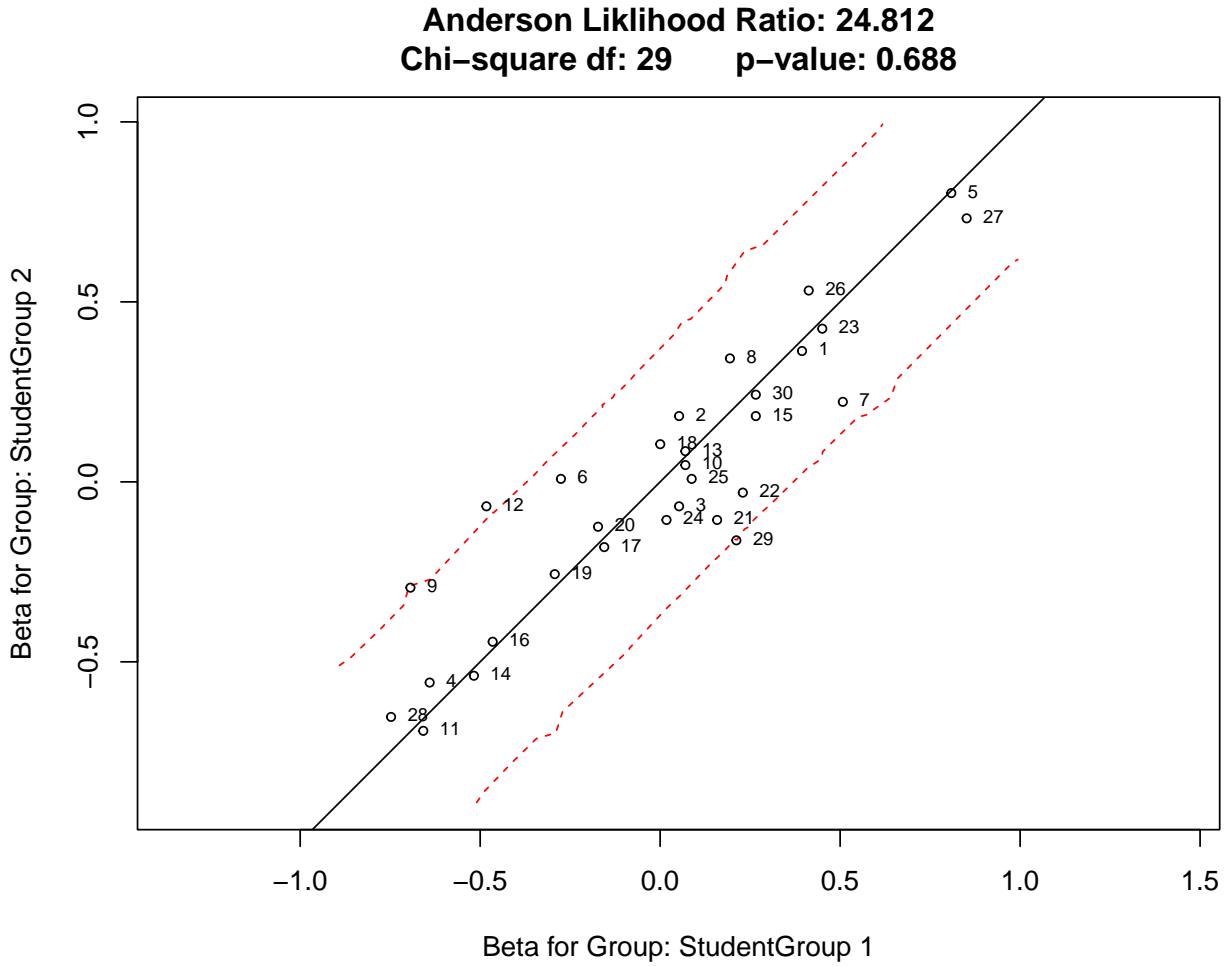


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: SocialStudies 11 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	483	1.0474	1.0398
A2	483	1.0578	1.0246
A3	483	0.9026	0.9196
A4	483	0.9664	0.9806
A5	483	1.1068	1.0900
B1	483	1.0338	1.0386
B2	483	1.0645	1.0573
B3	483	1.0095	1.0119
B4	483	0.9387	0.9766
B5	483	0.9283	0.9463
C1	483	0.9431	0.9701
C2	483	0.8217	0.8572
C3	483	0.8381	0.8613
C4	483	0.8997	0.9226
C5	483	0.9502	0.9576
D1	483	0.9591	0.9751
D2	483	0.9870	0.9936
D3	483	0.9763	0.9858
D4	483	1.0856	1.0803
D5	483	0.9772	0.9796
E1	483	0.9572	0.9715
E2	483	1.0571	1.0490
E3	483	1.0629	1.0728
E4	483	0.9238	0.9426
E5	483	0.9588	0.9741
F1	483	1.0924	1.0595
F2	483	1.0739	1.0668
F3	483	0.9798	1.0102
F4	483	0.9905	0.9878
F5	483	0.9630	0.9642

Table 5: SocialStudies 11 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9851	0.0723
Infit	Infit	0.9922	0.0592

Table 6: SocialStudies 11 Raw to Theta Table

Raw Score	theta	SE
5	-1.3870	0.4835
6	-1.1748	0.4543
7	-0.9850	0.4323
8	-0.8113	0.4154
9	-0.6496	0.4023
10	-0.4969	0.3921
11	-0.3509	0.3844
12	-0.2099	0.3787
13	-0.0724	0.3747
14	0.0629	0.3725
15	0.1971	0.3717
16	0.3313	0.3725
17	0.4665	0.3748
18	0.6040	0.3787
19	0.7450	0.3844
20	0.8910	0.3921
21	1.0438	0.4023
22	1.2055	0.4154
23	1.3792	0.4323
24	1.5691	0.4543
25	1.7813	0.4836
26	2.0256	0.5237
27	2.3192	0.5821
28	2.6967	0.6754
29	3.2473	0.8556

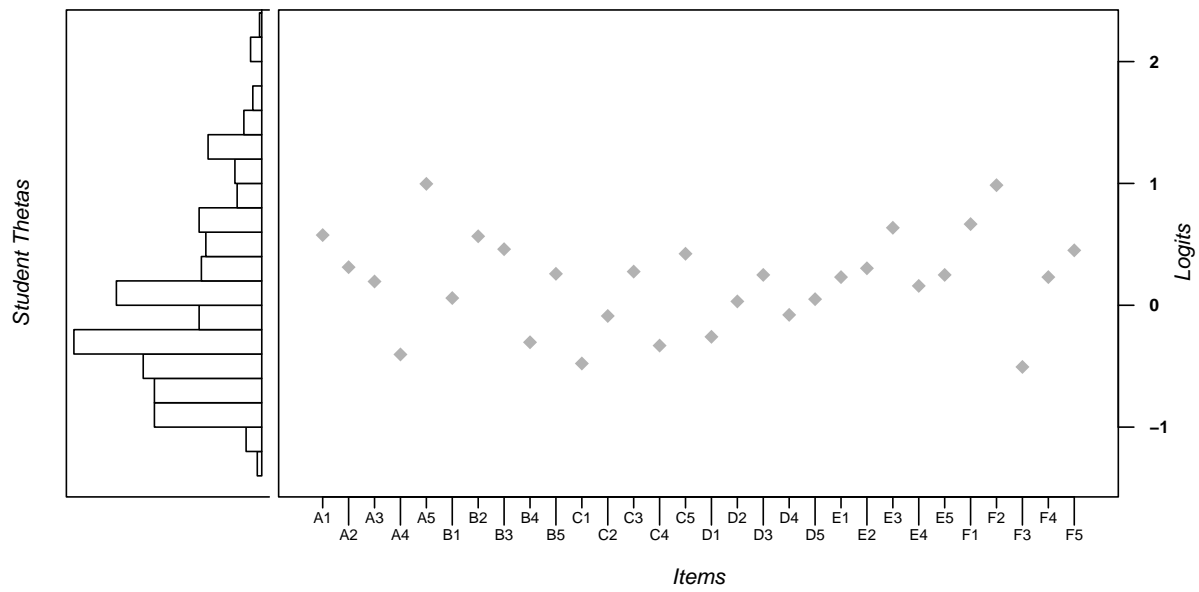


Figure 2: Student Ability - Item Difficulty Wright Map

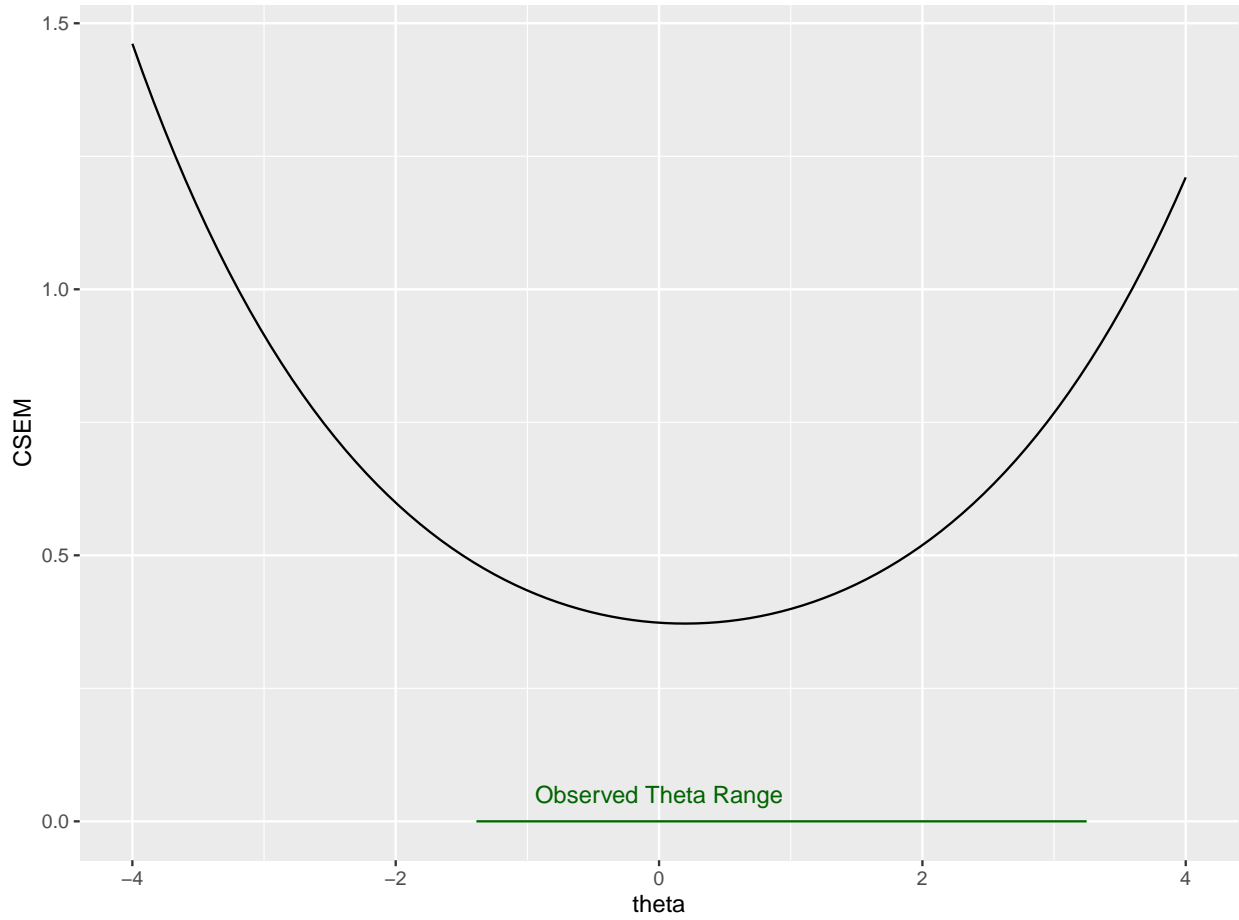


Figure 3: SocialStudies 11 Conditional Standard Error of Measure

Table 7: SocialStudies 11 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		483	0.71
Ethnic	Black	50	0.61
Ethnic	Hispanic	21	0.53
Ethnic	Other	17	0.60
Ethnic	White	387	0.72
Disadvantaged	No	357	0.69
Disadvantaged	Yes	126	0.74
LEP	No	455	0.71
LEP	Yes	28	0.50
Gender	Female	154	0.64
Gender	Male	329	0.73
Homeless	No	470	0.71
Homeless	Yes	13	0.62

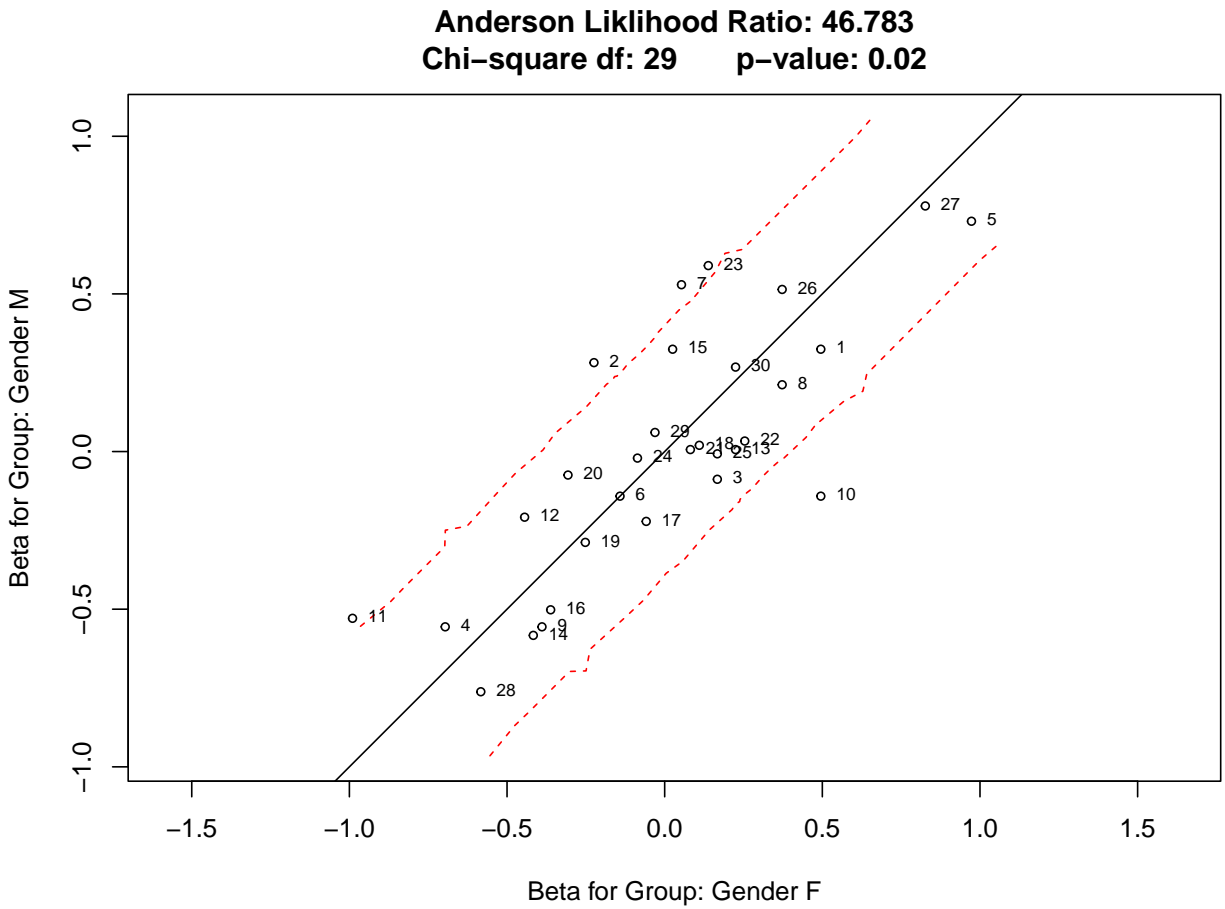


Figure 4: SocialStudies 11 Differential Item (DIF) and Test (DTF) Function for Gender

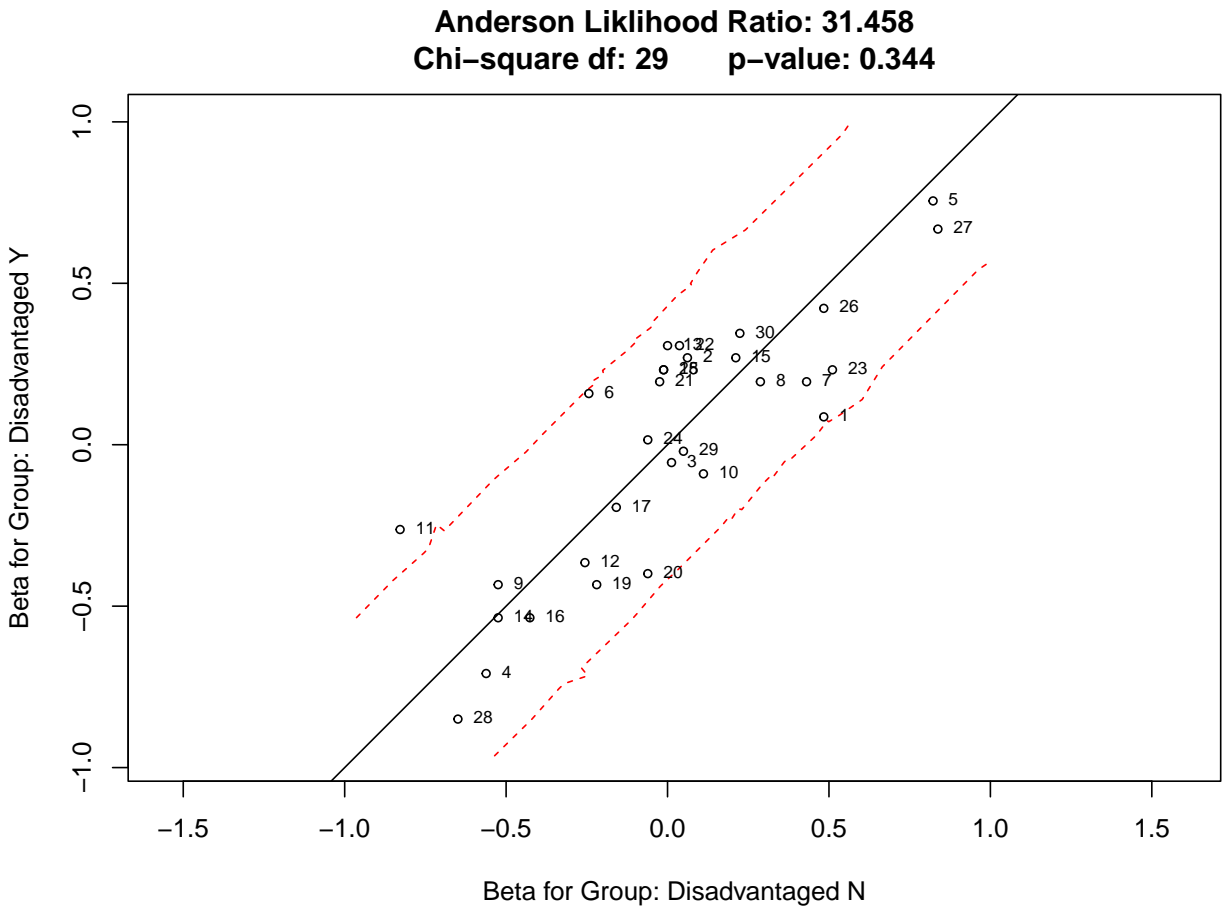


Figure 5: SocialStudies 11 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

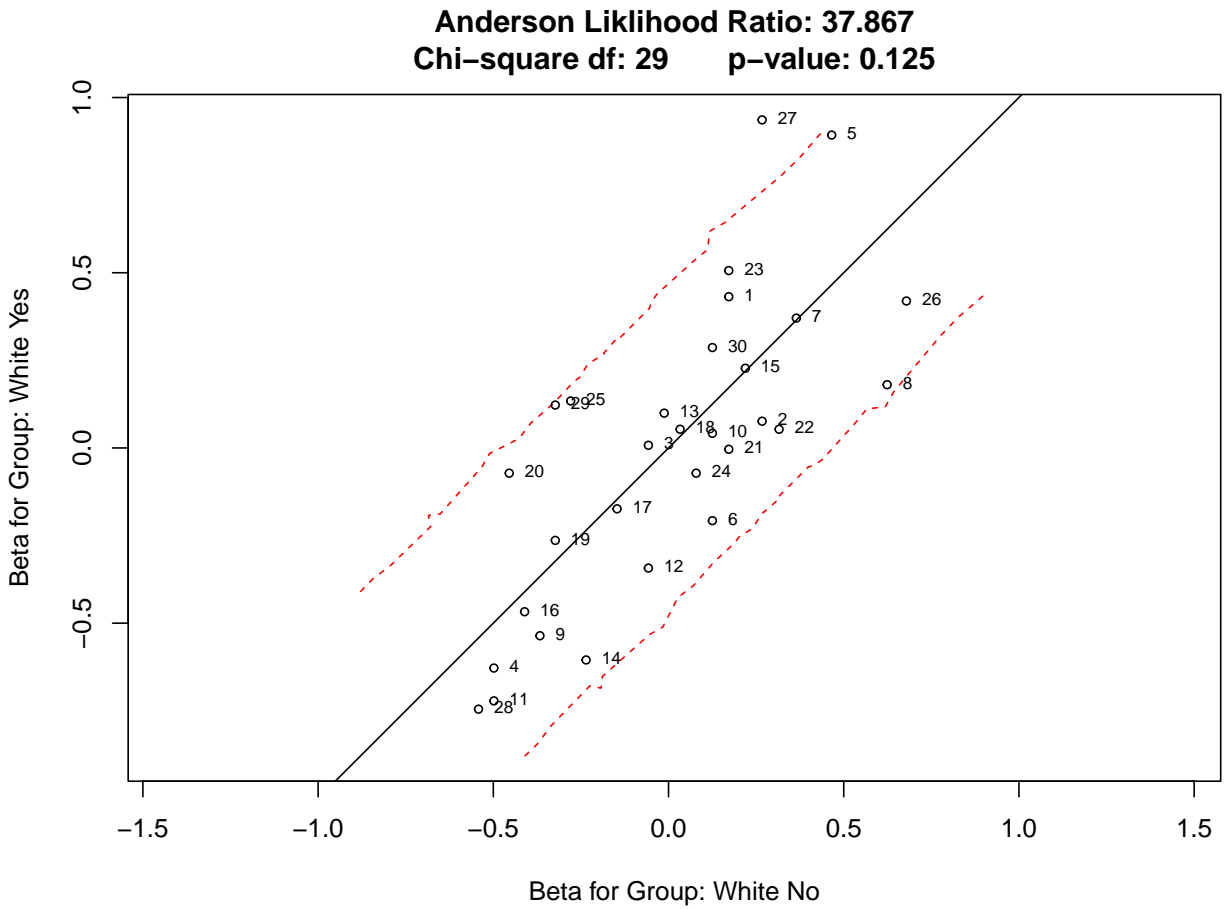


Figure 6: SocialStudies 11 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6186	0.2283	0.8469
False	0.0613	0.0918	0.1531
Total	0.6799	0.3201	1.0000

Accuracy = 0.8469

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5318	0.1482
j	0.0793	0.2407

Proportion of Consistent Classifications = 0.7725
Cohen's Kappa = 0.5054

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0919	0.0505	0.8092	0.0484	0.6552	0.9412	0.9011	0.0751	0.0203	0.0559
Apprentice	0.4281	0.1095	0.3204	0.1421	0.7507	0.7453	0.7484	0.3681	0.2889	0.1113
Proficient	0.2079	0.0930	0.6221	0.0770	0.7296	0.8699	0.8300	0.1830	0.0905	0.1017
Distinguished	0.0033	0.0159	0.9795	0.0013	0.7193	0.9841	0.9828	0.0059	0.0004	0.0055

Social Studies Grade 8

Table 1: SocialStudies 08 Item Statistics

	Item	n	mean	sd	se
A1	1	546	0.421	0.494	0.021
A2	2	546	0.661	0.474	0.020
A3	3	546	0.416	0.493	0.021
A4	4	546	0.498	0.500	0.021
A5	5	546	0.350	0.477	0.020
B1	6	546	0.487	0.500	0.021
B2	7	546	0.418	0.494	0.021
B3	8	546	0.332	0.471	0.020
B4	9	546	0.390	0.488	0.021
B5	10	546	0.267	0.443	0.019
C1	11	546	0.291	0.455	0.019
C2	12	546	0.579	0.494	0.021
C3	13	546	0.344	0.476	0.020
C4	14	546	0.335	0.472	0.020
C5	15	546	0.429	0.495	0.021
D1	16	546	0.390	0.488	0.021
D2	17	546	0.440	0.497	0.021
D3	18	546	0.491	0.500	0.021
D4	19	546	0.200	0.400	0.017
D5	20	546	0.390	0.488	0.021
E1	21	546	0.443	0.497	0.021
E2	22	546	0.485	0.500	0.021
E3	23	546	0.381	0.486	0.021
E4	24	546	0.397	0.490	0.021
E5	25	546	0.473	0.500	0.021
F1	26	546	0.476	0.500	0.021
F2	27	546	0.445	0.497	0.021
F3	28	546	0.319	0.466	0.020
F4	29	546	0.454	0.498	0.021
F5	30	546	0.348	0.477	0.020

Chronbach's Alpha: 0.6361

Table 2: SocialStudies 08 Raw Score Frequencies

Score	freq	pct	pct_cum
4	1	0.183	0.183
5	4	0.733	0.916
6	13	2.381	3.297
7	26	4.762	8.059
8	50	9.158	17.216
9	63	11.538	28.755
10	52	9.524	38.278
11	63	11.538	49.817
12	58	10.623	60.440
13	41	7.509	67.949
14	39	7.143	75.092
15	25	4.579	79.670
16	22	4.029	83.700
17	20	3.663	87.363
18	12	2.198	89.560
19	11	2.015	91.575
20	12	2.198	93.773
21	11	2.015	95.788
22	6	1.099	96.886
23	7	1.282	98.168
24	6	1.099	99.267
25	2	0.366	99.634
26	1	0.183	99.817
28	1	0.183	100.000

Table 3: SocialStudies 08 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			1	0.002	-0.003	0.000	0.000	0.000	0.013	0.000
A1		a	166	0.304	-0.274	-0.212	0.389	0.324	0.312	0.176
A1	*	b	230	0.421	0.294	0.510	0.159	0.416	0.525	0.669
A1		c	149	0.273	-0.356	-0.298	0.452	0.260	0.150	0.154
A2			4	0.007	-0.017	0.002	0.013	0.000	0.000	0.015
A2		a	78	0.143	-0.256	-0.140	0.191	0.202	0.075	0.051
A2		b	103	0.189	-0.287	-0.207	0.280	0.202	0.175	0.074
A2	*	c	361	0.661	0.192	0.344	0.516	0.595	0.750	0.860
A3			4	0.007	-0.072	-0.013	0.013	0.006	0.013	0.000
A3	*	a	227	0.416	0.333	0.548	0.217	0.289	0.488	0.765
A3		b	144	0.264	-0.245	-0.130	0.255	0.364	0.300	0.125
A3		c	171	0.313	-0.405	-0.406	0.516	0.341	0.200	0.110
A4			2	0.004	-0.040	-0.006	0.006	0.000	0.013	0.000
A4		a	107	0.196	-0.207	-0.125	0.236	0.225	0.200	0.110
A4	*	b	272	0.498	0.283	0.484	0.280	0.416	0.650	0.765
A4		c	165	0.302	-0.410	-0.353	0.478	0.358	0.138	0.125
A5			1	0.002	-0.044	-0.006	0.006	0.000	0.000	0.000
A5	*	a	191	0.350	0.286	0.438	0.172	0.260	0.450	0.610
A5		b	151	0.277	-0.235	-0.097	0.274	0.358	0.275	0.176
A5		c	203	0.372	-0.355	-0.335	0.548	0.382	0.275	0.213
B1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B1		a	142	0.260	-0.275	-0.163	0.280	0.335	0.300	0.118
B1	*	b	266	0.487	0.307	0.532	0.255	0.445	0.525	0.787
B1		c	138	0.253	-0.381	-0.369	0.465	0.220	0.175	0.096
B2			1	0.002	0.067	0.007	0.000	0.000	0.000	0.007
B2		a	157	0.288	-0.125	-0.008	0.236	0.376	0.300	0.228
B2	*	b	228	0.418	0.182	0.366	0.274	0.364	0.438	0.640
B2		c	160	0.293	-0.396	-0.365	0.490	0.260	0.262	0.125
B3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B3	*	a	181	0.332	0.232	0.387	0.127	0.335	0.412	0.515
B3		b	152	0.278	-0.160	-0.069	0.312	0.272	0.288	0.243
B3		c	213	0.390	-0.372	-0.318	0.561	0.393	0.300	0.243
B4			3	0.005	-0.104	-0.019	0.019	0.000	0.000	0.000
B4		a	162	0.297	-0.153	-0.045	0.280	0.329	0.362	0.235
B4		b	168	0.308	-0.198	-0.117	0.338	0.295	0.425	0.221
B4	*	c	213	0.390	0.032	0.181	0.363	0.376	0.212	0.544
B5			2	0.004	-0.083	-0.013	0.013	0.000	0.000	0.000
B5	*	a	146	0.267	0.116	0.242	0.140	0.260	0.338	0.382
B5		b	163	0.299	-0.155	-0.007	0.287	0.353	0.238	0.279
B5		c	235	0.430	-0.251	-0.222	0.561	0.387	0.425	0.338
C1			1	0.002	-0.054	-0.006	0.006	0.000	0.000	0.000
C1	*	a	159	0.291	0.045	0.175	0.178	0.312	0.362	0.353
C1		b	198	0.363	-0.161	-0.071	0.395	0.353	0.388	0.324
C1		c	188	0.344	-0.198	-0.097	0.420	0.335	0.250	0.324
C2			2	0.004	-0.076	-0.013	0.013	0.000	0.000	0.000
C2		a	102	0.187	-0.234	-0.126	0.229	0.220	0.175	0.103
C2		b	126	0.231	-0.216	-0.102	0.242	0.289	0.238	0.140
C2	*	c	316	0.579	0.114	0.241	0.516	0.491	0.588	0.757
C3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C3	*	a	188	0.344	0.268	0.415	0.166	0.318	0.350	0.581

Table 3: SocialStudies 08 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	138	0.253	-0.198	-0.108	0.299	0.237	0.300	0.191
C3		c	220	0.403	-0.371	-0.307	0.535	0.445	0.350	0.228
C4			2	0.004	-0.069	-0.013	0.013	0.000	0.000	0.000
C4		a	157	0.288	-0.090	0.043	0.229	0.335	0.325	0.272
C4	*	b	183	0.335	0.158	0.278	0.229	0.301	0.325	0.507
C4		c	204	0.374	-0.366	-0.308	0.529	0.364	0.350	0.221
C5			1	0.002	-0.044	-0.006	0.006	0.000	0.000	0.000
C5		a	127	0.233	-0.199	-0.091	0.268	0.249	0.225	0.176
C5	*	b	234	0.429	0.314	0.540	0.166	0.393	0.550	0.706
C5		c	184	0.337	-0.433	-0.443	0.561	0.358	0.225	0.118
D1			2	0.004	-0.069	-0.006	0.006	0.006	0.000	0.000
D1		a	147	0.269	-0.314	-0.254	0.357	0.306	0.300	0.103
D1	*	b	213	0.390	0.312	0.482	0.217	0.301	0.400	0.699
D1		c	184	0.337	-0.315	-0.222	0.420	0.387	0.300	0.199
D2			2	0.004	-0.062	-0.006	0.006	0.006	0.000	0.000
D2	*	a	240	0.440	0.331	0.535	0.229	0.364	0.462	0.765
D2		b	148	0.271	-0.350	-0.249	0.338	0.364	0.250	0.088
D2		c	156	0.286	-0.313	-0.280	0.427	0.266	0.288	0.147
D3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D3		a	123	0.225	-0.258	-0.152	0.255	0.289	0.238	0.103
D3		b	155	0.284	-0.209	-0.126	0.376	0.254	0.225	0.250
D3	*	c	268	0.491	0.120	0.278	0.369	0.457	0.537	0.647
D4			1	0.002	-0.074	-0.006	0.006	0.000	0.000	0.000
D4	*	a	109	0.200	-0.172	-0.045	0.185	0.237	0.250	0.140
D4		b	201	0.368	-0.007	0.073	0.376	0.324	0.312	0.449
D4		c	235	0.430	-0.148	-0.021	0.433	0.439	0.438	0.412
D5			2	0.004	-0.118	-0.013	0.013	0.000	0.000	0.000
D5		a	166	0.304	-0.106	0.046	0.248	0.341	0.350	0.294
D5		b	165	0.302	-0.359	-0.302	0.427	0.324	0.312	0.125
D5	*	c	213	0.390	0.149	0.269	0.312	0.335	0.338	0.581
E1			1	0.002	-0.054	-0.006	0.006	0.000	0.000	0.000
E1		a	162	0.297	-0.276	-0.200	0.369	0.295	0.375	0.169
E1		b	141	0.258	-0.282	-0.170	0.325	0.301	0.212	0.154
E1	*	c	242	0.443	0.220	0.377	0.299	0.405	0.412	0.676
E2			1	0.002	0.037	0.007	0.000	0.000	0.000	0.007
E2		a	135	0.247	-0.251	-0.146	0.293	0.277	0.262	0.147
E2		b	145	0.266	-0.225	-0.131	0.293	0.318	0.275	0.162
E2	*	c	265	0.485	0.127	0.270	0.414	0.405	0.462	0.684
E3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E3	*	a	208	0.381	0.200	0.337	0.229	0.353	0.425	0.566
E3		b	148	0.271	-0.252	-0.152	0.350	0.301	0.175	0.199
E3		c	190	0.348	-0.275	-0.185	0.420	0.347	0.400	0.235
E4			1	0.002	-0.074	-0.006	0.006	0.000	0.000	0.000
E4	*	a	217	0.397	0.063	0.195	0.312	0.364	0.450	0.507
E4		b	128	0.234	-0.251	-0.136	0.261	0.306	0.212	0.125
E4		c	200	0.366	-0.147	-0.053	0.420	0.329	0.338	0.368
E5			4	0.007	-0.092	-0.019	0.019	0.006	0.000	0.000
E5		a	138	0.253	-0.240	-0.141	0.280	0.295	0.300	0.140
E5	*	b	258	0.473	0.170	0.340	0.344	0.416	0.488	0.684
E5		c	146	0.267	-0.262	-0.180	0.357	0.283	0.212	0.176

Table 3: SocialStudies 08 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F1	*	a	260	0.476	0.146	0.348	0.299	0.439	0.613	0.647
F1		b	123	0.225	-0.245	-0.163	0.325	0.225	0.138	0.162
F1		c	163	0.299	-0.246	-0.185	0.376	0.335	0.250	0.191
F2			3	0.005	-0.081	-0.006	0.006	0.012	0.000	0.000
F2		a	115	0.211	-0.263	-0.178	0.274	0.254	0.188	0.096
F2		b	185	0.339	-0.182	-0.075	0.369	0.358	0.312	0.294
F2	*	c	243	0.445	0.107	0.260	0.350	0.376	0.500	0.610
F3			1	0.002	-0.094	-0.006	0.006	0.000	0.000	0.000
F3	*	a	174	0.319	0.165	0.306	0.172	0.306	0.362	0.478
F3		b	173	0.317	-0.147	-0.040	0.363	0.266	0.325	0.324
F3		c	198	0.363	-0.319	-0.260	0.459	0.428	0.312	0.199
F4			3	0.005	-0.064	-0.013	0.013	0.006	0.000	0.000
F4		a	154	0.282	-0.267	-0.198	0.338	0.324	0.325	0.140
F4		b	141	0.258	-0.295	-0.217	0.357	0.277	0.225	0.140
F4	*	c	248	0.454	0.225	0.428	0.293	0.393	0.450	0.721
F5			2	0.004	-0.097	-0.013	0.013	0.000	0.000	0.000
F5		a	160	0.293	-0.260	-0.177	0.376	0.289	0.300	0.199
F5	*	b	190	0.348	0.225	0.381	0.185	0.312	0.375	0.566
F5		c	194	0.355	-0.271	-0.191	0.427	0.399	0.325	0.235

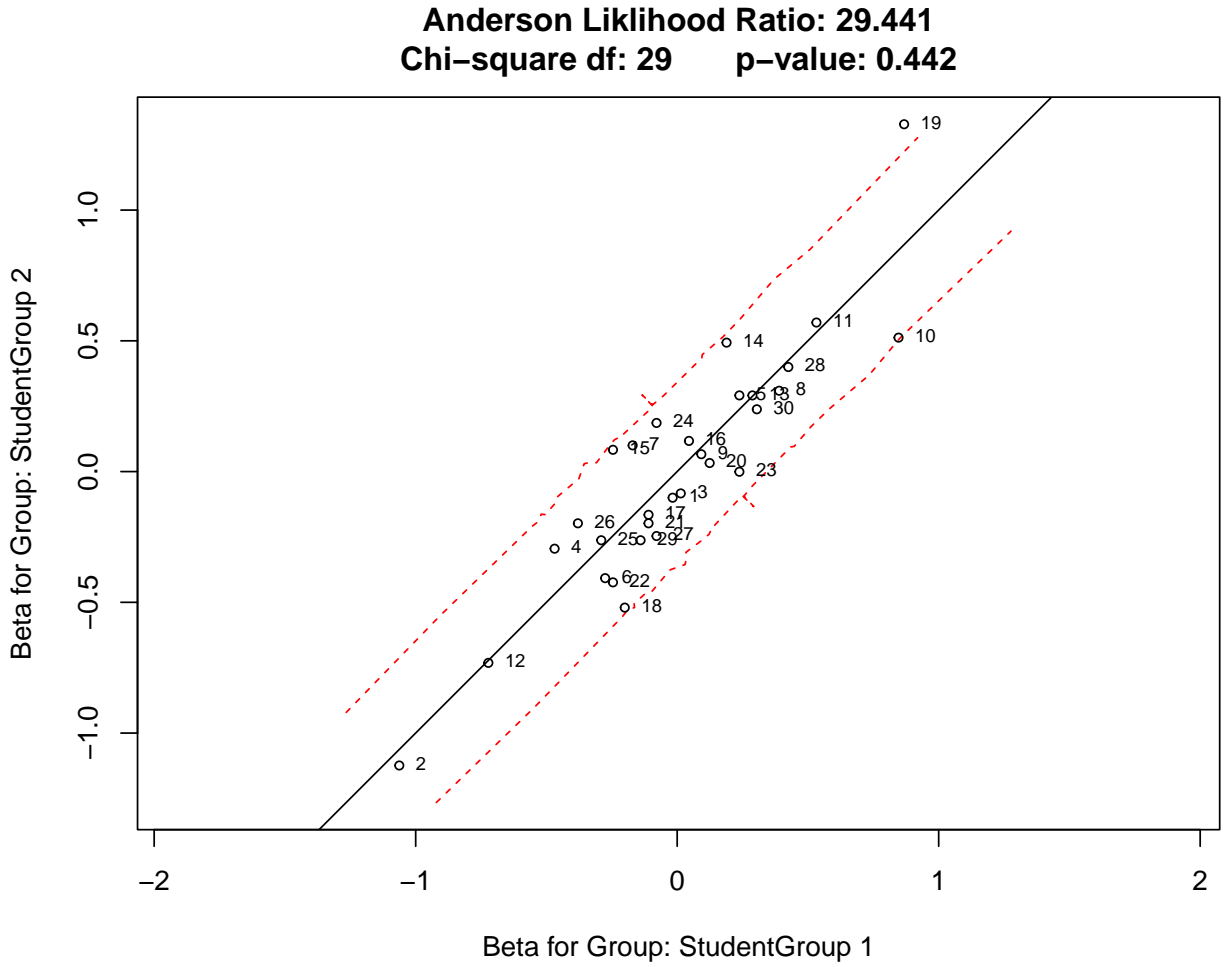


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: SocialStudies 08 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	546	0.9146	0.9297
A2	546	0.9363	0.9739
A3	546	0.8961	0.9066
A4	546	0.9217	0.9339
A5	546	0.9268	0.9315
B1	546	0.9031	0.9200
B2	546	0.9965	0.9957
B3	546	0.9477	0.9655
B4	546	1.1016	1.0875
B5	546	1.0251	1.0289
C1	546	1.0863	1.0799
C2	546	1.0135	1.0315
C3	546	0.9285	0.9434
C4	546	1.0093	1.0073
C5	546	0.9049	0.9178
D1	546	0.9131	0.9186
D2	546	0.8951	0.9086
D3	546	1.0337	1.0290
D4	546	1.3098	1.1916
D5	546	1.0135	1.0155
E1	546	0.9630	0.9736
E2	546	1.0267	1.0280
E3	546	0.9812	0.9850
E4	546	1.0819	1.0690
E5	546	0.9981	1.0023
F1	546	1.0182	1.0128
F2	546	1.0461	1.0398
F3	546	0.9966	1.0057
F4	546	0.9580	0.9696
F5	546	0.9692	0.9691

Table 5: SocialStudies 08 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9905	0.0843
Infit	Infit	0.9924	0.0638

Table 6: SocialStudies 08 Raw to Theta Table

Raw Score	theta	SE
4	-1.4469	0.5247
5	-1.2016	0.4845
6	-0.9885	0.4552
7	-0.7979	0.4331
8	-0.6235	0.4162
9	-0.4611	0.4030
10	-0.3078	0.3928
11	-0.1613	0.3850
12	-0.0198	0.3793
13	0.1182	0.3754
14	0.2539	0.3731
15	0.3885	0.3723
16	0.5231	0.3731
17	0.6588	0.3754
18	0.7968	0.3793
19	0.9383	0.3850
20	1.0849	0.3928
21	1.2382	0.4030
22	1.4005	0.4162
23	1.5749	0.4331
24	1.7656	0.4552
25	1.9787	0.4845
26	2.2239	0.5247
28	2.8973	0.6765

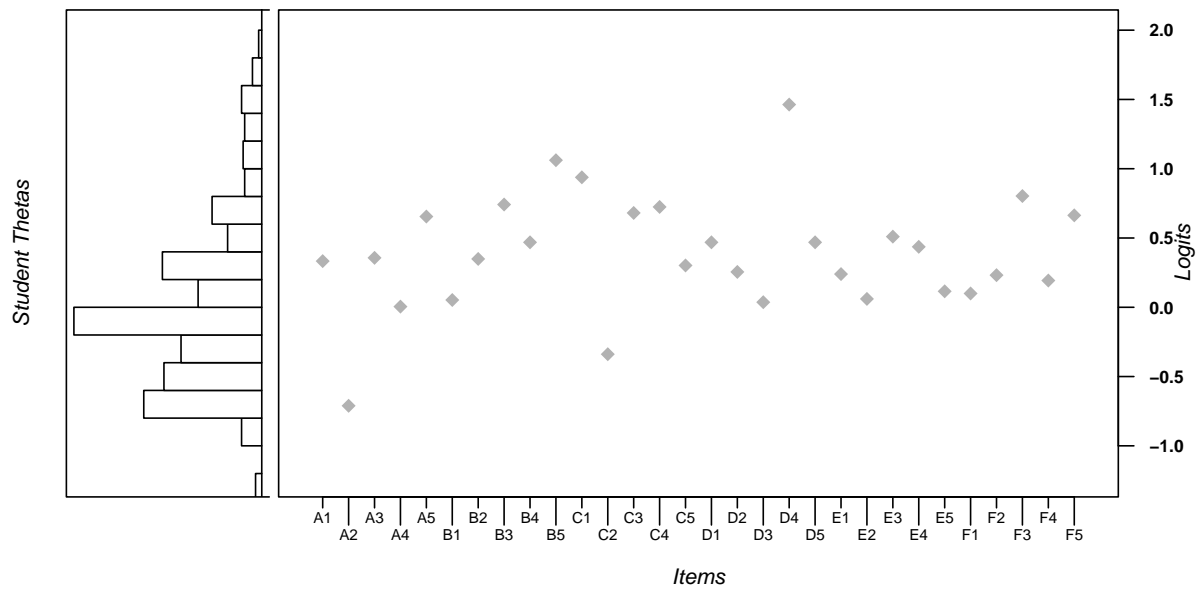


Figure 2: Student Ability - Item Difficulty Wright Map

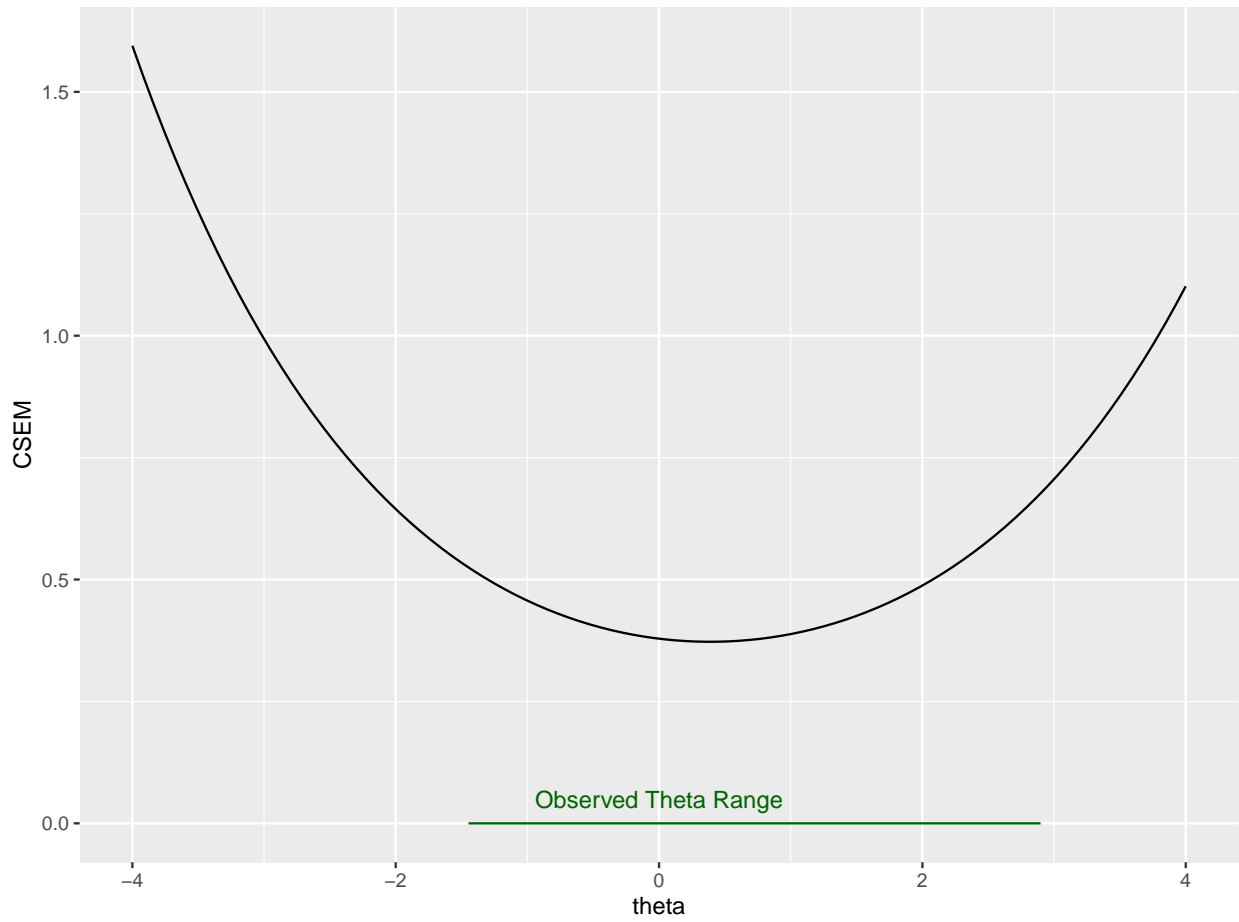


Figure 3: SocialStudies 08 Conditional Standard Error of Measure

Table 7: SocialStudies 08 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		546	0.60
Ethnic	Black	72	0.43
Ethnic	Hispanic	37	0.20
Ethnic	Other	28	0.59
Ethnic	White	399	0.63
Disadvantaged	No	405	0.62
Disadvantaged	Yes	141	0.53
LEP	No	521	0.61
LEP	Yes	25	0.34
Gender	Female	173	0.55
Gender	Male	373	0.62
Homeless	No	532	0.60
Homeless	Yes	14	0.74

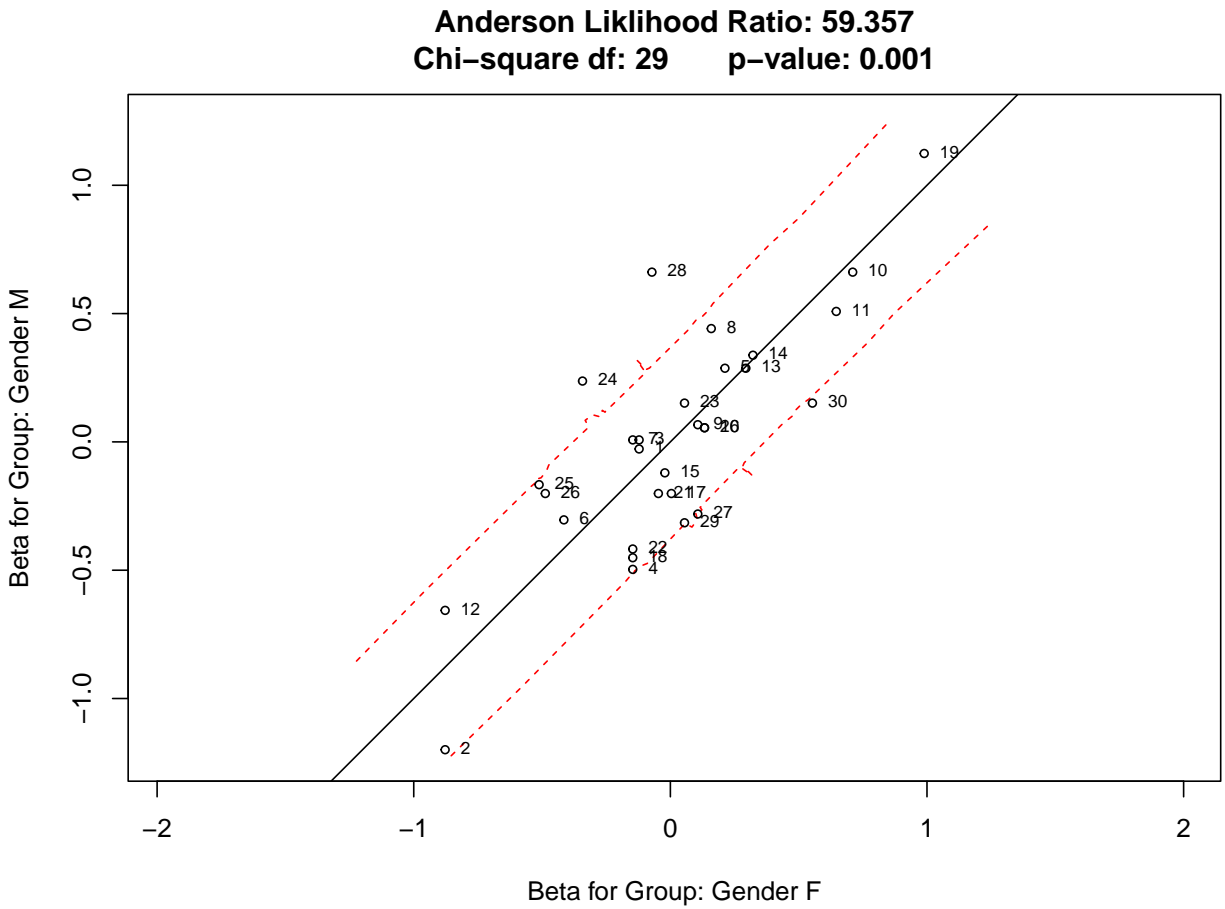


Figure 4: SocialStudies 08 Differential Item (DIF) and Test (DTF) Function for Gender

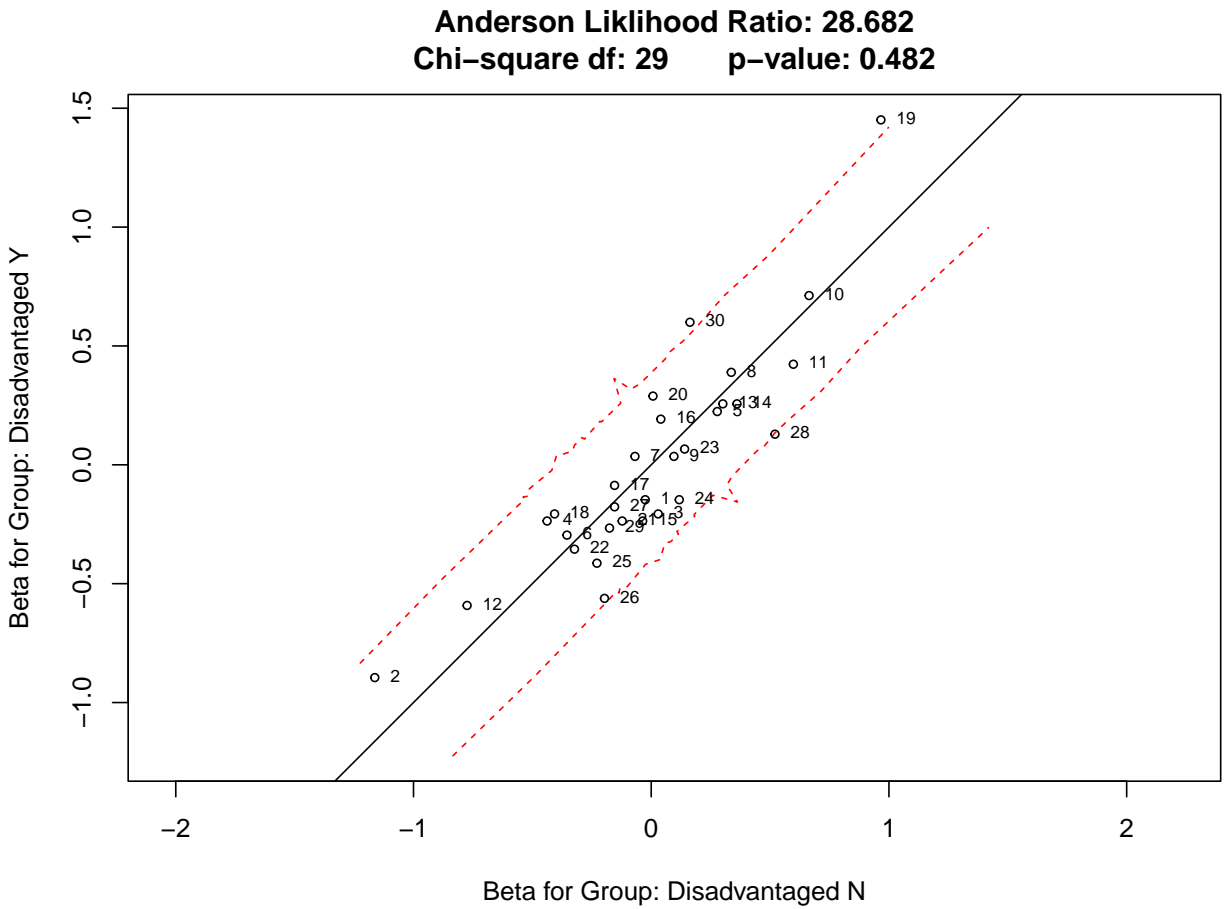


Figure 5: SocialStudies 08 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

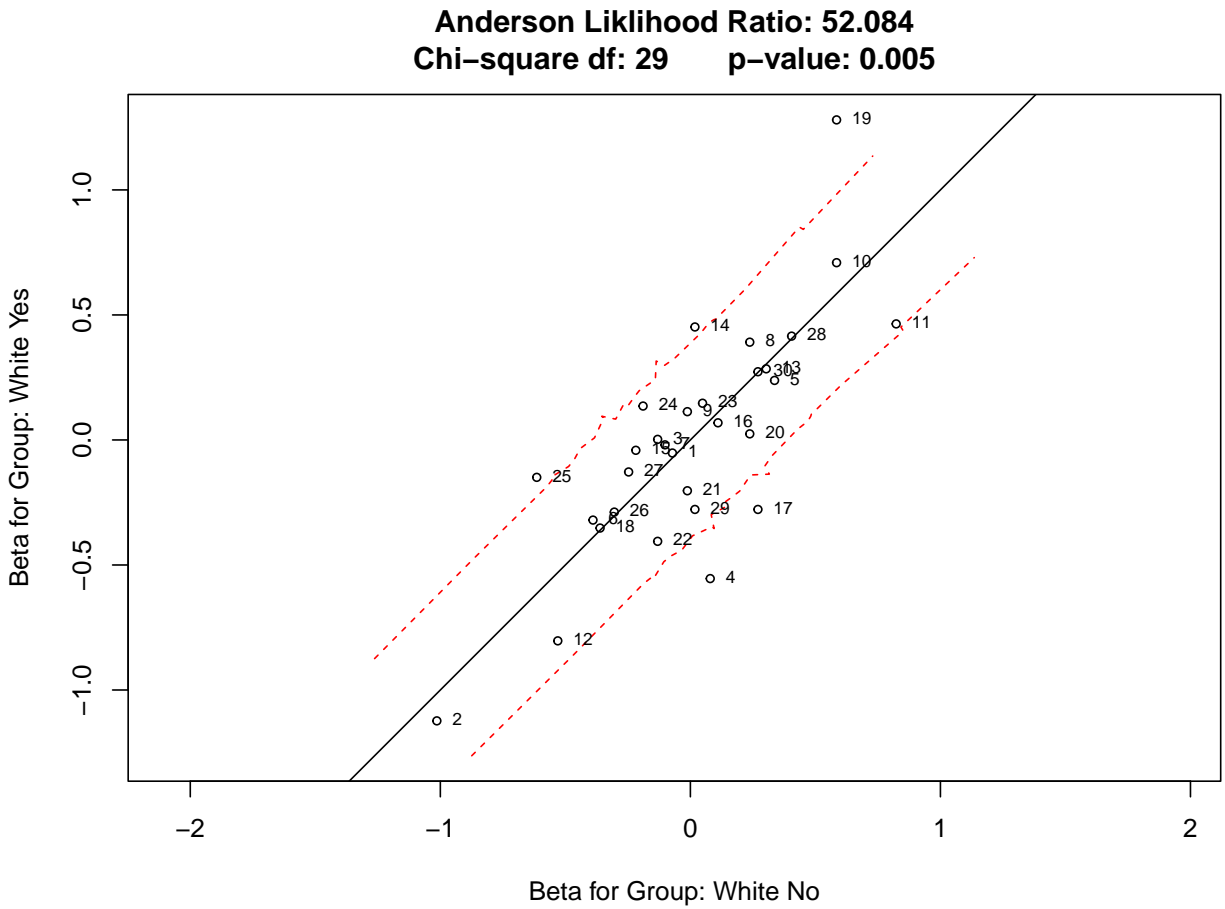


Figure 6: SocialStudies 08 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6735	0.1640	0.8375
False	0.0579	0.1046	0.1625
Total	0.7314	0.2686	1.0000

Accuracy = 0.8375

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5705	0.1609
j	0.0863	0.1824

Proportion of Consistent Classifications = 0.7529
Cohen's Kappa = 0.4218

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0310	0.0441	0.9028	0.0221	0.5835	0.9534	0.9338	0.0274	0.0056	0.0219
Apprentice	0.5763	0.0800	0.1951	0.1487	0.7949	0.7093	0.7714	0.4977	0.4307	0.1178
Proficient	0.1558	0.1047	0.6741	0.0654	0.7043	0.8656	0.8299	0.1426	0.0679	0.0801
Distinguished	0.0005	0.0077	0.9916	0.0002	0.6752	0.9923	0.9921	0.0015	0.0001	0.0015

Social Studies Grade 5

Table 1: SocialStudies 05 Item Statistics

	Item	n	mean	sd	se
A1	1	506	0.494	0.500	0.022
A2	2	506	0.387	0.488	0.022
A3	3	506	0.366	0.482	0.021
A4	4	506	0.302	0.460	0.020
A5	5	506	0.478	0.500	0.022
B1	6	506	0.468	0.499	0.022
B2	7	506	0.547	0.498	0.022
B3	8	506	0.320	0.467	0.021
B4	9	506	0.534	0.499	0.022
B5	10	506	0.510	0.500	0.022
C1	11	506	0.423	0.495	0.022
C2	12	506	0.496	0.500	0.022
C3	13	506	0.460	0.499	0.022
C4	14	506	0.273	0.446	0.020
C5	15	506	0.567	0.496	0.022
D1	16	506	0.536	0.499	0.022
D2	17	506	0.549	0.498	0.022
D3	18	506	0.654	0.476	0.021
D4	19	506	0.518	0.500	0.022
D5	20	506	0.433	0.496	0.022
E1	21	506	0.275	0.447	0.020
E2	22	506	0.468	0.499	0.022
E3	23	506	0.490	0.500	0.022
E4	24	506	0.393	0.489	0.022
E5	25	506	0.322	0.468	0.021
F1	26	506	0.453	0.498	0.022
F2	27	506	0.451	0.498	0.022
F3	28	506	0.421	0.494	0.022
F4	29	506	0.358	0.480	0.021
F5	30	506	0.356	0.479	0.021

Chronbach's Alpha: 0.5943

Table 2: SocialStudies 05 Raw Score Frequencies

Score	freq	pct	pct_cum
4	1	0.198	0.198
5	2	0.395	0.593
6	2	0.395	0.988
7	6	1.186	2.174
8	25	4.941	7.115
9	40	7.905	15.020
10	56	11.067	26.087
11	74	14.625	40.711
12	58	11.462	52.174
13	51	10.079	62.253
14	29	5.731	67.984
15	27	5.336	73.320
16	28	5.534	78.854
17	21	4.150	83.004
18	19	3.755	86.759
19	21	4.150	90.909
20	16	3.162	94.071
21	9	1.779	95.850
22	4	0.791	96.640
23	6	1.186	97.826
24	2	0.395	98.221
25	4	0.791	99.012
26	5	0.988	100.000

Table 3: SocialStudies 05 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.035	-0.008	0.008	0.000	0.007	0.000
A1		a	112	0.221	-0.227	-0.144	0.265	0.242	0.237	0.121
A1		b	142	0.281	-0.171	-0.115	0.386	0.212	0.252	0.271
A1	*	c	250	0.494	0.046	0.267	0.341	0.545	0.504	0.607
A2			5	0.010	-0.080	-0.008	0.008	0.023	0.007	0.000
A2	*	a	196	0.387	0.192	0.350	0.258	0.303	0.422	0.607
A2		b	108	0.213	-0.231	-0.146	0.295	0.205	0.193	0.150
A2		c	197	0.389	-0.291	-0.196	0.439	0.470	0.378	0.243
A3			3	0.006	-0.075	-0.015	0.015	0.008	0.000	0.000
A3		a	113	0.223	-0.203	-0.120	0.288	0.235	0.193	0.168
A3	*	b	185	0.366	0.120	0.270	0.235	0.326	0.422	0.505
A3		c	205	0.405	-0.248	-0.135	0.462	0.432	0.385	0.327
A4			1	0.002	0.029	0.009	0.000	0.000	0.000	0.009
A4	*	a	153	0.302	0.024	0.154	0.258	0.273	0.289	0.411
A4		b	165	0.326	-0.054	0.045	0.311	0.295	0.348	0.355
A4		c	187	0.370	-0.301	-0.208	0.432	0.432	0.363	0.224
A5			5	0.010	-0.036	0.004	0.015	0.008	0.000	0.019
A5		a	118	0.233	-0.280	-0.238	0.341	0.235	0.230	0.103
A5		b	141	0.279	-0.228	-0.143	0.348	0.303	0.244	0.206
A5	*	c	242	0.478	0.150	0.377	0.295	0.455	0.526	0.673
B1			1	0.002	-0.101	-0.008	0.008	0.000	0.000	0.000
B1		a	107	0.211	-0.237	-0.151	0.273	0.242	0.193	0.121
B1	*	b	237	0.468	0.277	0.512	0.273	0.379	0.496	0.785
B1		c	161	0.318	-0.381	-0.354	0.447	0.379	0.311	0.093
B2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B2	*	a	277	0.547	0.240	0.449	0.402	0.439	0.556	0.850
B2		b	97	0.192	-0.274	-0.222	0.288	0.189	0.200	0.065
B2		c	132	0.261	-0.332	-0.226	0.311	0.371	0.244	0.084
B3			4	0.008	-0.072	-0.008	0.008	0.015	0.007	0.000
B3		a	115	0.227	-0.213	-0.152	0.311	0.205	0.222	0.159
B3	*	b	162	0.320	0.144	0.260	0.273	0.205	0.311	0.533
B3		c	225	0.445	-0.248	-0.101	0.409	0.576	0.459	0.308
B4			5	0.010	-0.095	-0.023	0.023	0.015	0.000	0.000
B4		a	111	0.219	-0.298	-0.198	0.311	0.280	0.156	0.112
B4		b	120	0.237	-0.260	-0.189	0.311	0.265	0.230	0.121
B4	*	c	270	0.534	0.207	0.410	0.356	0.439	0.615	0.766
B5			3	0.006	-0.037	-0.006	0.015	0.000	0.000	0.009
B5		a	133	0.263	-0.273	-0.222	0.371	0.280	0.230	0.150
B5		b	112	0.221	-0.255	-0.214	0.326	0.205	0.222	0.112
B5	*	c	258	0.510	0.169	0.441	0.288	0.515	0.548	0.729
C1			1	0.002	-0.068	-0.008	0.008	0.000	0.000	0.000
C1	*	a	214	0.423	0.207	0.396	0.333	0.303	0.385	0.729
C1		b	113	0.223	-0.252	-0.174	0.295	0.220	0.237	0.121
C1		c	178	0.352	-0.300	-0.214	0.364	0.477	0.378	0.150
C2			2	0.004	-0.097	-0.015	0.015	0.000	0.000	0.000
C2		a	127	0.251	-0.315	-0.280	0.364	0.265	0.259	0.084
C2		b	126	0.249	-0.290	-0.229	0.341	0.326	0.193	0.112
C2	*	c	251	0.496	0.253	0.523	0.280	0.409	0.548	0.804
C3			3	0.006	-0.043	-0.006	0.015	0.000	0.000	0.009
C3		a	139	0.275	-0.199	-0.093	0.364	0.273	0.193	0.271

Table 3: SocialStudies 05 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	131	0.259	-0.230	-0.177	0.364	0.220	0.252	0.187
C3	*	c	233	0.460	0.079	0.275	0.258	0.508	0.556	0.533
C4			1	0.002	-0.025	0.000	0.000	0.008	0.000	0.000
C4	*	a	138	0.273	-0.081	0.082	0.273	0.288	0.193	0.355
C4		b	157	0.310	-0.163	-0.138	0.371	0.273	0.348	0.234
C4		c	210	0.415	-0.094	0.055	0.356	0.432	0.459	0.411
C5			1	0.002	-0.047	-0.008	0.008	0.000	0.000	0.000
C5		a	110	0.217	-0.239	-0.161	0.273	0.295	0.170	0.112
C5		b	108	0.213	-0.234	-0.170	0.311	0.189	0.200	0.140
C5	*	c	287	0.567	0.118	0.339	0.409	0.515	0.630	0.748
D1			1	0.002	-0.036	0.000	0.000	0.008	0.000	0.000
D1		a	146	0.289	-0.296	-0.258	0.417	0.311	0.244	0.159
D1		b	88	0.174	-0.302	-0.189	0.273	0.220	0.104	0.084
D1	*	c	271	0.536	0.230	0.446	0.311	0.462	0.652	0.757
D2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D2	*	a	278	0.549	0.312	0.557	0.303	0.470	0.622	0.860
D2		b	123	0.243	-0.358	-0.351	0.417	0.227	0.230	0.065
D2		c	105	0.208	-0.324	-0.206	0.280	0.303	0.148	0.075
D3			1	0.002	-0.025	0.000	0.000	0.008	0.000	0.000
D3		a	79	0.156	-0.288	-0.188	0.235	0.212	0.111	0.047
D3	*	b	331	0.654	0.272	0.431	0.485	0.500	0.763	0.916
D3		c	95	0.188	-0.352	-0.243	0.280	0.280	0.126	0.037
D4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D4		a	159	0.314	-0.326	-0.313	0.462	0.326	0.289	0.150
D4		b	85	0.168	-0.371	-0.316	0.326	0.220	0.089	0.009
D4	*	c	262	0.518	0.318	0.629	0.212	0.455	0.622	0.841
D5			6	0.012	-0.070	-0.013	0.023	0.008	0.007	0.009
D5		a	128	0.253	-0.270	-0.199	0.348	0.265	0.230	0.150
D5	*	b	219	0.433	0.199	0.394	0.288	0.356	0.452	0.682
D5		c	153	0.302	-0.272	-0.182	0.341	0.371	0.311	0.159
E1			2	0.004	-0.051	-0.008	0.008	0.000	0.007	0.000
E1		a	252	0.498	-0.176	-0.093	0.523	0.508	0.519	0.430
E1	*	b	139	0.275	0.201	0.370	0.144	0.212	0.274	0.514
E1		c	113	0.223	-0.345	-0.270	0.326	0.280	0.200	0.056
E2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E2		a	107	0.211	-0.296	-0.253	0.318	0.212	0.222	0.065
E2		b	162	0.320	-0.256	-0.192	0.379	0.379	0.311	0.187
E2	*	c	237	0.468	0.189	0.445	0.303	0.409	0.467	0.748
E3			3	0.006	-0.050	0.002	0.008	0.008	0.000	0.009
E3	*	a	248	0.490	0.137	0.290	0.402	0.394	0.511	0.692
E3		b	108	0.213	-0.131	-0.031	0.227	0.205	0.222	0.196
E3		c	147	0.291	-0.346	-0.261	0.364	0.394	0.267	0.103
E4			3	0.006	-0.006	0.009	0.000	0.015	0.000	0.009
E4	*	a	199	0.393	0.096	0.216	0.326	0.295	0.437	0.542
E4		b	124	0.245	-0.236	-0.152	0.311	0.311	0.185	0.159
E4		c	180	0.356	-0.210	-0.074	0.364	0.379	0.378	0.290
E5			3	0.006	-0.050	-0.006	0.015	0.000	0.000	0.009
E5		a	142	0.281	-0.177	-0.098	0.341	0.273	0.259	0.243
E5	*	b	163	0.322	0.082	0.238	0.220	0.295	0.341	0.458
E5		c	198	0.391	-0.232	-0.135	0.424	0.432	0.400	0.290

Table 3: SocialStudies 05 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F1		a	139	0.275	-0.283	-0.288	0.409	0.212	0.326	0.121
F1		b	138	0.273	-0.250	-0.146	0.333	0.356	0.200	0.187
F1	*	c	229	0.453	0.178	0.434	0.258	0.432	0.474	0.692
F2			1	0.002	-0.068	-0.008	0.008	0.000	0.000	0.000
F2		a	131	0.259	-0.273	-0.223	0.364	0.227	0.281	0.140
F2	*	b	228	0.451	0.215	0.415	0.295	0.386	0.459	0.710
F2		c	146	0.289	-0.292	-0.184	0.333	0.386	0.259	0.150
F3			2	0.004	-0.104	-0.015	0.015	0.000	0.000	0.000
F3	*	a	213	0.421	0.135	0.250	0.348	0.288	0.481	0.598
F3		b	122	0.241	-0.174	-0.044	0.250	0.273	0.230	0.206
F3		c	169	0.334	-0.294	-0.190	0.386	0.439	0.289	0.196
F4			2	0.004	0.026	0.009	0.000	0.008	0.000	0.009
F4	*	a	181	0.358	0.104	0.237	0.295	0.265	0.370	0.533
F4		b	147	0.291	-0.174	-0.088	0.303	0.295	0.333	0.215
F4		c	176	0.348	-0.272	-0.159	0.402	0.432	0.296	0.243
F5			1	0.002	-0.047	-0.008	0.008	0.000	0.000	0.000
F5		a	141	0.279	-0.199	-0.135	0.341	0.250	0.304	0.206
F5	*	b	180	0.356	0.130	0.271	0.280	0.318	0.311	0.551
F5		c	184	0.364	-0.264	-0.128	0.371	0.432	0.385	0.243

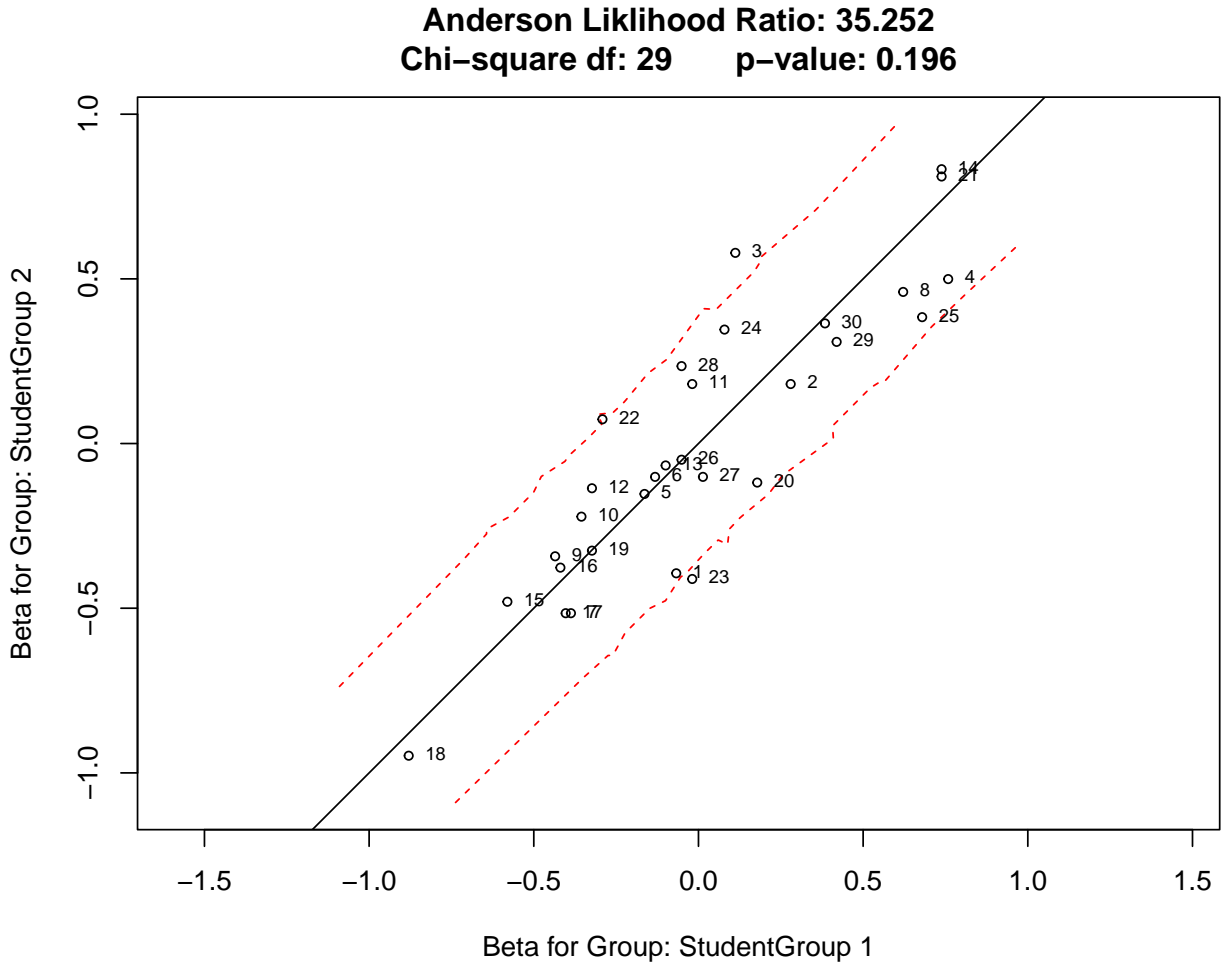


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: SocialStudies 05 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	506	1.0795	1.0602
A2	506	0.9718	0.9796
A3	506	1.0209	1.0204
A4	506	1.0858	1.0740
A5	506	1.0034	1.0019
B1	506	0.9273	0.9320
B2	506	0.9341	0.9496
B3	506	1.0118	1.0006
B4	506	0.9540	0.9687
B5	506	0.9966	0.9876
C1	506	0.9680	0.9710
C2	506	0.9368	0.9437
C3	506	1.0401	1.0438
C4	506	1.1834	1.1319
C5	506	1.0273	1.0104
D1	506	0.9464	0.9532
D2	506	0.8900	0.9089
D3	506	0.8773	0.9247
D4	506	0.8964	0.9069
D5	506	0.9680	0.9760
E1	506	0.9741	0.9656
E2	506	0.9807	0.9812
E3	506	1.0093	1.0096
E4	506	1.0294	1.0356
E5	506	1.0501	1.0395
F1	506	0.9825	0.9878
F2	506	0.9576	0.9670
F3	506	1.0149	1.0127
F4	506	1.0348	1.0292
F5	506	1.0212	1.0110

Table 5: SocialStudies 05 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9924	0.0633
Infit	Infit	0.9928	0.0499

Table 6: SocialStudies 05 Raw to Theta Table

Raw Score	theta	SE
4	-1.5809	0.5239
5	-1.3364	0.4838
6	-1.1239	0.4546
7	-0.9338	0.4326
8	-0.7598	0.4158
9	-0.5978	0.4027
10	-0.4447	0.3926
11	-0.2984	0.3849
12	-0.1570	0.3792
13	-0.0191	0.3753
14	0.1166	0.3731
15	0.2513	0.3723
16	0.3860	0.3731
17	0.5218	0.3755
18	0.6599	0.3794
19	0.8015	0.3851
20	0.9481	0.3929
21	1.1014	0.4031
22	1.2639	0.4162
23	1.4383	0.4331
24	1.6289	0.4551
25	1.8418	0.4843
26	2.0868	0.5245

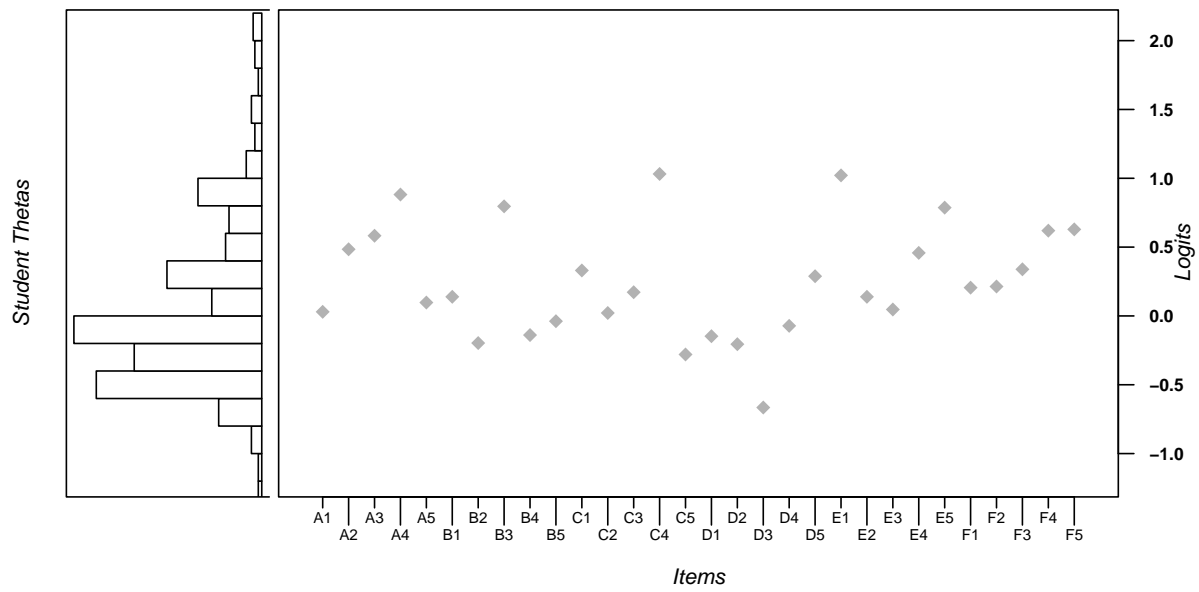


Figure 2: Student Ability - Item Difficulty Wright Map

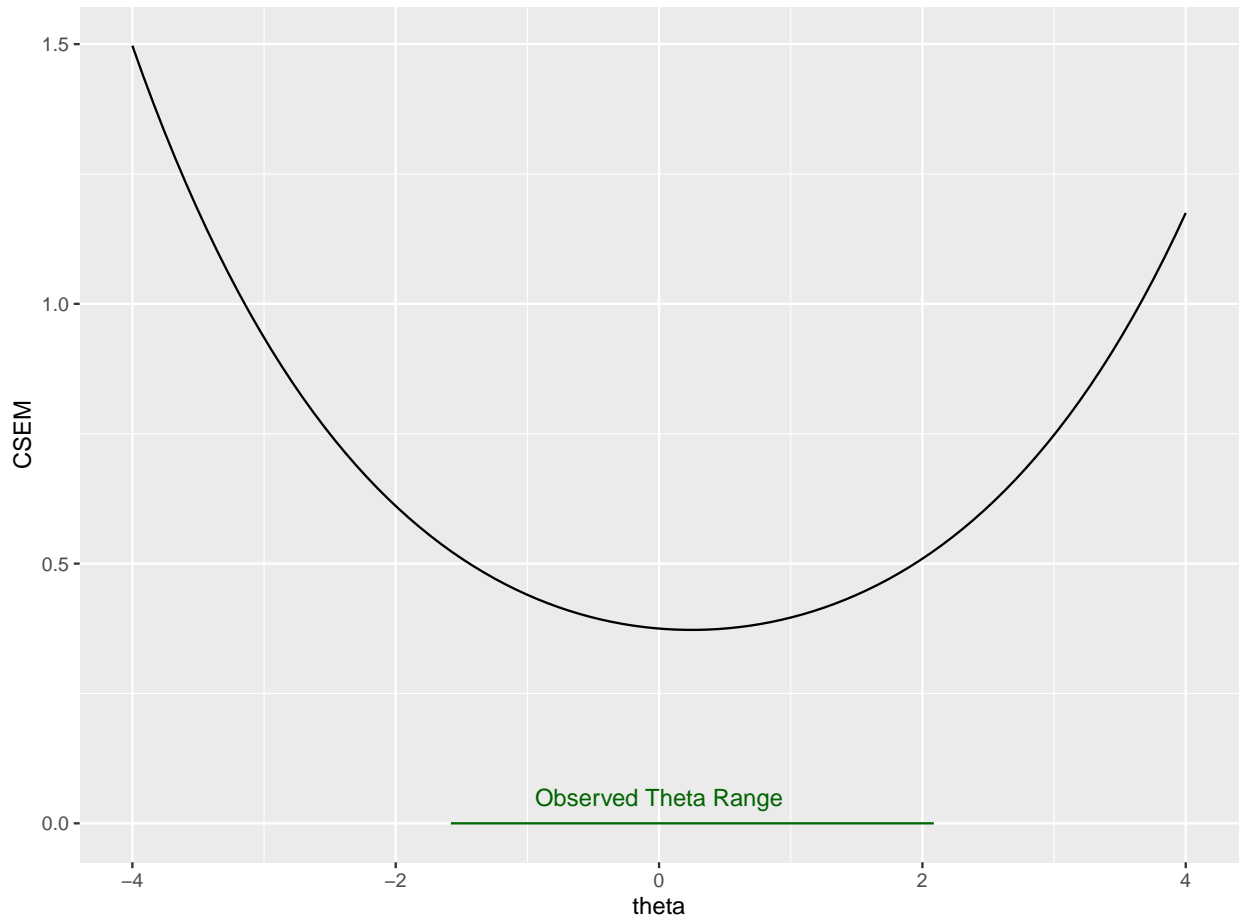


Figure 3: SocialStudies 05 Conditional Standard Error of Measure

Table 7: SocialStudies 05 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		506	0.57
Ethnic	Black	63	0.12
Ethnic	Hispanic	33	0.26
Ethnic	Other	25	0.52
Ethnic	White	376	0.61
Disadvantaged	No	379	0.57
Disadvantaged	Yes	127	0.57
LEP	No	476	0.58
LEP	Yes	30	-0.27
Gender	Female	175	0.40
Gender	Male	331	0.63
Homeless	No	488	0.58
Homeless	Yes	18	0.42

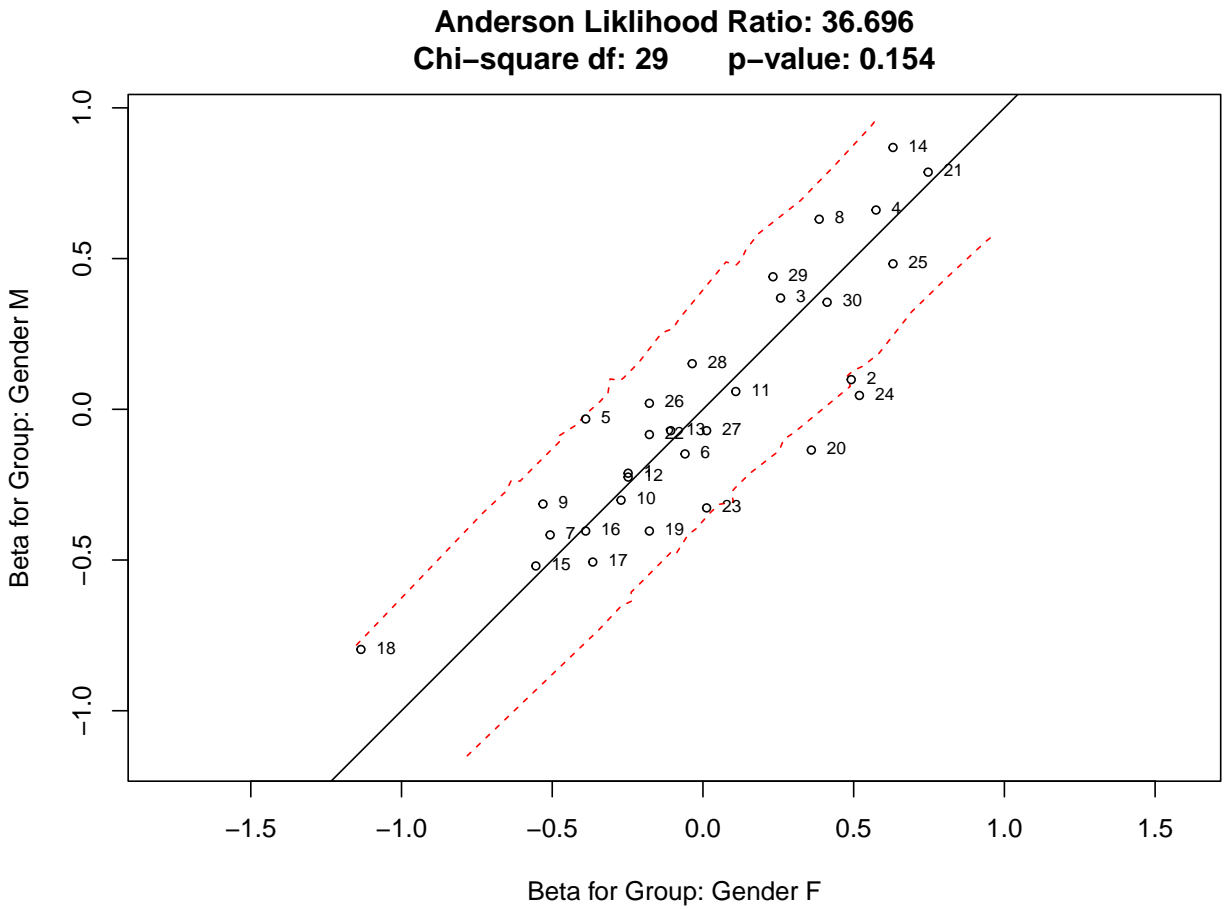


Figure 4: SocialStudies 05 Differential Item (DIF) and Test (DTF) Function for Gender

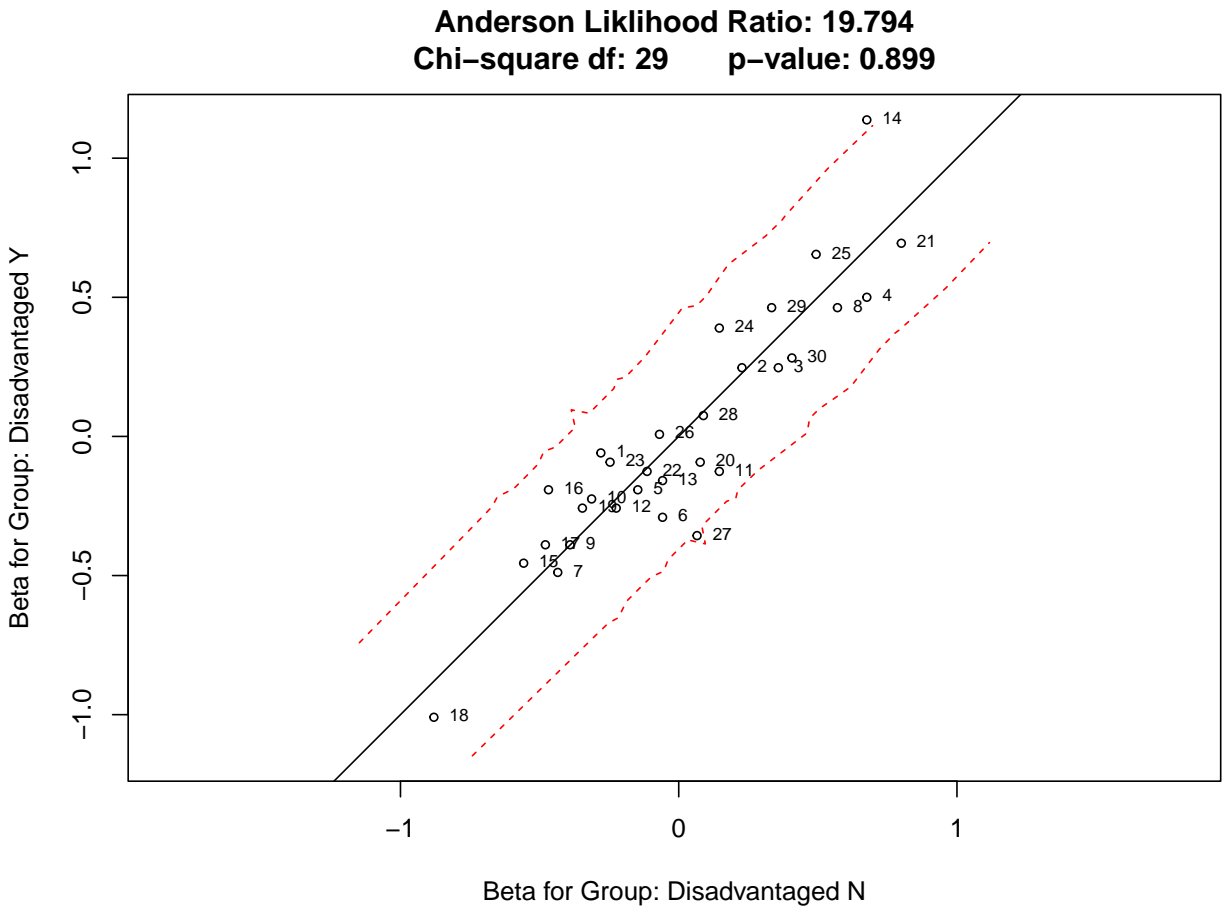


Figure 5: SocialStudies 05 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

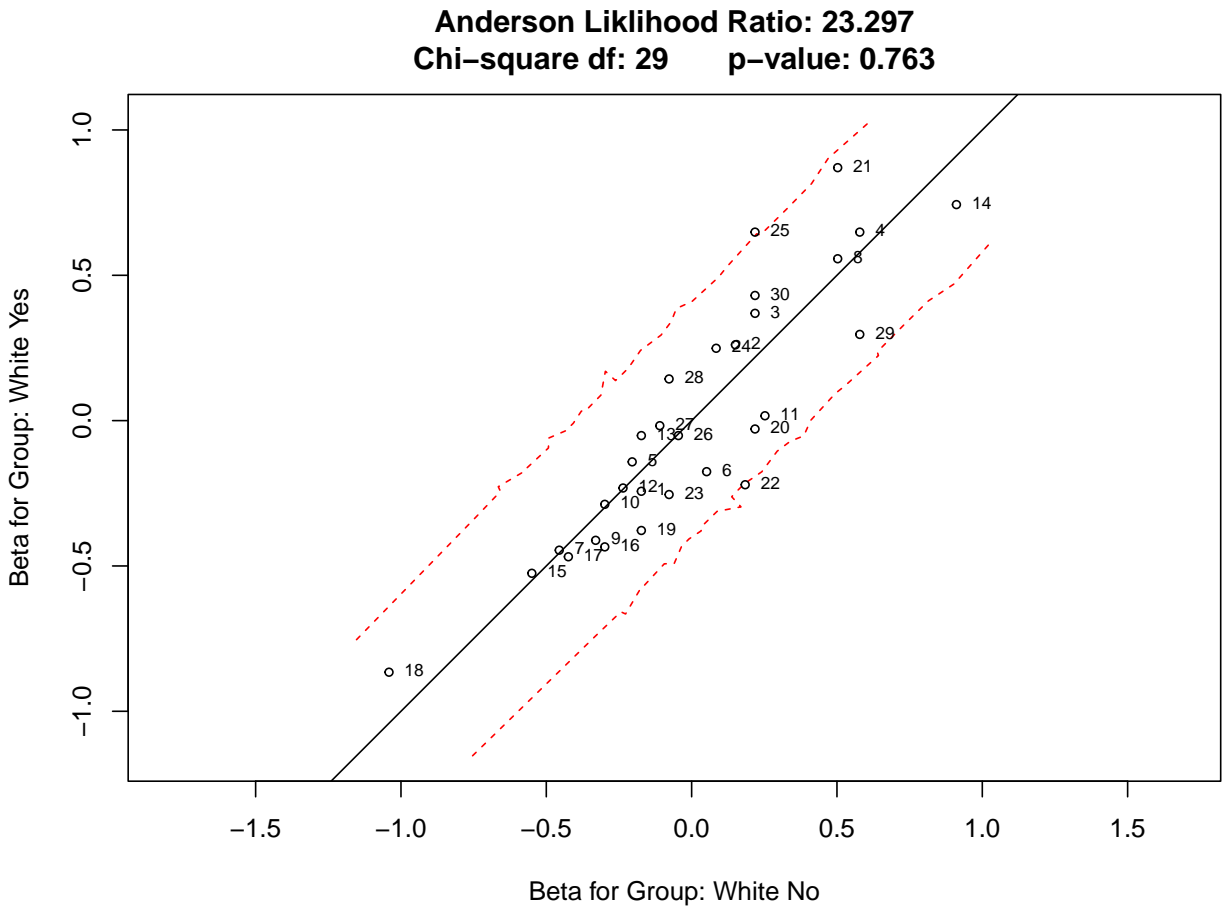


Figure 6: SocialStudies 05 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.6838	0.1460	0.8298
False	0.0553	0.1149	0.1702
Total	0.7391	0.2609	1.0000

Accuracy = 0.8298

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.5698	0.1693
j	0.0910	0.1699

Proportion of Consistent Classifications = 0.7397
Cohen's Kappa = 0.3848

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0925	0.0713	0.7760	0.0602	0.6057	0.9159	0.8685	0.0746	0.0268	0.0491
Apprentice	0.4607	0.1147	0.2394	0.1853	0.7131	0.6761	0.7000	0.3790	0.3310	0.0718
Proficient	0.1409	0.1148	0.6841	0.0602	0.7008	0.8563	0.8250	0.1345	0.0654	0.0740
Distinguished	0.0001	0.0050	0.9949	0.0001	0.6664	0.9950	0.9950	0.0007	0.0000	0.0006

Writing Grade 11

Table 1: Writing 11 Item Statistics

	Item	n	mean	sd	se
A1	1	483	0.387	0.488	0.022
A2	2	483	0.364	0.482	0.022
A3	3	483	0.391	0.489	0.022
A4	4	483	0.712	0.453	0.021
A5	5	483	0.466	0.499	0.023
B1	6	483	0.484	0.500	0.023
B2	7	483	0.491	0.500	0.023
B3	8	483	0.337	0.473	0.022
B4	9	483	0.427	0.495	0.023
B5	10	483	0.600	0.490	0.022
C1	11	483	0.557	0.497	0.023
C2	12	483	0.685	0.465	0.021
C3	13	483	0.507	0.500	0.023
C4	14	483	0.451	0.498	0.023
C5	15	483	0.366	0.482	0.022
D1	16	483	0.427	0.495	0.023
D2	17	483	0.205	0.404	0.018
D3	18	483	0.557	0.497	0.023
D4	19	483	0.424	0.495	0.023
D5	20	483	0.503	0.501	0.023
E1	21	483	0.398	0.490	0.022
E2	22	483	0.389	0.488	0.022
E3	23	483	0.412	0.493	0.022
E4	24	483	0.464	0.499	0.023
E5	25	483	0.420	0.494	0.022
F1	26	483	0.391	0.489	0.022
F2	27	483	0.435	0.496	0.023
F3	28	483	0.375	0.485	0.022
F4	29	483	0.497	0.501	0.023
F5	30	483	0.342	0.475	0.022

Chronbach's Alpha: 0.6734

Table 2: Writing 11 Raw Score Frequencies

Score	freq	pct	pct_cum
3	2	0.414	0.414
5	4	0.828	1.242
6	6	1.242	2.484
7	19	3.934	6.418
8	33	6.832	13.251
9	31	6.418	19.669
10	38	7.867	27.536
11	38	7.867	35.404
12	49	10.145	45.549
13	52	10.766	56.315
14	42	8.696	65.010
15	29	6.004	71.014
16	29	6.004	77.019
17	26	5.383	82.402
18	19	3.934	86.335
19	13	2.692	89.027
20	14	2.899	91.925
21	7	1.449	93.375
22	6	1.242	94.617
23	10	2.070	96.687
24	9	1.863	98.551
25	3	0.621	99.172
26	3	0.621	99.793
28	1	0.207	100.000

Table 3: Writing 11 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
A1		a	191	0.395	-0.297	-0.176	0.429	0.561	0.28	0.252
A1	*	b	187	0.387	0.309	0.447	0.211	0.266	0.49	0.658
A1		c	105	0.217	-0.327	-0.271	0.361	0.173	0.23	0.090
A2			1	0.002	-0.035	0.000	0.000	0.007	0.00	0.000
A2	*	a	176	0.364	0.205	0.375	0.165	0.367	0.43	0.541
A2		b	105	0.217	-0.320	-0.256	0.346	0.245	0.15	0.090
A2		c	201	0.416	-0.204	-0.119	0.489	0.381	0.42	0.369
A3			2	0.004	-0.064	-0.008	0.008	0.000	0.01	0.000
A3	*	a	189	0.391	0.254	0.465	0.165	0.396	0.42	0.631
A3		b	77	0.159	-0.223	-0.176	0.248	0.144	0.16	0.072
A3		c	215	0.445	-0.333	-0.282	0.579	0.460	0.41	0.297
A4			1	0.002	-0.085	-0.008	0.008	0.000	0.00	0.000
A4		a	60	0.124	-0.285	-0.159	0.195	0.180	0.05	0.036
A4	*	b	344	0.712	0.367	0.531	0.406	0.712	0.87	0.937
A4		c	78	0.161	-0.421	-0.364	0.391	0.108	0.08	0.027
A5			2	0.004	-0.064	-0.008	0.008	0.007	0.00	0.000
A5		a	142	0.294	-0.233	-0.145	0.316	0.388	0.27	0.171
A5		b	114	0.236	-0.275	-0.220	0.301	0.259	0.29	0.081
A5	*	c	225	0.466	0.184	0.372	0.376	0.345	0.44	0.748
B1			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
B1	*	a	234	0.484	0.240	0.486	0.226	0.518	0.53	0.712
B1		b	121	0.251	-0.260	-0.232	0.331	0.266	0.29	0.099
B1		c	128	0.265	-0.312	-0.254	0.444	0.216	0.18	0.189
B2			1	0.002	-0.075	-0.008	0.008	0.000	0.00	0.000
B2		a	156	0.323	-0.236	-0.128	0.353	0.381	0.31	0.225
B2		b	89	0.184	-0.248	-0.153	0.226	0.245	0.17	0.072
B2	*	c	237	0.491	0.156	0.289	0.414	0.374	0.52	0.703
B3			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
B3		a	166	0.344	-0.146	-0.041	0.293	0.417	0.41	0.252
B3	*	b	163	0.337	0.062	0.217	0.278	0.288	0.31	0.495
B3		c	154	0.319	-0.225	-0.176	0.429	0.295	0.28	0.252
B4			1	0.002	-0.025	0.000	0.000	0.007	0.00	0.000
B4		a	154	0.319	-0.219	-0.122	0.293	0.410	0.39	0.171
B4	*	b	206	0.427	0.324	0.536	0.203	0.381	0.44	0.739
B4		c	122	0.253	-0.428	-0.414	0.504	0.201	0.17	0.090
B5			1	0.002	-0.085	-0.008	0.008	0.000	0.00	0.000
B5		a	103	0.213	-0.244	-0.152	0.278	0.259	0.16	0.126
B5		b	89	0.184	-0.302	-0.226	0.271	0.259	0.12	0.045
B5	*	c	290	0.600	0.213	0.385	0.444	0.482	0.72	0.829
C1			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
C1		a	124	0.257	-0.228	-0.095	0.248	0.360	0.24	0.153
C1	*	b	269	0.557	0.303	0.507	0.331	0.468	0.67	0.838
C1		c	90	0.186	-0.432	-0.412	0.421	0.173	0.09	0.009
C2			1	0.002	-0.045	-0.008	0.008	0.000	0.00	0.000
C2		a	77	0.159	-0.275	-0.173	0.218	0.237	0.10	0.045
C2		b	74	0.153	-0.227	-0.163	0.226	0.201	0.09	0.063
C2	*	c	331	0.685	0.179	0.343	0.549	0.561	0.81	0.892
C3			1	0.002	0.086	0.009	0.000	0.000	0.00	0.009
C3	*	a	245	0.507	0.190	0.420	0.256	0.547	0.60	0.676

Table 3: Writing 11 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	99	0.205	-0.242	-0.167	0.293	0.187	0.20	0.126
C3		c	138	0.286	-0.289	-0.262	0.451	0.266	0.20	0.189
C4			2	0.004	-0.092	-0.015	0.015	0.000	0.00	0.000
C4	*	a	218	0.451	0.143	0.322	0.263	0.482	0.51	0.586
C4		b	119	0.246	-0.169	-0.083	0.263	0.281	0.25	0.180
C4		c	144	0.298	-0.284	-0.224	0.459	0.237	0.24	0.234
C5			1	0.002	0.005	0.000	0.000	0.000	0.01	0.000
C5		a	99	0.205	-0.229	-0.105	0.195	0.324	0.18	0.090
C5	*	b	177	0.366	0.178	0.288	0.271	0.281	0.40	0.559
C5		c	206	0.427	-0.261	-0.182	0.534	0.396	0.41	0.351
D1			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
D1		a	167	0.346	-0.295	-0.221	0.383	0.403	0.42	0.162
D1	*	b	206	0.427	0.303	0.497	0.233	0.338	0.47	0.730
D1		c	110	0.228	-0.332	-0.275	0.383	0.259	0.11	0.108
D2			2	0.004	-0.007	0.009	0.000	0.007	0.00	0.009
D2	*	a	99	0.205	0.041	0.173	0.098	0.288	0.16	0.270
D2		b	155	0.321	-0.114	-0.005	0.293	0.295	0.43	0.288
D2		c	227	0.470	-0.203	-0.177	0.609	0.410	0.41	0.432
D3			2	0.004	-0.085	-0.008	0.008	0.007	0.00	0.000
D3	*	a	269	0.557	0.328	0.638	0.218	0.590	0.63	0.856
D3		b	95	0.197	-0.261	-0.202	0.301	0.201	0.16	0.099
D3		c	117	0.242	-0.398	-0.429	0.474	0.201	0.21	0.045
D4			1	0.002	-0.035	0.000	0.000	0.007	0.00	0.000
D4		a	145	0.300	-0.206	-0.121	0.301	0.374	0.33	0.180
D4		b	132	0.273	-0.188	-0.089	0.323	0.266	0.26	0.234
D4	*	c	205	0.424	0.077	0.210	0.376	0.353	0.41	0.586
D5			1	0.002	-0.015	0.000	0.000	0.007	0.00	0.000
D5		a	113	0.234	-0.277	-0.182	0.263	0.367	0.18	0.081
D5		b	126	0.261	-0.234	-0.146	0.353	0.216	0.26	0.207
D5	*	c	243	0.503	0.178	0.328	0.383	0.410	0.56	0.712
E1			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
E1	*	a	192	0.398	0.147	0.338	0.203	0.410	0.48	0.541
E1		b	119	0.246	-0.273	-0.215	0.323	0.273	0.26	0.108
E1		c	172	0.356	-0.196	-0.122	0.474	0.317	0.26	0.351
E2			1	0.002	-0.035	0.000	0.000	0.007	0.00	0.000
E2		a	117	0.242	-0.113	0.061	0.128	0.396	0.24	0.189
E2	*	b	188	0.389	0.180	0.282	0.331	0.230	0.44	0.613
E2		c	177	0.366	-0.362	-0.343	0.541	0.367	0.32	0.198
E3			1	0.002	-0.085	-0.008	0.008	0.000	0.00	0.000
E3	*	a	199	0.412	0.329	0.564	0.165	0.374	0.44	0.730
E3		b	119	0.246	-0.302	-0.241	0.331	0.309	0.22	0.090
E3		c	164	0.340	-0.333	-0.316	0.496	0.317	0.34	0.180
E4			1	0.002	-0.085	-0.008	0.008	0.000	0.00	0.000
E4		a	145	0.300	-0.171	-0.005	0.248	0.403	0.29	0.243
E4		b	113	0.234	-0.240	-0.172	0.316	0.245	0.21	0.144
E4	*	c	224	0.464	0.091	0.184	0.429	0.353	0.50	0.613
E5			2	0.004	-0.057	-0.008	0.008	0.007	0.00	0.000
E5	*	a	203	0.420	0.339	0.600	0.120	0.439	0.46	0.721
E5		b	123	0.255	-0.219	-0.136	0.316	0.237	0.28	0.180
E5		c	155	0.321	-0.422	-0.457	0.556	0.317	0.26	0.099

Table 3: Writing 11 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.075	-0.008	0.008	0.000	0.00	0.000
F1		a	155	0.321	-0.153	-0.011	0.263	0.417	0.34	0.252
F1	*	b	189	0.391	0.205	0.358	0.263	0.309	0.42	0.622
F1		c	138	0.286	-0.361	-0.340	0.466	0.273	0.24	0.126
F2			0	0.000	NA	0.000	0.000	0.000	0.00	0.000
F2	*	a	210	0.435	0.325	0.605	0.143	0.475	0.42	0.748
F2		b	135	0.280	-0.317	-0.259	0.376	0.324	0.27	0.117
F2		c	138	0.286	-0.329	-0.346	0.481	0.201	0.31	0.135
F3			1	0.002	-0.035	0.000	0.000	0.007	0.00	0.000
F3		a	164	0.340	-0.174	-0.051	0.286	0.446	0.38	0.234
F3	*	b	181	0.375	0.170	0.321	0.256	0.288	0.43	0.577
F3		c	137	0.284	-0.308	-0.269	0.459	0.259	0.19	0.189
F4			1	0.002	-0.015	0.000	0.000	0.007	0.00	0.000
F4		a	126	0.261	-0.131	0.040	0.158	0.388	0.29	0.198
F4		b	116	0.240	-0.317	-0.278	0.368	0.252	0.22	0.090
F4	*	c	240	0.497	0.120	0.238	0.474	0.353	0.49	0.712
F5			3	0.006	-0.113	-0.023	0.023	0.000	0.00	0.000
F5	*	a	165	0.342	0.073	0.248	0.158	0.424	0.40	0.405
F5		b	139	0.288	-0.256	-0.170	0.368	0.281	0.29	0.198
F5		c	176	0.364	-0.113	-0.055	0.451	0.295	0.31	0.396

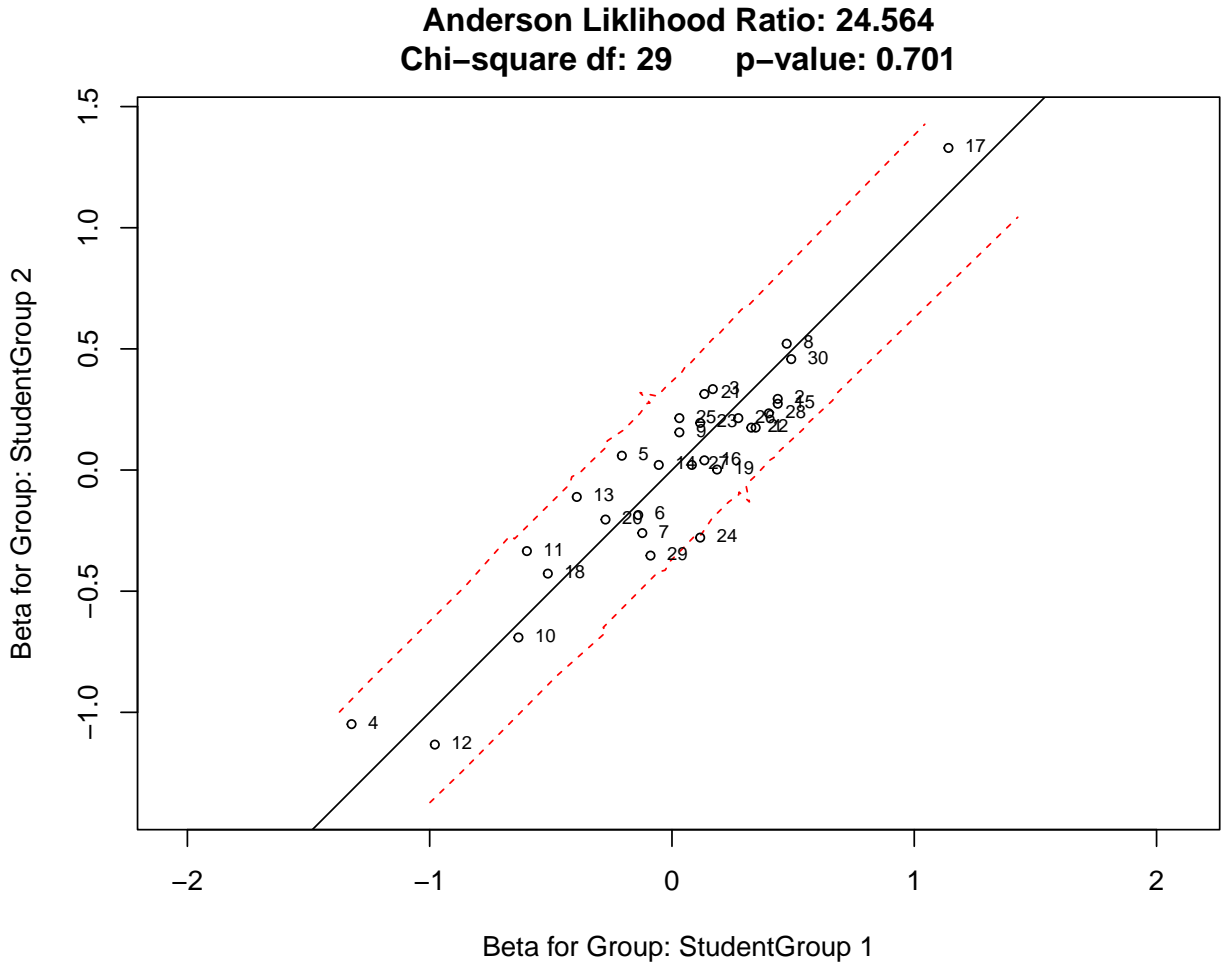


Figure 1: Anderson’s LR-test (Student Groups Randomly Selected)

Table 4: Writing 11 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	483	0.9073	0.9305
A2	483	0.9808	0.9961
A3	483	0.9498	0.9642
A4	483	0.8106	0.8641
A5	483	1.0051	1.0098
B1	483	0.9596	0.9728
B2	483	1.0265	1.0287
B3	483	1.1132	1.0873
B4	483	0.9006	0.9212
B5	483	0.9720	0.9827
C1	483	0.9105	0.9290
C2	483	0.9734	0.9943
C3	483	1.0052	1.0001
C4	483	1.0330	1.0359
C5	483	1.0050	1.0115
D1	483	0.9326	0.9340
D2	483	1.0957	1.0844
D3	483	0.9053	0.9101
D4	483	1.0937	1.0785
D5	483	1.0043	1.0140
E1	483	1.0330	1.0356
E2	483	1.0383	1.0079
E3	483	0.9049	0.9177
E4	483	1.0697	1.0697
E5	483	0.8870	0.9121
F1	483	0.9961	0.9960
F2	483	0.9023	0.9211
F3	483	1.0218	1.0184
F4	483	1.0528	1.0521
F5	483	1.0739	1.0881

Table 5: Writing 11 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9855	0.0733
Infit	Infit	0.9923	0.0612

Table 6: Writing 11 Raw to Theta Table

Raw Score	theta	SE
3	-1.9262	0.5858
5	-1.3807	0.4871
6	-1.1652	0.4577
7	-0.9722	0.4355
8	-0.7957	0.4185
9	-0.6314	0.4052
10	-0.4763	0.3949
11	-0.3282	0.3870
12	-0.1852	0.3812
13	-0.0458	0.3771
14	0.0912	0.3747
15	0.2270	0.3738
16	0.3628	0.3745
17	0.4995	0.3767
18	0.6384	0.3806
19	0.7808	0.3862
20	0.9282	0.3939
21	1.0823	0.4040
22	1.2454	0.4171
23	1.4205	0.4340
24	1.6119	0.4561
25	1.8257	0.4853
26	2.0718	0.5255
28	2.7469	0.6773

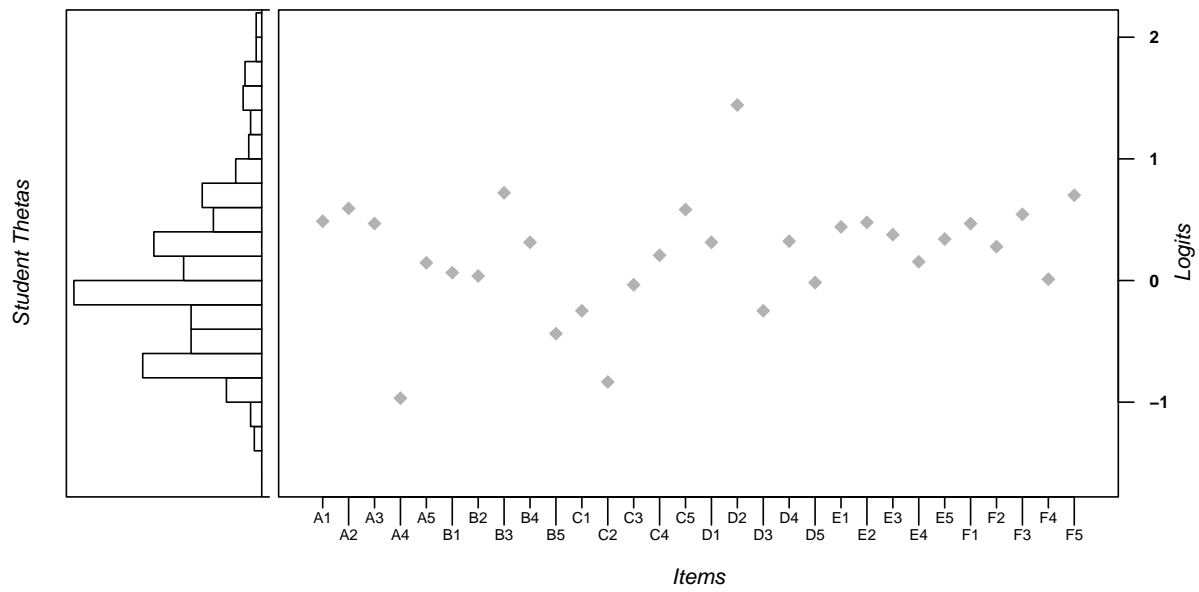


Figure 2: Student Ability - Item Difficulty Wright Map

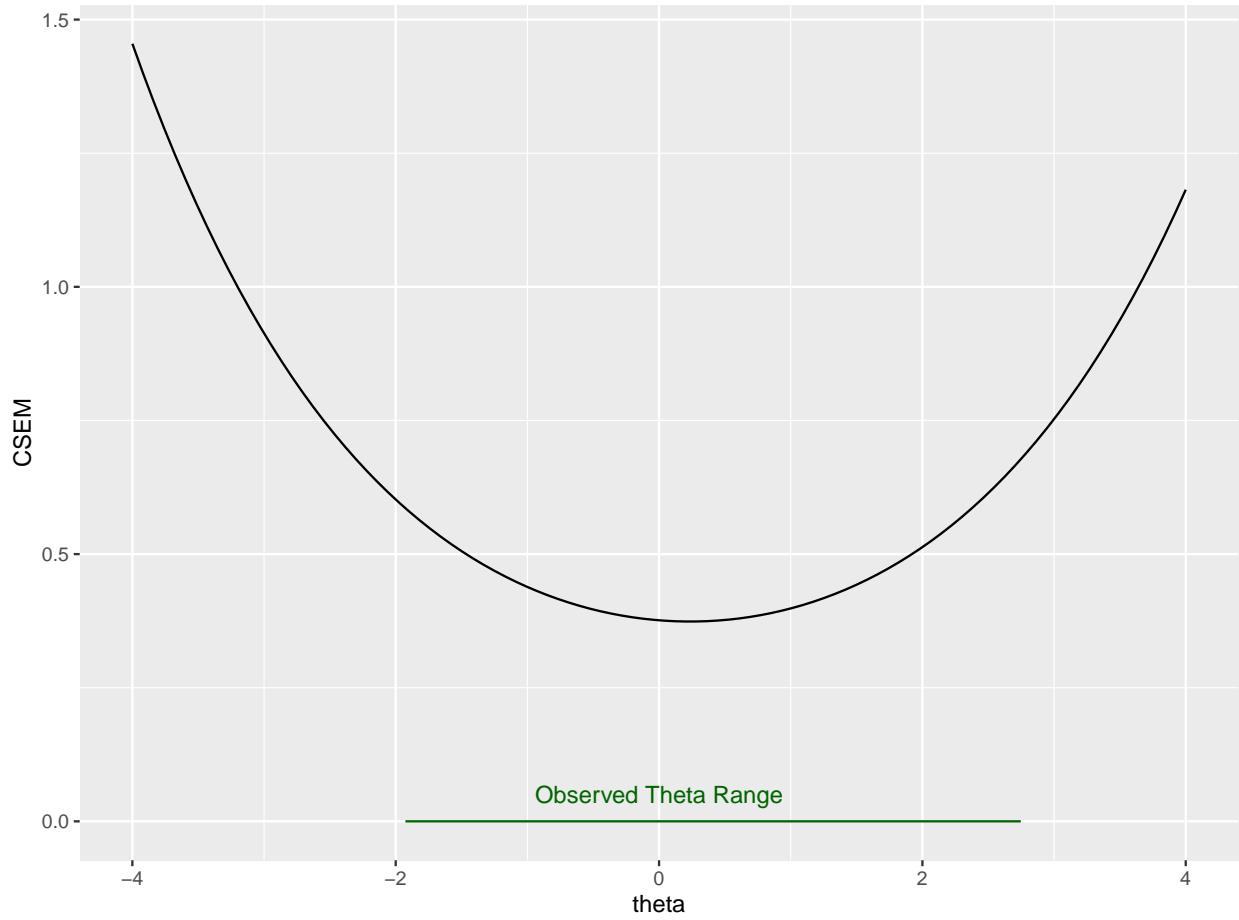


Figure 3: Writing 11 Conditional Standard Error of Measure

Table 7: Writing 11 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		483	0.66
Ethnic	Black	50	0.36
Ethnic	Hispanic	21	0.62
Ethnic	Other	18	0.50
Ethnic	White	387	0.68
Disadvantaged	No	357	0.65
Disadvantaged	Yes	126	0.67
LEP	No	456	0.66
LEP	Yes	27	0.52
Gender	Female	155	0.55
Gender	Male	328	0.69
Homeless	No	469	0.65
Homeless	Yes	14	0.76

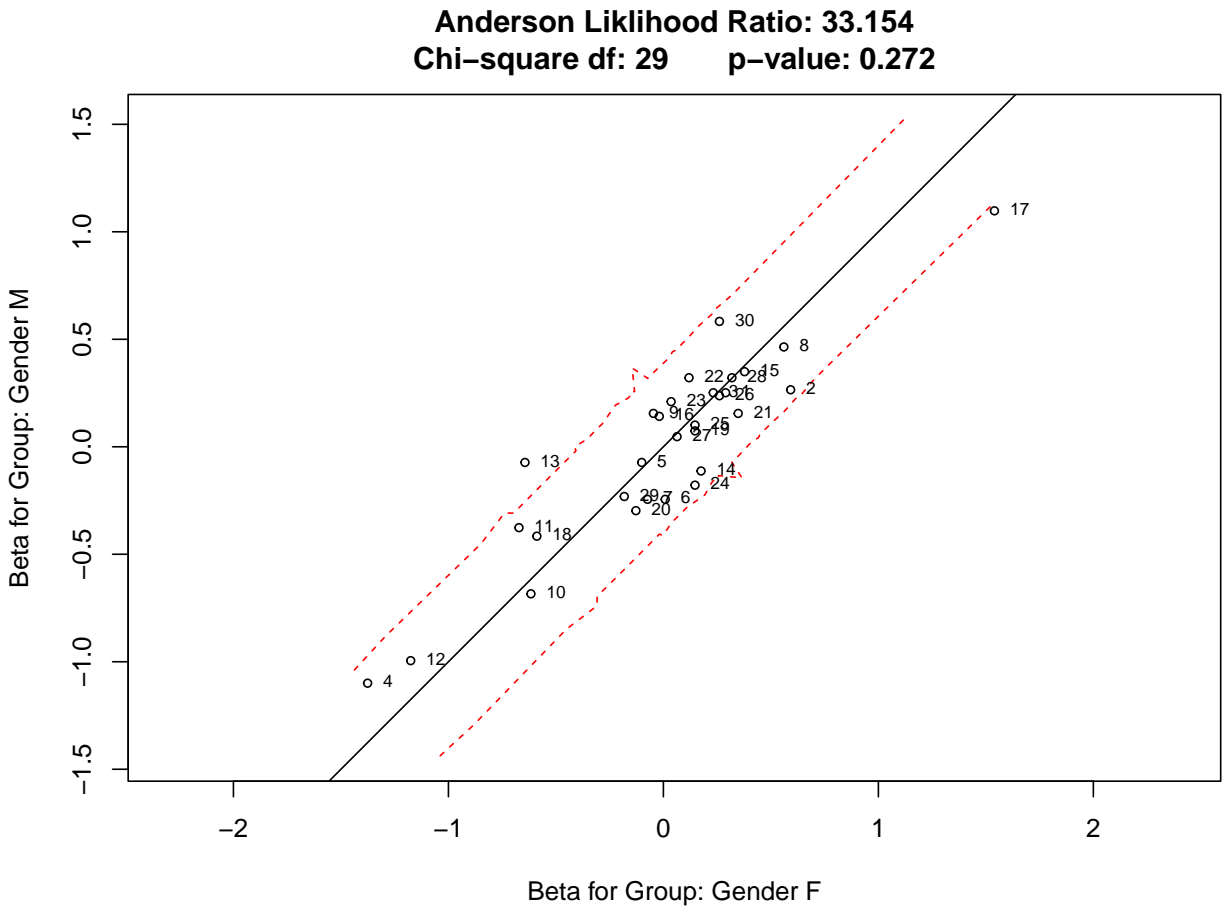


Figure 4: Writing 11 Differential Item (DIF) and Test (DTF) Function for Gender

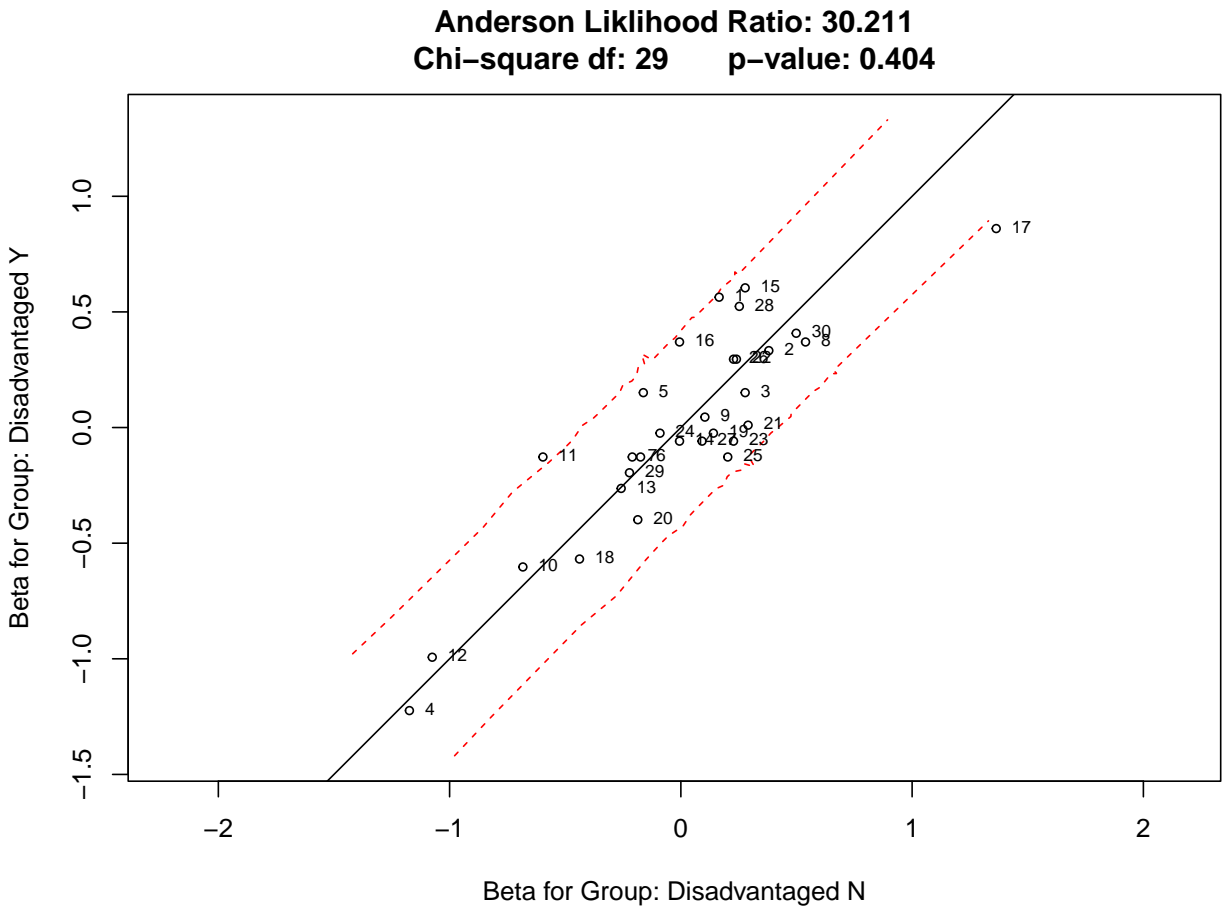


Figure 5: Writing 11 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

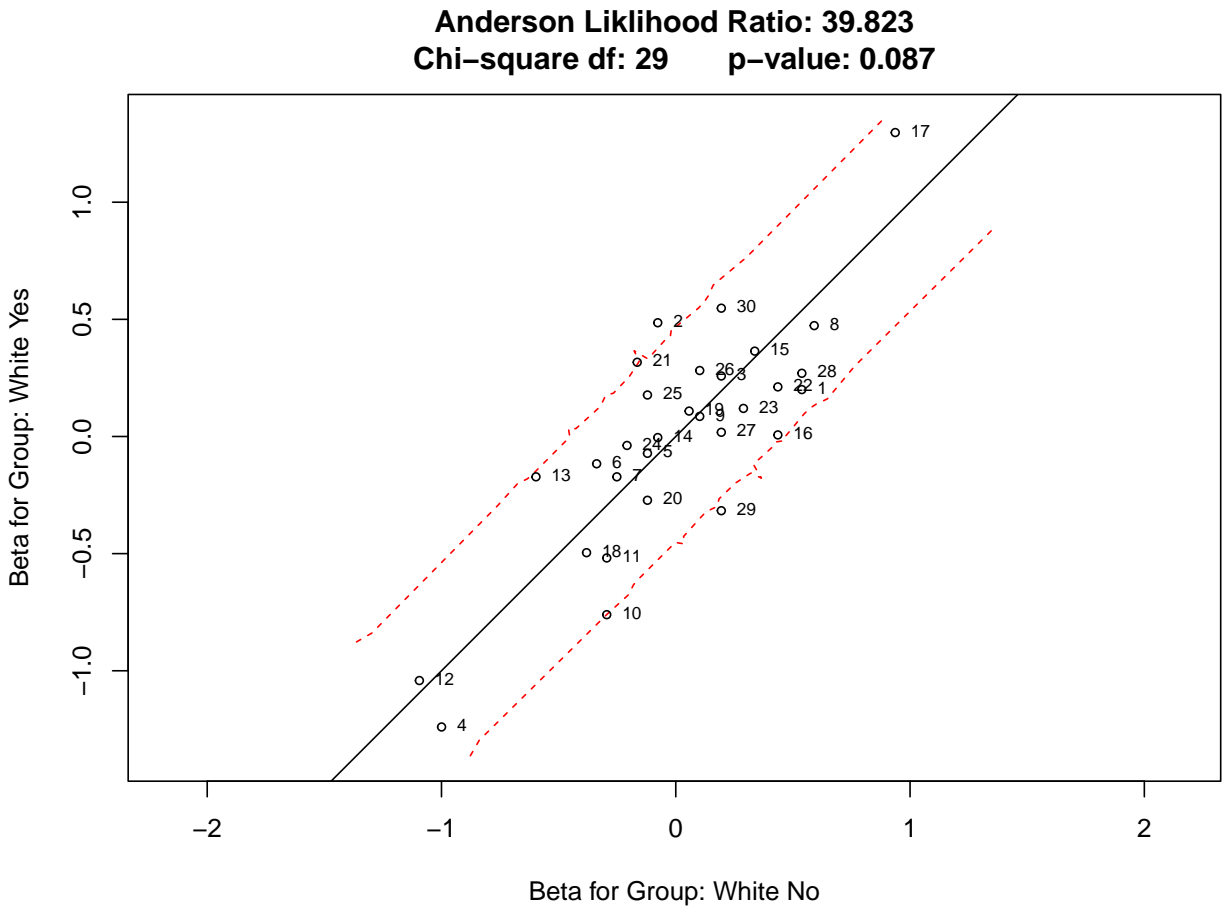


Figure 6: Writing 11 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.2474	0.5737	0.8211
False	0.0680	0.1108	0.1789
Total	0.3155	0.6845	1.0000

Accuracy = 0.8211

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.1989	0.1166
j	0.1166	0.5680

Proportion of Consistent Classifications = 0.7669
Cohen's Kappa = 0.4603

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0092	0.0214	0.9623	0.0071	0.5648	0.9782	0.9715	0.0090	0.0009	0.0080
Apprentice	0.2102	0.0747	0.5833	0.1318	0.6146	0.8865	0.7935	0.1528	0.0812	0.0779
Proficient	0.4309	0.1303	0.3007	0.1380	0.7574	0.6976	0.7316	0.3848	0.3150	0.1018
Distinguished	0.0529	0.0704	0.8568	0.0199	0.7266	0.9241	0.9097	0.0584	0.0152	0.0439

Writing Grade 8

Table 1: Writing 08 Item Statistics

	Item	n	mean	sd	se	
	A1	1	545	0.475	0.500	0.021
	A2	2	545	0.477	0.500	0.021
	A3	3	545	0.583	0.493	0.021
	A4	4	545	0.492	0.500	0.021
	A5	5	545	0.576	0.495	0.021
	B1	6	545	0.600	0.490	0.021
	B2	7	545	0.336	0.473	0.020
	B3	8	545	0.624	0.485	0.021
	B4	9	545	0.321	0.467	0.020
	B5	10	545	0.552	0.498	0.021
	C1	11	545	0.327	0.469	0.020
	C2	12	545	0.662	0.473	0.020
	C3	13	545	0.248	0.432	0.019
	C4	14	545	0.600	0.490	0.021
	C5	15	545	0.503	0.500	0.021
	D1	16	545	0.383	0.487	0.021
	D2	17	545	0.339	0.474	0.020
	D3	18	545	0.541	0.499	0.021
	D4	19	545	0.473	0.500	0.021
	D5	20	545	0.486	0.500	0.021
	E1	21	545	0.547	0.498	0.021
	E2	22	545	0.389	0.488	0.021
	E3	23	545	0.371	0.483	0.021
	E4	24	545	0.308	0.462	0.020
	E5	25	545	0.389	0.488	0.021
	F1	26	545	0.358	0.480	0.021
	F2	27	545	0.349	0.477	0.020
	F3	28	545	0.563	0.496	0.021
	F4	29	545	0.448	0.498	0.021
	F5	30	545	0.349	0.477	0.020

Chronbach's Alpha: 0.674

Table 2: Writing 08 Raw Score Frequencies

Score	freq	pct	pct_cum
4	1	0.183	0.183
5	2	0.367	0.550
6	5	0.917	1.468
7	15	2.752	4.220
8	23	4.220	8.440
9	40	7.339	15.780
10	69	12.661	28.440
11	46	8.440	36.881
12	49	8.991	45.872
13	58	10.642	56.514
14	39	7.156	63.670
15	35	6.422	70.092
16	31	5.688	75.780
17	29	5.321	81.101
18	29	5.321	86.422
19	12	2.202	88.624
20	12	2.202	90.826
21	10	1.835	92.661
22	11	2.018	94.679
23	7	1.284	95.963
24	8	1.468	97.431
25	5	0.917	98.349
26	5	0.917	99.266
27	3	0.550	99.817
28	1	0.183	100.000

Table 3: Writing 08 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.063	-0.013	0.013	0.000	0.000	0.000
A1	*	a	143	0.262	-0.338	-0.265	0.348	0.359	0.219	0.083
A1		b	259	0.475	0.363	0.526	0.277	0.301	0.610	0.803
A1		c	141	0.259	-0.350	-0.248	0.361	0.340	0.171	0.114
A2			2	0.004	-0.063	-0.013	0.013	0.000	0.000	0.000
A2	*	a	260	0.477	0.295	0.494	0.271	0.418	0.505	0.765
A2		b	125	0.229	-0.313	-0.252	0.335	0.255	0.219	0.083
A2		c	158	0.290	-0.310	-0.229	0.381	0.327	0.276	0.152
A3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A3		a	120	0.220	-0.239	-0.112	0.226	0.307	0.219	0.114
A3		b	107	0.196	-0.351	-0.317	0.355	0.196	0.162	0.038
A3	*	c	318	0.583	0.246	0.429	0.419	0.497	0.619	0.848
A4			1	0.002	-0.082	-0.006	0.006	0.000	0.000	0.000
A4	*	a	268	0.492	0.185	0.322	0.329	0.464	0.571	0.652
A4		b	154	0.283	-0.216	-0.088	0.323	0.307	0.248	0.235
A4		c	122	0.224	-0.298	-0.228	0.342	0.229	0.181	0.114
A5			1	0.002	-0.082	-0.006	0.006	0.000	0.000	0.000
A5		a	112	0.206	-0.274	-0.166	0.265	0.268	0.162	0.098
A5		b	118	0.217	-0.264	-0.213	0.342	0.183	0.190	0.129
A5	*	c	314	0.576	0.207	0.386	0.387	0.549	0.648	0.773
B1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B1		a	99	0.182	-0.312	-0.250	0.303	0.183	0.162	0.053
B1	*	b	327	0.600	0.399	0.648	0.284	0.529	0.752	0.932
B1		c	119	0.218	-0.436	-0.398	0.413	0.288	0.086	0.015
B2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B2	*	a	183	0.336	0.102	0.275	0.232	0.288	0.343	0.508
B2		b	171	0.314	-0.129	-0.050	0.323	0.307	0.362	0.273
B2		c	191	0.350	-0.277	-0.225	0.445	0.405	0.295	0.220
B3			2	0.004	-0.110	-0.013	0.013	0.000	0.000	0.000
B3		a	94	0.172	-0.270	-0.186	0.239	0.229	0.143	0.053
B3		b	109	0.200	-0.352	-0.249	0.310	0.281	0.095	0.061
B3	*	c	340	0.624	0.290	0.448	0.439	0.490	0.762	0.886
B4			1	0.002	-0.035	0.000	0.000	0.007	0.000	0.000
B4	*	a	175	0.321	0.095	0.198	0.265	0.216	0.381	0.462
B4		b	170	0.312	-0.197	-0.135	0.355	0.359	0.295	0.220
B4		c	199	0.365	-0.199	-0.062	0.381	0.418	0.324	0.318
B5			2	0.004	-0.063	-0.006	0.006	0.007	0.000	0.000
B5		a	87	0.160	-0.289	-0.196	0.265	0.170	0.105	0.068
B5	*	b	301	0.552	0.321	0.542	0.284	0.516	0.657	0.826
B5		c	155	0.284	-0.369	-0.339	0.445	0.307	0.238	0.106
C1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C1		a	226	0.415	-0.035	0.077	0.400	0.359	0.438	0.477
C1	*	b	178	0.327	0.049	0.175	0.219	0.346	0.371	0.394
C1		c	141	0.259	-0.335	-0.252	0.381	0.294	0.190	0.129
C2			2	0.004	-0.117	-0.013	0.013	0.000	0.000	0.000
C2		a	98	0.180	-0.329	-0.271	0.316	0.176	0.152	0.045
C2		b	84	0.154	-0.261	-0.152	0.213	0.203	0.114	0.061
C2	*	c	361	0.662	0.263	0.436	0.458	0.621	0.733	0.894
C3			1	0.002	-0.044	-0.006	0.006	0.000	0.000	0.000
C3	*	a	135	0.248	0.035	0.125	0.194	0.235	0.257	0.318

Table 3: Writing 08 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3		b	198	0.363	-0.103	0.003	0.368	0.359	0.352	0.371
C3		c	211	0.387	-0.220	-0.122	0.432	0.405	0.390	0.311
C4			4	0.007	-0.122	-0.019	0.019	0.007	0.000	0.000
C4		a	92	0.169	-0.286	-0.185	0.245	0.222	0.114	0.061
C4		b	122	0.224	-0.272	-0.194	0.277	0.255	0.276	0.083
C4	*	c	327	0.600	0.234	0.398	0.458	0.516	0.610	0.856
C5			1	0.002	-0.063	-0.006	0.006	0.000	0.000	0.000
C5		a	116	0.213	-0.363	-0.333	0.348	0.248	0.210	0.015
C5	*	b	274	0.503	0.393	0.631	0.232	0.386	0.619	0.864
C5		c	154	0.283	-0.364	-0.292	0.413	0.366	0.171	0.121
D1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D1		a	194	0.356	-0.192	-0.061	0.348	0.373	0.429	0.288
D1	*	b	209	0.383	0.233	0.381	0.232	0.327	0.400	0.614
D1		c	142	0.261	-0.359	-0.321	0.419	0.301	0.171	0.098
D2			2	0.004	-0.043	-0.006	0.006	0.007	0.000	0.000
D2	*	a	185	0.339	0.199	0.330	0.200	0.320	0.333	0.530
D2		b	177	0.325	-0.249	-0.140	0.413	0.314	0.276	0.273
D2		c	181	0.332	-0.247	-0.184	0.381	0.359	0.390	0.197
D3			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D3		a	131	0.240	-0.300	-0.222	0.335	0.275	0.210	0.114
D3		b	119	0.218	-0.221	-0.118	0.277	0.216	0.210	0.159
D3	*	c	295	0.541	0.186	0.340	0.387	0.510	0.581	0.727
D4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D4	*	a	258	0.473	0.183	0.406	0.245	0.484	0.571	0.652
D4		b	130	0.239	-0.311	-0.279	0.400	0.222	0.171	0.121
D4		c	157	0.288	-0.204	-0.128	0.355	0.294	0.257	0.227
D5			4	0.007	-0.065	-0.006	0.006	0.020	0.000	0.000
D5		a	144	0.264	-0.227	-0.178	0.329	0.294	0.267	0.152
D5		b	132	0.242	-0.255	-0.139	0.290	0.294	0.210	0.152
D5	*	c	265	0.486	0.160	0.323	0.374	0.392	0.524	0.697
E1			3	0.006	-0.055	-0.013	0.013	0.000	0.010	0.000
E1		a	112	0.206	-0.329	-0.239	0.323	0.255	0.114	0.083
E1		b	132	0.242	-0.218	-0.155	0.284	0.248	0.314	0.129
E1	*	c	298	0.547	0.212	0.407	0.381	0.497	0.562	0.788
E2			2	0.004	-0.002	0.001	0.006	0.000	0.000	0.008
E2		a	174	0.319	-0.237	-0.145	0.387	0.288	0.362	0.242
E2	*	b	212	0.389	0.262	0.442	0.187	0.373	0.410	0.629
E2		c	157	0.288	-0.338	-0.298	0.419	0.340	0.229	0.121
E3			1	0.002	-0.016	0.000	0.000	0.007	0.000	0.000
E3	*	a	202	0.371	0.290	0.462	0.174	0.327	0.390	0.636
E3		b	151	0.277	-0.300	-0.212	0.348	0.366	0.219	0.136
E3		c	191	0.350	-0.294	-0.250	0.477	0.301	0.390	0.227
E4			1	0.002	-0.044	-0.006	0.006	0.000	0.000	0.000
E4		a	177	0.325	-0.170	-0.023	0.303	0.386	0.324	0.280
E4	*	b	168	0.308	0.099	0.221	0.226	0.275	0.305	0.447
E4		c	199	0.365	-0.225	-0.192	0.465	0.340	0.371	0.273
E5			2	0.004	-0.083	-0.013	0.013	0.000	0.000	0.000
E5	*	a	212	0.389	0.108	0.243	0.310	0.327	0.390	0.553
E5		b	143	0.262	-0.196	-0.094	0.284	0.275	0.305	0.189
E5		c	188	0.345	-0.218	-0.136	0.394	0.399	0.305	0.258

Table 3: Writing 08 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			2	0.004	-0.070	-0.013	0.013	0.000	0.000	0.000
F1		a	134	0.246	-0.222	-0.120	0.310	0.255	0.210	0.189
F1	*	b	195	0.358	0.165	0.340	0.213	0.353	0.333	0.553
F1		c	214	0.393	-0.244	-0.207	0.465	0.392	0.457	0.258
F2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
F2	*	a	190	0.349	0.154	0.337	0.194	0.353	0.343	0.530
F2		b	161	0.295	-0.220	-0.165	0.400	0.275	0.248	0.235
F2		c	194	0.356	-0.240	-0.172	0.406	0.373	0.410	0.235
F3			1	0.002	-0.016	0.000	0.000	0.007	0.000	0.000
F3		a	115	0.211	-0.153	-0.021	0.226	0.216	0.190	0.205
F3		b	122	0.224	-0.307	-0.221	0.297	0.301	0.190	0.076
F3	*	c	307	0.563	0.132	0.242	0.477	0.477	0.619	0.720
F4			2	0.004	-0.090	-0.013	0.013	0.000	0.000	0.000
F4		a	174	0.319	-0.221	-0.116	0.335	0.327	0.410	0.220
F4		b	125	0.229	-0.257	-0.191	0.297	0.294	0.190	0.106
F4	*	c	244	0.448	0.158	0.319	0.355	0.379	0.400	0.674
F5			3	0.006	-0.038	-0.005	0.013	0.000	0.000	0.008
F5		a	123	0.226	-0.181	-0.090	0.265	0.222	0.238	0.174
F5	*	b	190	0.349	0.189	0.341	0.219	0.314	0.324	0.561
F5		c	229	0.420	-0.300	-0.246	0.503	0.464	0.438	0.258

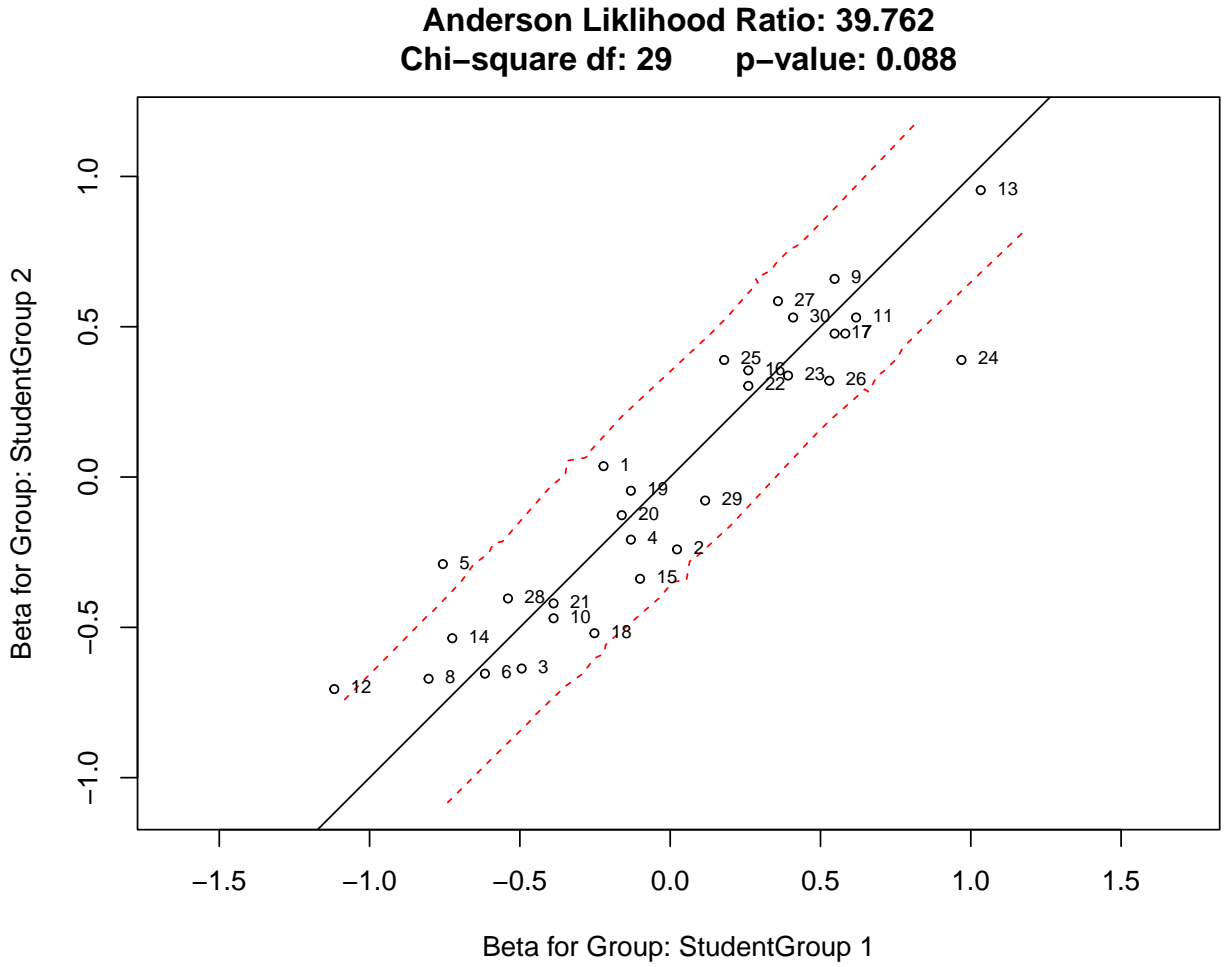


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Writing 08 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	545	0.8761	0.8967
A2	545	0.9262	0.9391
A3	545	0.9393	0.9618
A4	545	0.9945	1.0076
A5	545	0.9692	0.9855
B1	545	0.8228	0.8648
B2	545	1.0914	1.0672
B3	545	0.8850	0.9304
B4	545	1.0917	1.0672
B5	545	0.8935	0.9166
C1	545	1.1106	1.1056
C2	545	0.9064	0.9364
C3	545	1.1616	1.0947
C4	545	0.9365	0.9685
C5	545	0.8514	0.8763
D1	545	0.9721	0.9789
D2	545	0.9923	0.9983
D3	545	0.9941	1.0017
D4	545	1.0190	1.0094
D5	545	1.0416	1.0238
E1	545	0.9912	0.9813
E2	545	0.9510	0.9604
E3	545	0.9333	0.9407
E4	545	1.0855	1.0628
E5	545	1.0788	1.0612
F1	545	1.0236	1.0259
F2	545	1.0460	1.0289
F3	545	1.0426	1.0320
F4	545	1.0276	1.0274
F5	545	1.0070	1.0058

Table 5: Writing 08 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9887	0.0823
Infit	Infit	0.9919	0.0619

Table 6: Writing 08 Raw to Theta Table

Raw Score	theta	SE
4	-1.6674	0.5268
5	-1.4201	0.4868
6	-1.2049	0.4578
7	-1.0120	0.4359
8	-0.8352	0.4192
9	-0.6703	0.4062
10	-0.5144	0.3961
11	-0.3652	0.3884
12	-0.2210	0.3828
13	-0.0802	0.3789
14	0.0583	0.3767
15	0.1957	0.3759
16	0.3332	0.3767
17	0.4717	0.3789
18	0.6124	0.3828
19	0.7567	0.3884
20	0.9059	0.3961
21	1.0618	0.4062
22	1.2266	0.4192
23	1.4034	0.4359
24	1.5964	0.4578
25	1.8116	0.4868
26	2.0589	0.5268
27	2.3554	0.5850
28	2.7357	0.6781

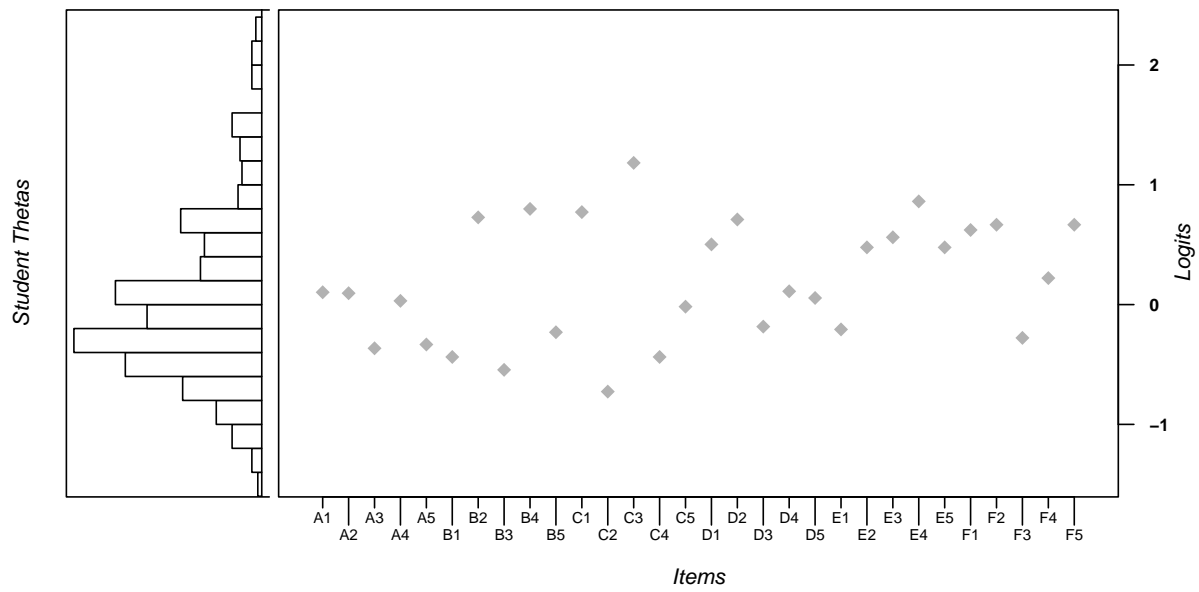


Figure 2: Student Ability - Item Difficulty Wright Map

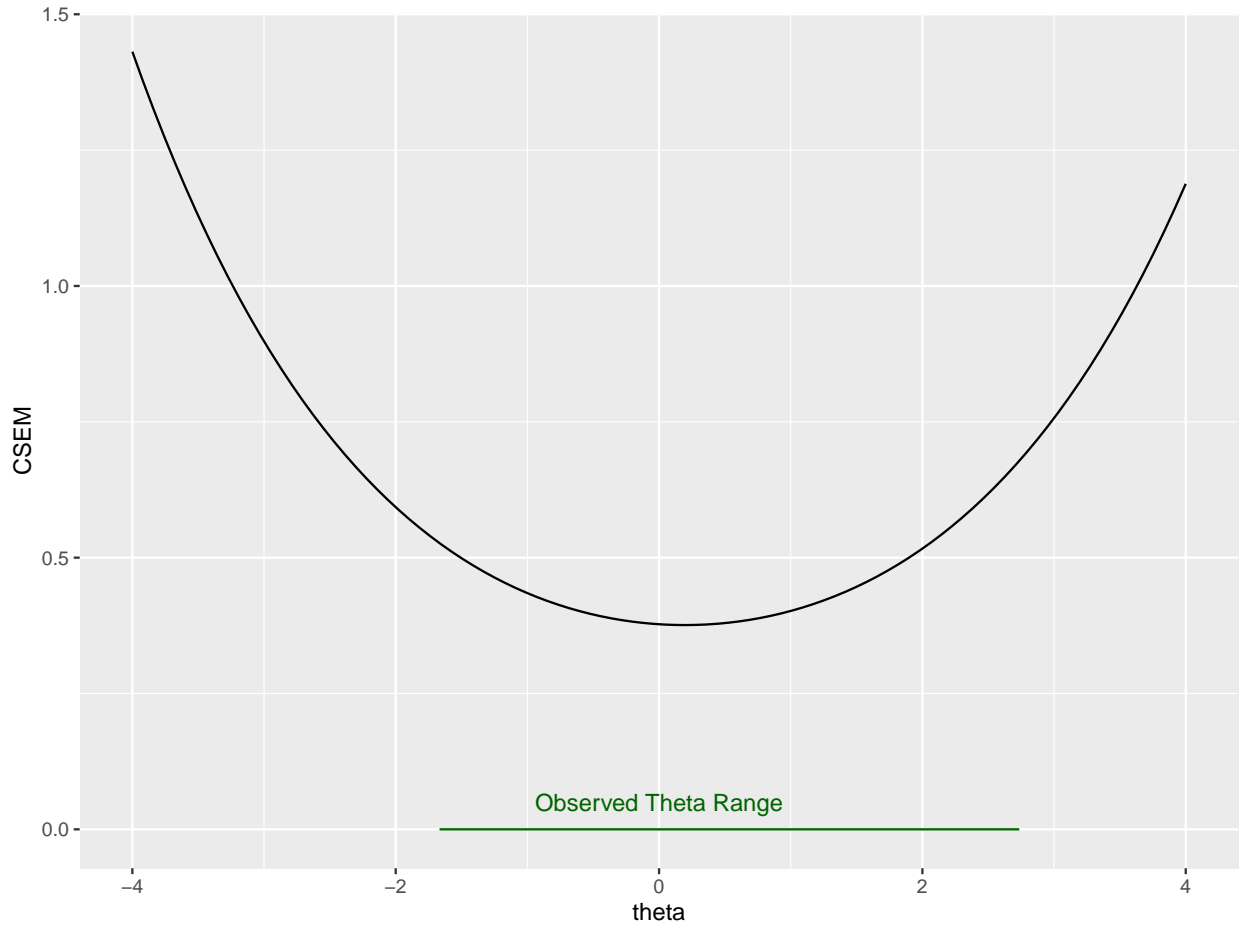


Figure 3: Writing 08 Conditional Standard Error of Measure

Table 7: Writing 08 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		545	0.66
Ethnic	Black	72	0.60
Ethnic	Hispanic	37	0.22
Ethnic	Other	28	0.57
Ethnic	White	398	0.68
Disadvantaged	No	405	0.67
Disadvantaged	Yes	140	0.62
LEP	No	520	0.67
LEP	Yes	25	-0.04
Gender	Female	171	0.65
Gender	Male	374	0.67
Homeless	No	531	0.66
Homeless	Yes	14	0.50

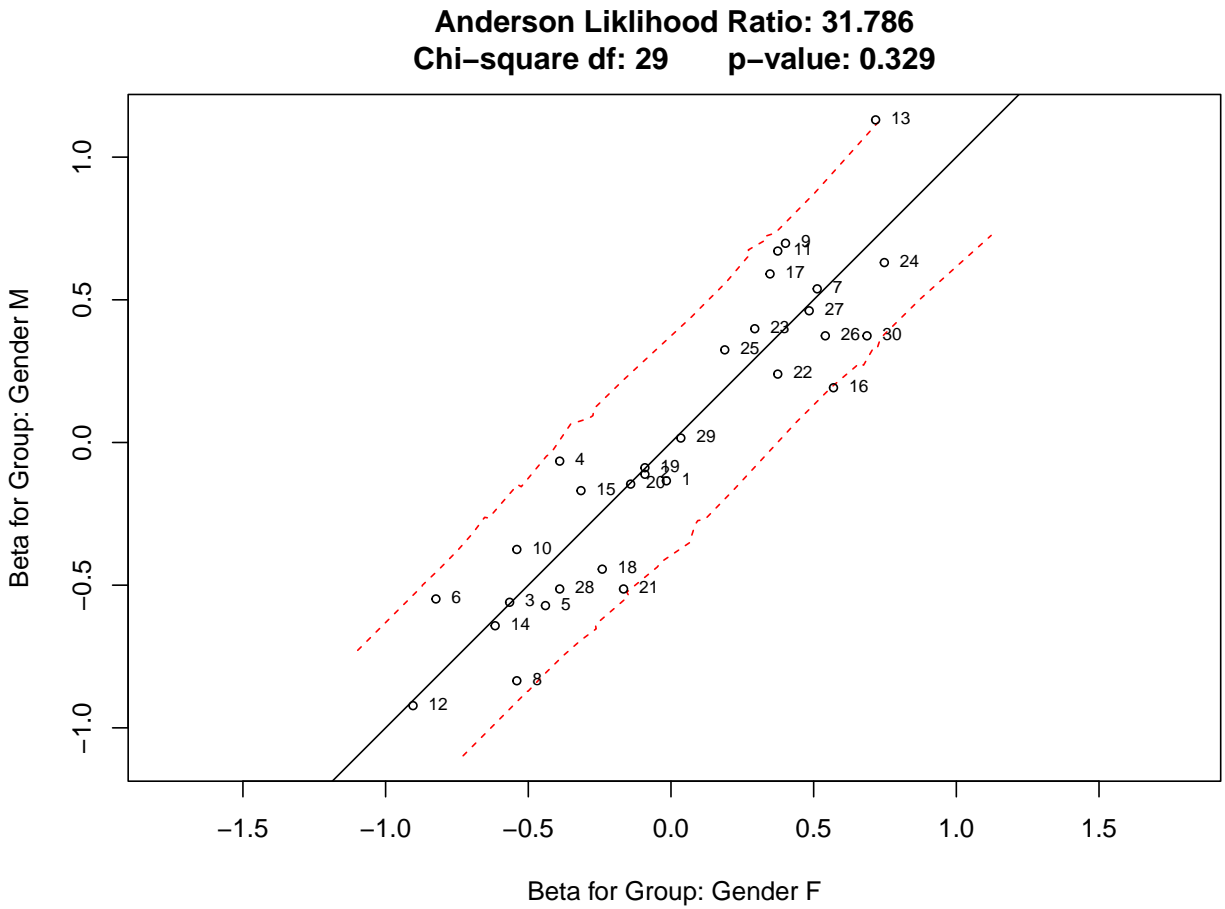


Figure 4: Writing 08 Differential Item (DIF) and Test (DTF) Function for Gender

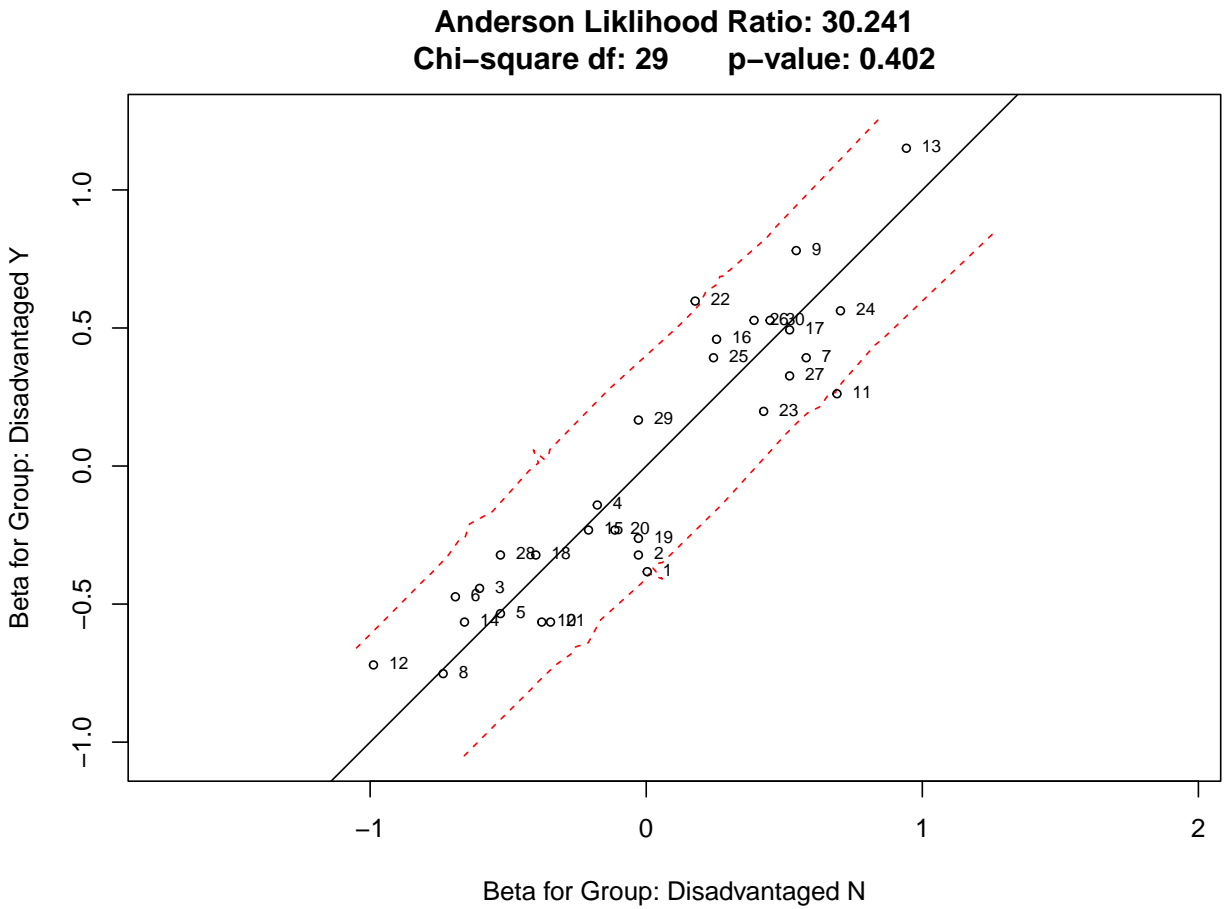


Figure 5: Writing 08 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

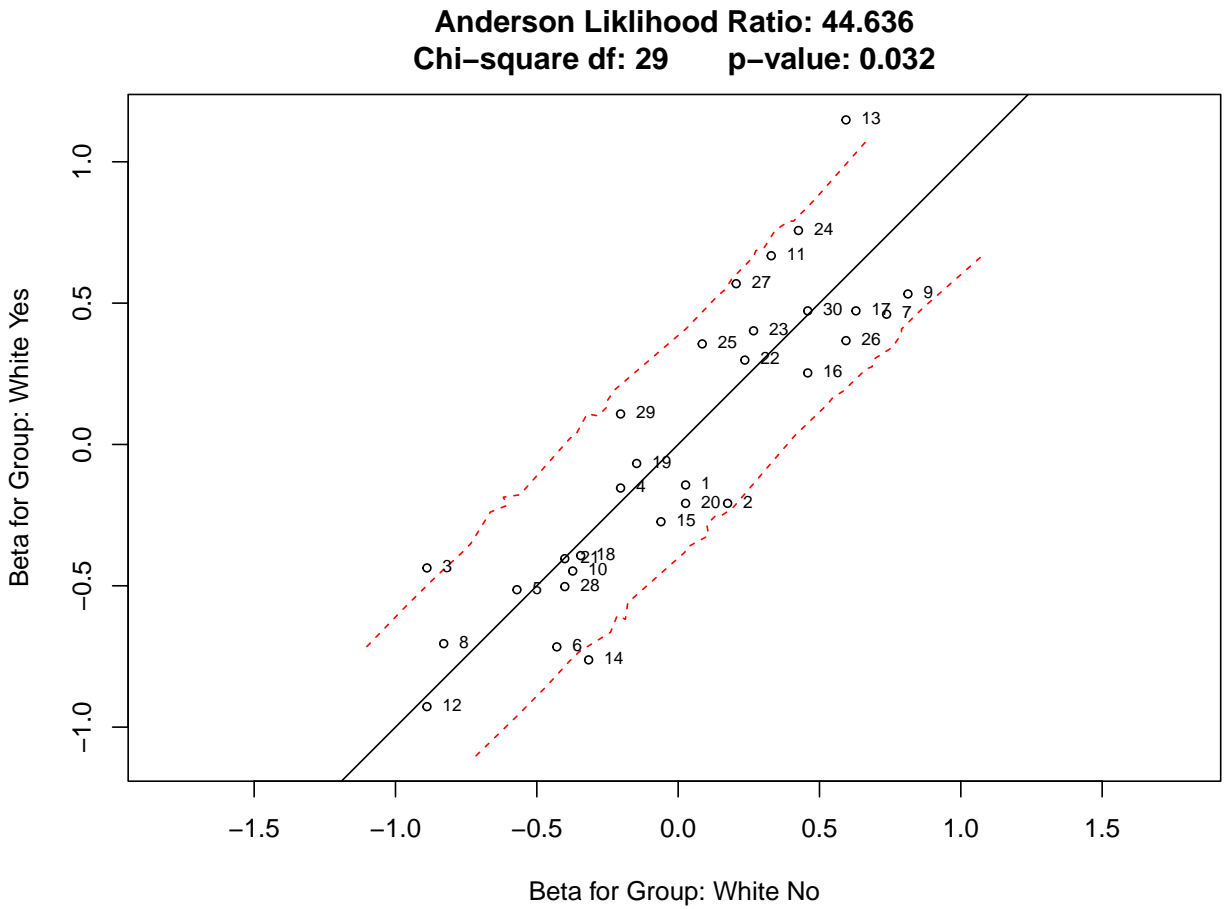


Figure 6: Writing 08 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.0759	0.8180	0.8939
False	0.0756	0.0305	0.1061
Total	0.1515	0.8485	1.0000

Accuracy = 0.8939

Table 9: Proficiency Decision Consistency

Contingency Matrix		
.	i	j
i	0.0591	0.0924
j	0.0463	0.8022

Proportion of Consistent Classifications = 0.8613
Cohen's Kappa = 0.3834

Table 10: NAPD Decision Consistency

Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0007	0.0047	0.9940	0.0007	0.4947	0.9953	0.9947	0.0009	0.0000	0.0008
Apprentice	0.0703	0.0759	0.8189	0.0349	0.6683	0.9151	0.8892	0.0678	0.0214	0.0474
Proficient	0.6929	0.0401	0.1126	0.1543	0.8179	0.7374	0.8056	0.5967	0.5374	0.1283
Distinguished	0.0367	0.0787	0.8750	0.0096	0.7926	0.9174	0.9117	0.0541	0.0133	0.0413

Writing Grade 5

Table 1: Writing 05 Item Statistics

	Item	n	mean	sd	se	
	A1	1	501	0.405	0.491	0.022
	A2	2	501	0.435	0.496	0.022
	A3	3	501	0.373	0.484	0.022
	A4	4	501	0.439	0.497	0.022
	A5	5	501	0.343	0.475	0.021
	B1	6	501	0.355	0.479	0.021
	B2	7	501	0.401	0.491	0.022
	B3	8	501	0.325	0.469	0.021
	B4	9	501	0.443	0.497	0.022
	B5	10	501	0.577	0.495	0.022
	C1	11	501	0.413	0.493	0.022
	C2	12	501	0.543	0.499	0.022
	C3	13	501	0.359	0.480	0.021
	C4	14	501	0.363	0.481	0.022
	C5	15	501	0.327	0.470	0.021
	D1	16	501	0.281	0.450	0.020
	D2	17	501	0.323	0.468	0.021
	D3	18	501	0.625	0.485	0.022
	D4	19	501	0.373	0.484	0.022
	D5	20	501	0.319	0.467	0.021
	E1	21	501	0.479	0.500	0.022
	E2	22	501	0.351	0.478	0.021
	E3	23	501	0.529	0.500	0.022
	E4	24	501	0.285	0.452	0.020
	E5	25	501	0.371	0.484	0.022
	F1	26	501	0.391	0.489	0.022
	F2	27	501	0.403	0.491	0.022
	F3	28	501	0.447	0.498	0.022
	F4	29	501	0.477	0.500	0.022
	F5	30	501	0.455	0.498	0.022

Chronbach's Alpha: 0.4555

Table 2: Writing 05 Raw Score Frequencies

Score	freq	pct	pct_cum
5	4	0.798	0.798
6	5	0.998	1.796
7	13	2.595	4.391
8	41	8.184	12.575
9	58	11.577	24.152
10	56	11.178	35.329
11	63	12.575	47.904
12	53	10.579	58.483
13	56	11.178	69.661
14	40	7.984	77.645
15	28	5.589	83.234
16	23	4.591	87.824
17	16	3.194	91.018
18	16	3.194	94.212
19	8	1.597	95.808
20	7	1.397	97.206
21	5	0.998	98.204
22	3	0.599	98.802
23	5	0.998	99.800
26	1	0.200	100.000

Table 3: Writing 05 Distractor Analysis

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
A1			2	0.004	-0.084	-0.011	0.011	0.000	0.000	0.000
A1	*	a	203	0.405	0.160	0.328	0.226	0.405	0.562	0.554
A1		b	141	0.281	-0.244	-0.087	0.328	0.267	0.260	0.241
A1		c	155	0.309	-0.304	-0.230	0.435	0.328	0.177	0.205
A2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
A2		a	117	0.234	-0.192	-0.055	0.243	0.293	0.198	0.188
A2	*	b	218	0.435	0.173	0.325	0.282	0.362	0.604	0.607
A2		c	166	0.331	-0.372	-0.269	0.475	0.345	0.198	0.205
A3			2	0.004	-0.084	-0.011	0.011	0.000	0.000	0.000
A3		a	132	0.263	-0.165	-0.044	0.294	0.233	0.260	0.250
A3	*	b	187	0.373	0.133	0.321	0.215	0.397	0.448	0.536
A3		c	180	0.359	-0.343	-0.266	0.480	0.371	0.292	0.214
A4			2	0.004	-0.066	-0.006	0.006	0.009	0.000	0.000
A4		a	150	0.299	-0.242	-0.122	0.328	0.379	0.260	0.205
A4		b	129	0.257	-0.175	-0.055	0.260	0.293	0.271	0.205
A4	*	c	220	0.439	0.023	0.183	0.407	0.319	0.469	0.589
A5			5	0.010	-0.136	-0.017	0.017	0.017	0.000	0.000
A5	*	a	172	0.343	0.168	0.327	0.209	0.293	0.427	0.536
A5		b	119	0.238	-0.227	-0.087	0.266	0.302	0.177	0.179
A5		c	205	0.409	-0.296	-0.223	0.508	0.388	0.396	0.286
B1			1	0.002	-0.066	-0.006	0.006	0.000	0.000	0.000
B1		a	152	0.303	-0.195	-0.113	0.328	0.302	0.365	0.214
B1	*	b	178	0.355	0.160	0.371	0.209	0.353	0.365	0.580
B1		c	170	0.339	-0.342	-0.252	0.458	0.345	0.271	0.205
B2			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
B2		a	134	0.267	-0.229	-0.112	0.299	0.345	0.208	0.188
B2		b	166	0.331	-0.102	0.071	0.277	0.336	0.406	0.348
B2	*	c	201	0.401	-0.069	0.041	0.424	0.319	0.385	0.464
B3			1	0.002	-0.053	-0.006	0.006	0.000	0.000	0.000
B3	*	a	163	0.325	0.075	0.233	0.232	0.310	0.354	0.464
B3		b	144	0.287	-0.080	0.072	0.232	0.328	0.323	0.304
B3		c	193	0.385	-0.360	-0.299	0.531	0.362	0.323	0.232
B4			3	0.006	0.047	0.003	0.006	0.000	0.010	0.009
B4		a	140	0.279	-0.226	-0.133	0.294	0.302	0.365	0.161
B4		b	136	0.271	-0.158	-0.034	0.311	0.233	0.240	0.277
B4	*	c	222	0.443	-0.026	0.164	0.390	0.466	0.385	0.554
B5			1	0.002	-0.053	-0.006	0.006	0.000	0.000	0.000
B5		a	120	0.240	-0.344	-0.251	0.322	0.284	0.229	0.071
B5		b	91	0.182	-0.263	-0.145	0.243	0.172	0.177	0.098
B5	*	c	289	0.577	0.200	0.401	0.429	0.543	0.594	0.830
C1			5	0.010	-0.057	-0.002	0.011	0.009	0.010	0.009
C1		a	148	0.295	-0.163	-0.052	0.311	0.267	0.344	0.259
C1		b	141	0.281	-0.195	-0.048	0.271	0.388	0.240	0.223
C1	*	c	207	0.413	-0.033	0.102	0.407	0.336	0.406	0.509
C2			1	0.002	-0.028	0.000	0.000	0.009	0.000	0.000
C2	*	a	272	0.543	0.223	0.457	0.356	0.543	0.573	0.812
C2		b	87	0.174	-0.262	-0.129	0.209	0.207	0.177	0.080
C2		c	141	0.281	-0.367	-0.328	0.435	0.241	0.250	0.107
C3			1	0.002	-0.078	-0.006	0.006	0.000	0.000	0.000
C3		a	128	0.255	-0.190	-0.127	0.288	0.259	0.302	0.161

Table 3: Writing 05 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
C3	*	b	180	0.359	0.092	0.305	0.249	0.371	0.323	0.554
C3		c	192	0.383	-0.282	-0.172	0.458	0.371	0.375	0.286
C4			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
C4	*	a	182	0.363	0.125	0.286	0.232	0.388	0.396	0.518
C4		b	134	0.267	-0.227	-0.081	0.322	0.267	0.198	0.241
C4		c	185	0.369	-0.286	-0.205	0.446	0.345	0.406	0.241
C5			2	0.004	-0.075	-0.011	0.011	0.000	0.000	0.000
C5		a	147	0.293	-0.202	-0.106	0.294	0.336	0.365	0.188
C5	*	b	164	0.327	0.169	0.397	0.192	0.336	0.260	0.589
C5		c	188	0.375	-0.331	-0.280	0.503	0.328	0.375	0.223
D1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
D1	*	a	141	0.281	0.099	0.248	0.181	0.310	0.260	0.429
D1		b	127	0.253	-0.180	-0.071	0.277	0.207	0.323	0.205
D1		c	233	0.465	-0.281	-0.176	0.542	0.483	0.417	0.366
D2			1	0.002	-0.028	0.000	0.000	0.009	0.000	0.000
D2		a	112	0.224	-0.186	-0.072	0.260	0.284	0.125	0.188
D2	*	b	162	0.323	0.046	0.156	0.254	0.267	0.417	0.411
D2		c	226	0.451	-0.239	-0.084	0.486	0.440	0.458	0.402
D3			1	0.002	0.035	0.009	0.000	0.000	0.000	0.009
D3		a	107	0.214	-0.262	-0.174	0.254	0.302	0.188	0.080
D3		b	80	0.160	-0.336	-0.204	0.249	0.164	0.125	0.045
D3	*	c	313	0.625	0.178	0.369	0.497	0.534	0.688	0.866
D4			2	0.004	-0.102	-0.011	0.011	0.000	0.000	0.000
D4	*	a	187	0.373	0.061	0.242	0.249	0.414	0.417	0.491
D4		b	110	0.220	-0.256	-0.143	0.277	0.241	0.188	0.134
D4		c	202	0.403	-0.195	-0.088	0.463	0.345	0.396	0.375
D5			3	0.006	-0.034	-0.002	0.011	0.000	0.000	0.009
D5		a	166	0.331	-0.132	0.003	0.328	0.362	0.302	0.330
D5	*	b	160	0.319	0.106	0.261	0.203	0.328	0.354	0.464
D5		c	172	0.343	-0.348	-0.261	0.458	0.310	0.344	0.196
E1			0	0.000	NA	0.000	0.000	0.000	0.000	0.000
E1		a	117	0.234	-0.203	-0.119	0.271	0.250	0.240	0.152
E1	*	b	240	0.479	0.277	0.541	0.271	0.405	0.562	0.812
E1		c	144	0.287	-0.468	-0.422	0.458	0.345	0.198	0.036
E2			1	0.002	0.010	0.000	0.000	0.000	0.010	0.000
E2	*	a	176	0.351	-0.021	0.084	0.299	0.371	0.385	0.384
E2		b	138	0.275	-0.169	-0.032	0.299	0.259	0.260	0.268
E2		c	186	0.371	-0.205	-0.053	0.401	0.371	0.344	0.348
E3			1	0.002	0.010	0.000	0.000	0.000	0.010	0.000
E3		a	105	0.210	-0.258	-0.160	0.294	0.250	0.094	0.134
E3		b	130	0.259	-0.248	-0.148	0.299	0.241	0.333	0.152
E3	*	c	265	0.529	0.095	0.308	0.407	0.509	0.562	0.714
E4			1	0.002	0.010	0.000	0.000	0.000	0.010	0.000
E4	*	a	143	0.285	0.034	0.214	0.215	0.250	0.292	0.429
E4		b	136	0.271	-0.133	-0.018	0.277	0.302	0.240	0.259
E4		c	221	0.441	-0.272	-0.196	0.508	0.448	0.458	0.312
E5			4	0.008	-0.062	-0.006	0.006	0.017	0.010	0.000
E5		a	157	0.313	-0.253	-0.124	0.356	0.293	0.354	0.232
E5	*	b	186	0.371	0.202	0.407	0.209	0.336	0.427	0.616
E5		c	154	0.307	-0.329	-0.278	0.429	0.353	0.208	0.152

Table 3: Writing 05 Distractor Analysis (*continued*)

item	correct	key	n	rspP	pBis	discrim	lower	mid50	mid75	upper
F1			1	0.002	-0.003	0.000	0.000	0.000	0.010	0.000
F1		a	146	0.291	-0.264	-0.139	0.345	0.319	0.260	0.205
F1	*	b	196	0.391	0.214	0.408	0.226	0.353	0.458	0.634
F1		c	158	0.315	-0.340	-0.269	0.429	0.328	0.271	0.161
F2			2	0.004	-0.075	-0.011	0.011	0.000	0.000	0.000
F2	*	a	202	0.403	0.125	0.338	0.260	0.414	0.427	0.598
F2		b	141	0.281	-0.198	-0.082	0.305	0.267	0.323	0.223
F2		c	156	0.311	-0.315	-0.245	0.424	0.319	0.250	0.179
F3			3	0.006	-0.034	-0.006	0.006	0.009	0.010	0.000
F3		a	134	0.267	-0.270	-0.141	0.311	0.293	0.271	0.170
F3		b	140	0.279	-0.153	-0.029	0.288	0.276	0.292	0.259
F3	*	c	224	0.447	0.023	0.176	0.395	0.422	0.427	0.571
F4			1	0.002	-0.041	-0.006	0.006	0.000	0.000	0.000
F4		a	143	0.285	-0.186	-0.081	0.322	0.302	0.250	0.241
F4		b	118	0.236	-0.262	-0.125	0.277	0.259	0.229	0.152
F4	*	c	239	0.477	0.045	0.212	0.395	0.440	0.521	0.607
F5			3	0.006	-0.019	0.003	0.006	0.000	0.010	0.009
F5		a	126	0.251	-0.302	-0.178	0.339	0.284	0.156	0.161
F5	*	b	228	0.455	0.274	0.462	0.243	0.362	0.667	0.705
F5		c	144	0.287	-0.374	-0.287	0.412	0.353	0.167	0.125

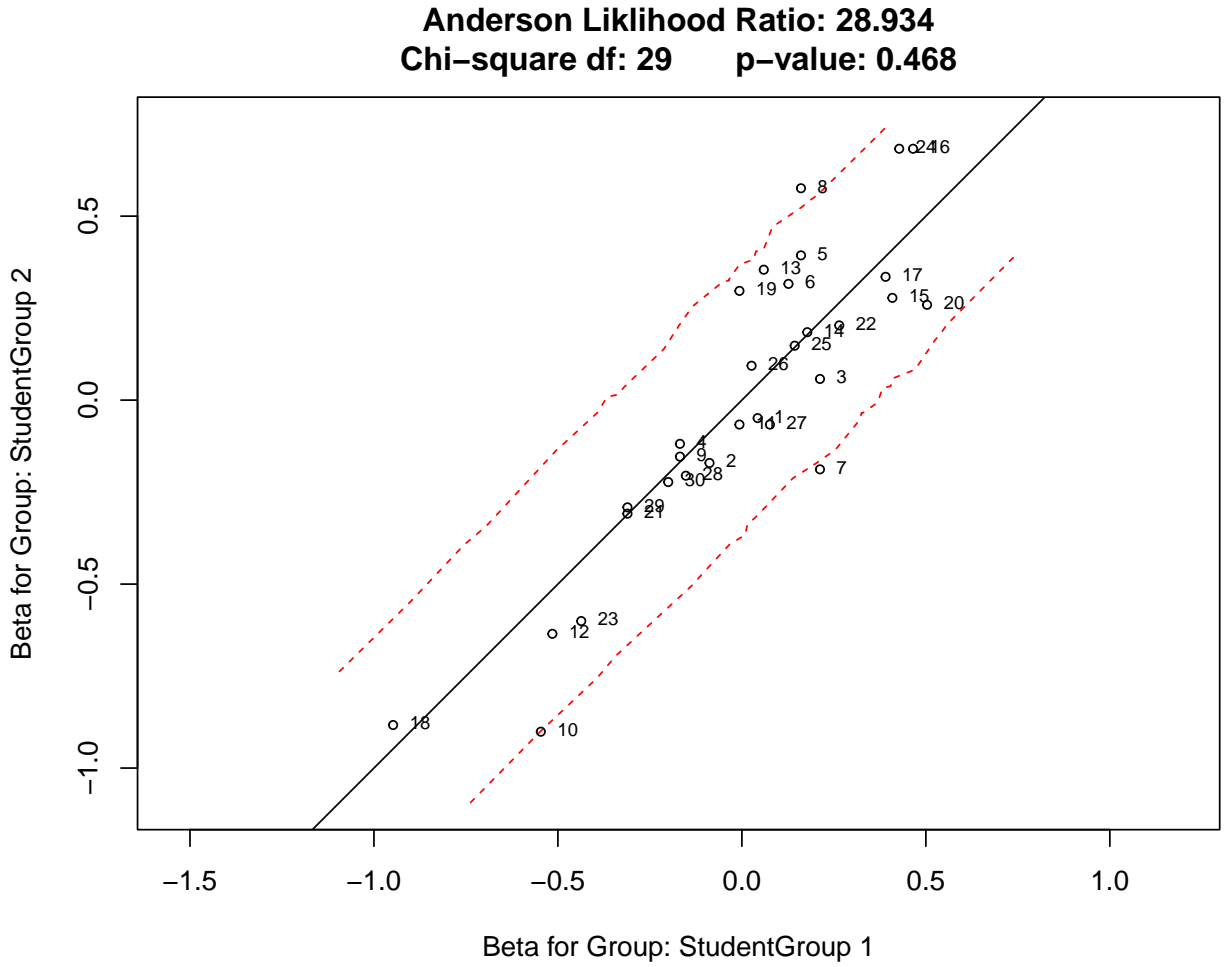


Figure 1: Anderson's LR-test (Student Groups Randomly Selected)

Table 4: Writing 05 Item Infit and Outfit Statistics

item	N	Outfit	Infit
A1	501	0.9635	0.9697
A2	501	0.9582	0.9646
A3	501	0.9769	0.9809
A4	501	1.0491	1.0380
A5	501	0.9569	0.9612
B1	501	0.9678	0.9663
B2	501	1.0955	1.0826
B3	501	1.0087	1.0044
B4	501	1.0701	1.0621
B5	501	0.9266	0.9486
C1	501	1.0787	1.0656
C2	501	0.9286	0.9391
C3	501	1.0059	0.9990
C4	501	0.9826	0.9837
C5	501	0.9549	0.9600
D1	501	0.9815	0.9848
D2	501	1.0191	1.0175
D3	501	0.9330	0.9516
D4	501	1.0090	1.0169
D5	501	0.9791	0.9894
E1	501	0.9079	0.9148
E2	501	1.0607	1.0545
E3	501	1.0022	0.9973
E4	501	1.0230	1.0187
E5	501	0.9430	0.9481
F1	501	0.9336	0.9437
F2	501	0.9924	0.9866
F3	501	1.0368	1.0382
F4	501	1.0268	1.0254
F5	501	0.9062	0.9161

Table 5: Writing 05 Summary of Fit Statistics

	fit	M	SD
Outfit	Outfit	0.9893	0.0511
Infit	Infit	0.9910	0.0441

Table 6: Writing 05 Raw to Theta Table

Raw Score	theta	SE
5	-1.1902	0.4830
6	-0.9784	0.4537
7	-0.7891	0.4316
8	-0.6159	0.4146
9	-0.4548	0.4014
10	-0.3028	0.3911
11	-0.1576	0.3833
12	-0.0174	0.3775
13	0.1192	0.3735
14	0.2535	0.3712
15	0.3867	0.3703
16	0.5197	0.3710
17	0.6539	0.3732
18	0.7901	0.3771
19	0.9299	0.3827
20	1.0745	0.3904
21	1.2258	0.4005
22	1.3861	0.4136
23	1.5583	0.4305
26	2.1996	0.5219

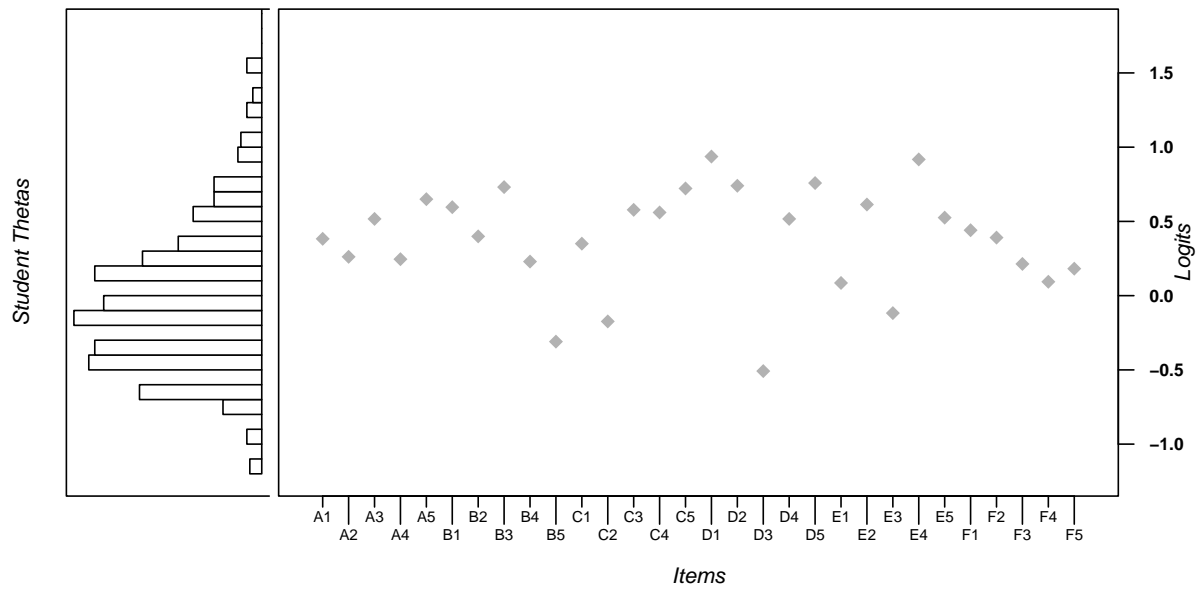


Figure 2: Student Ability - Item Difficulty Wright Map

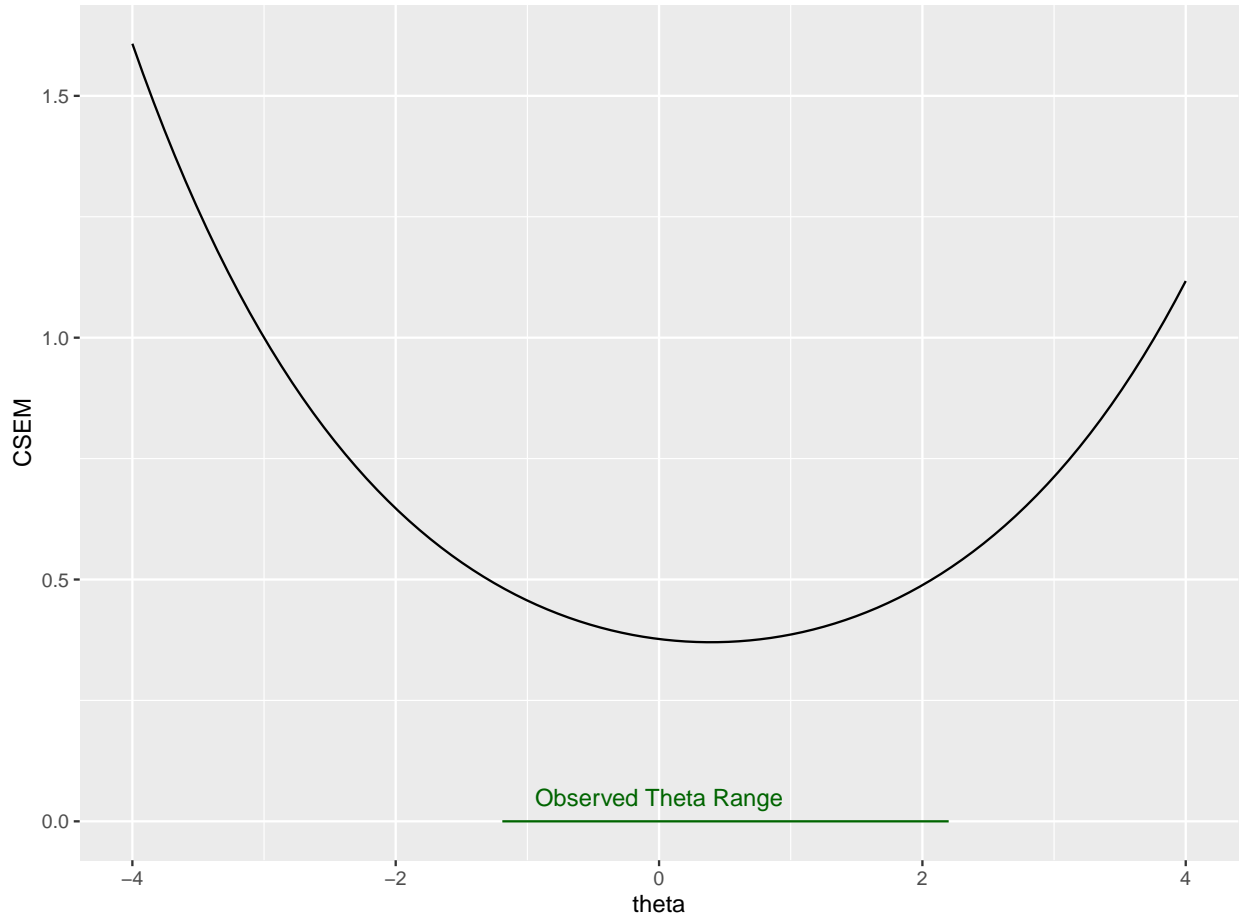


Figure 3: Writing 05 Conditional Standard Error of Measure

Table 7: Writing 05 Reliability for All Students and Subgroups with > 10 Students

Category	Group	nStudents	Reliability
All		501	0.41
Ethnic	Black	64	0.01
Ethnic	Hispanic	32	0.35
Ethnic	Other	25	0.52
Ethnic	White	371	0.44
Disadvantaged	No	375	0.38
Disadvantaged	Yes	126	0.50
LEP	No	471	0.43
LEP	Yes	30	-0.34
Gender	Female	171	0.30
Gender	Male	330	0.46
Homeless	No	483	0.42
Homeless	Yes	18	0.02

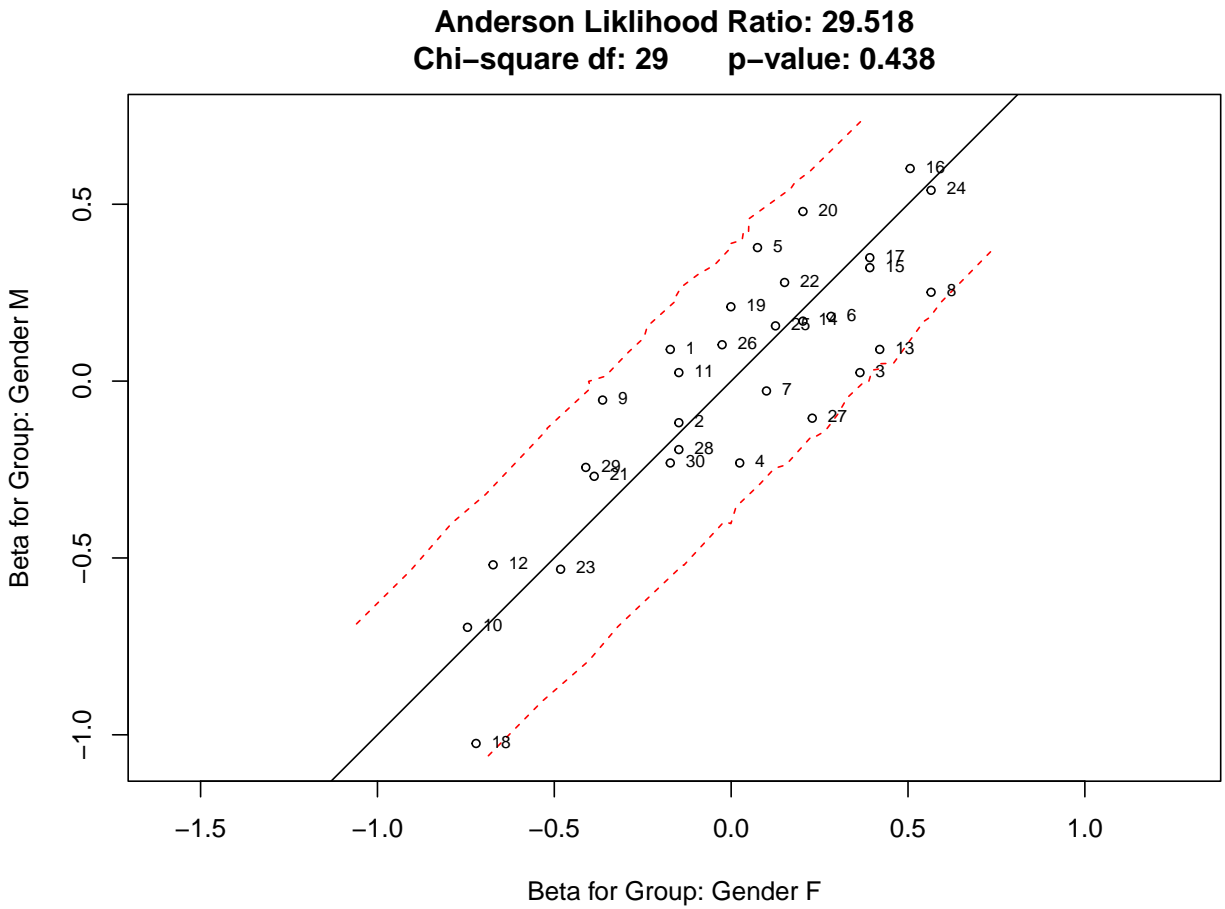


Figure 4: Writing 05 Differential Item (DIF) and Test (DTF) Function for Gender

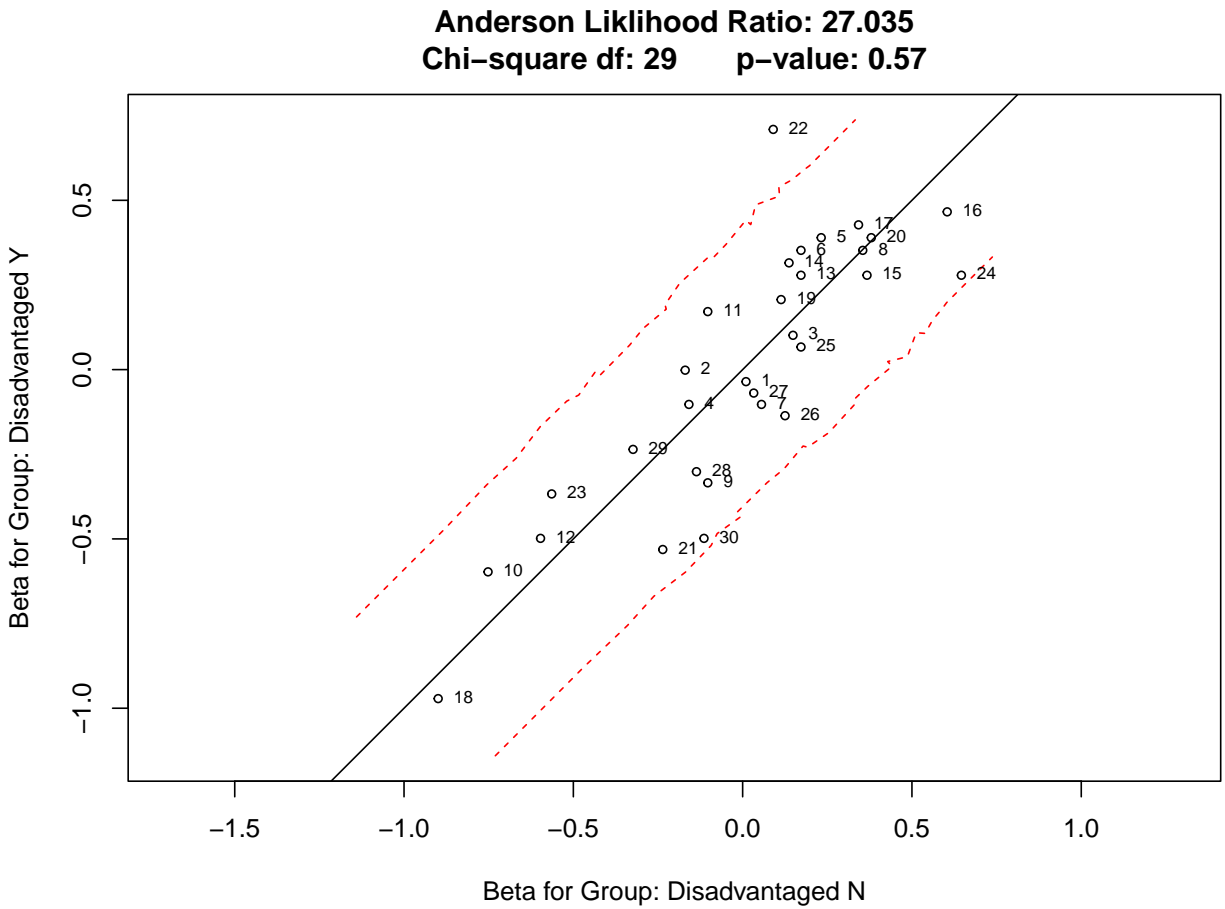


Figure 5: Writing 05 Differential Item (DIF) and Test (DTF) Function for Economic Disadvantage

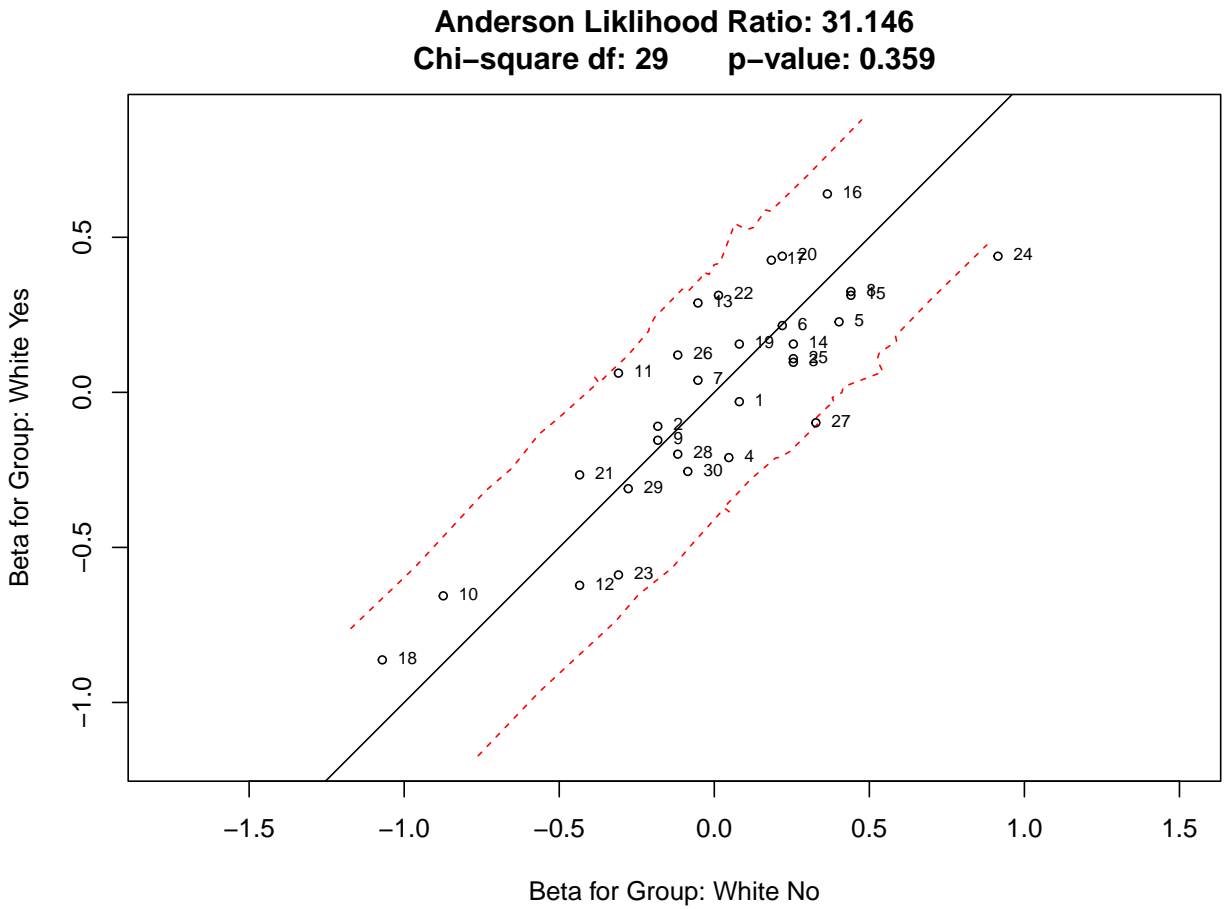


Figure 6: Writing 05 Differential Item (DIF) and Test (DTF) Function for White vs non-White

Table 8: Proficiency Classification Accuracy

Confusion Matrix			
.	Positive	Negative	Total
True	0.0478	0.8287	0.8765
False	0.0834	0.0402	0.1235
Total	0.1311	0.8689	1.0000

Accuracy = 0.8765

Table 9: Proficiency Decision Consistency

Contingency Matrix			
.	i	j	
i	0.0436	0.0875	
j	0.0875	0.7814	

Proportion of Consistent Classifications = 0.8249
Cohen's Kappa = 0.2316

Table 10: NAPD Decision Consistency

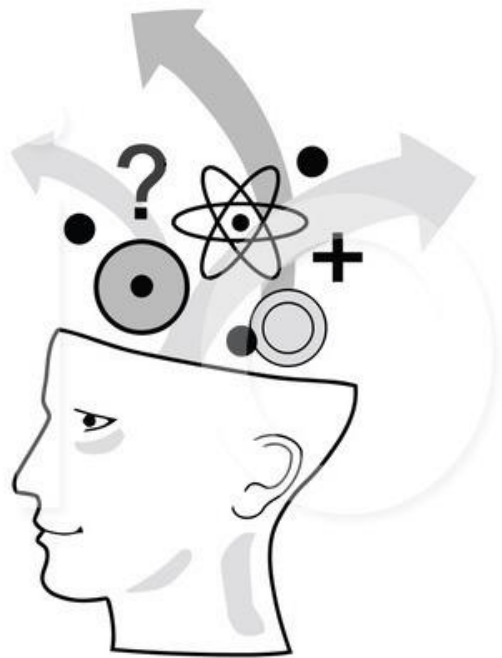
Performance Level	TP	FP	TN	FN	Sensitivity	Specificity	Accuracy	p	p_c	Kappa
Novice	0.0011	0.0192	0.9786	0.0012	0.4890	0.9808	0.9797	0.0027	0.0004	0.0023
Apprentice	0.0345	0.0764	0.8380	0.0512	0.4024	0.9165	0.8725	0.0272	0.0123	0.0151
Proficient	0.6596	0.0613	0.0874	0.1917	0.7748	0.5880	0.7470	0.5453	0.5196	0.0534
Distinguished	0.0395	0.1085	0.8307	0.0213	0.6503	0.8844	0.8702	0.0536	0.0219	0.0324



KENTUCKY ALTERNATE ASSESSMENT

ALTERNATE K-PREP
ASSESSING THE 1% POPULATION
June 2022

Selection Criteria for Panelists



Role of the Panel

- ❑ To understand the purpose of the tests and cut scores
- ❑ To be familiar with the test items
- ❑ To set standards for Alternate K-PREP Attainment Task items and to validate the minimum that students should know and be able to do at each proficiency level
- ❑ To provide necessary feedback to KDE





Alternate Kentucky Summative Assessment

What is an Attainment Task?

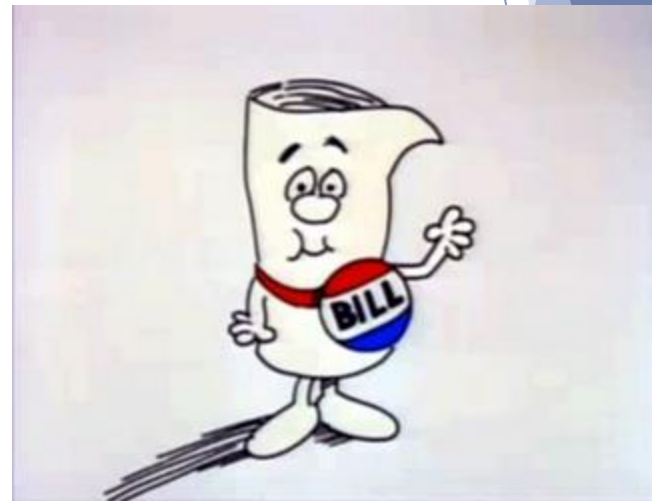
June 2022

Attainment Tasks are designed to provide an alternate assessment for:



▶ **Alternate Kentucky Summative Assessments (AKSA)**
in:

- Reading
- Mathematics
- Writing
- Social Studies
- Science



An Attainment Task

- ▶ **Assesses skills that evidence performance of specified standards (listed on the cover page);**
- ▶ **Uses an activity that is based on an authentic task (e.g., similar to a task that might occur in real life);**
- ▶ **Requires the student to complete a task, working step by step as directed by the teacher; and**
- ▶ **Teacher records the student response.**



Presentation and Response Modes



- **Modifications or supports may include such things as:**
 - ✓ representative objects
 - ✓ text reader
 - ✓ alternate keyboard
 - ▶ High tech or low tech

Task Administration

- ▶ **1:1 administration**
- ▶ **Scripted**
 - ▶ The answer choices are provided in picture format, but these can be modified by the teacher.
- ▶ **The task can be broken up into smaller time chunks.**
 - Each grade band is broken into six mini-tasks with 5 items per task
 - Tasks are administered twice a year, with 3 tasks in each testing window
- ▶ **The specific task can not be taught.**

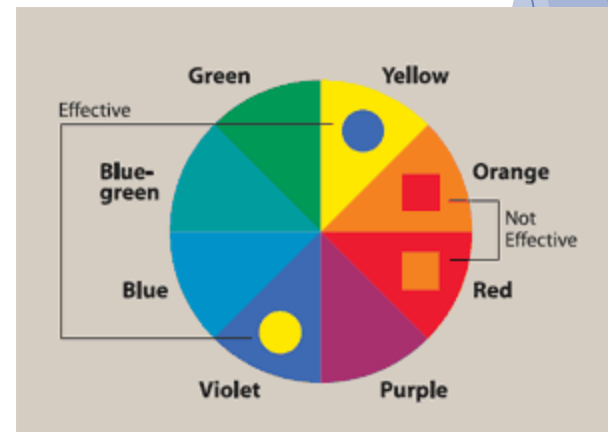
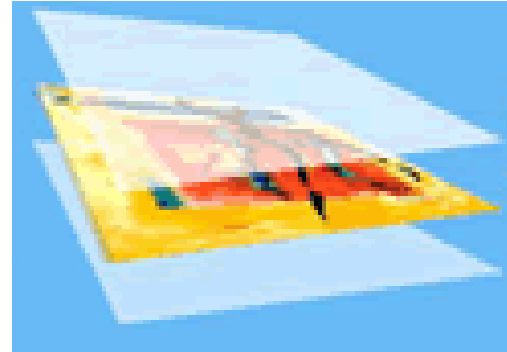
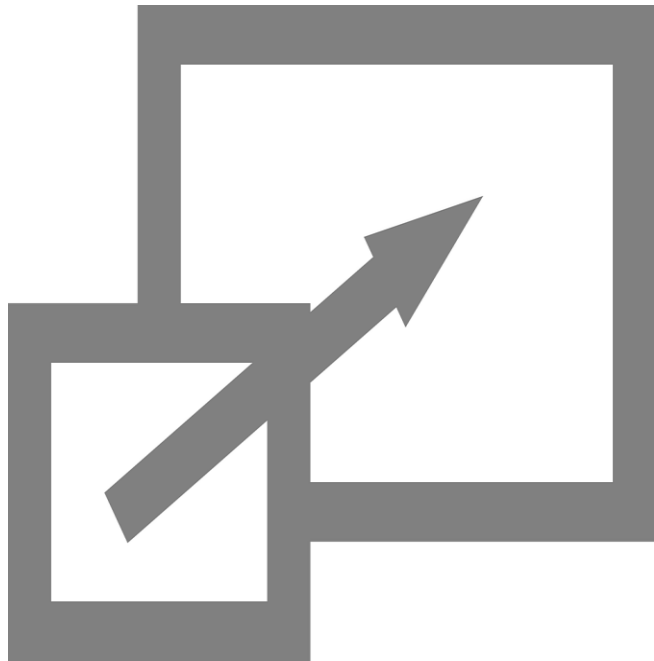


Scoring the Task

- ▶ The student must independently respond to each task item.
- ▶ Student selects a response A, B, or C
- ▶ Student response is entered into the online database (NR is used for No Response)



Possible ways to modify materials



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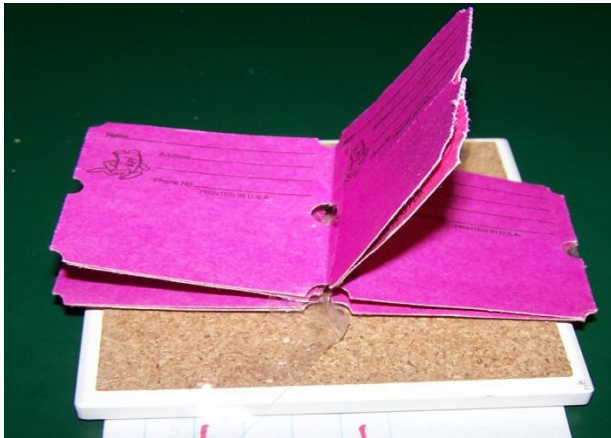
Possible ways to modify materials

- ▶ Scan pictures into the computer and have student select using a Touch Screen or adapted keyboard.

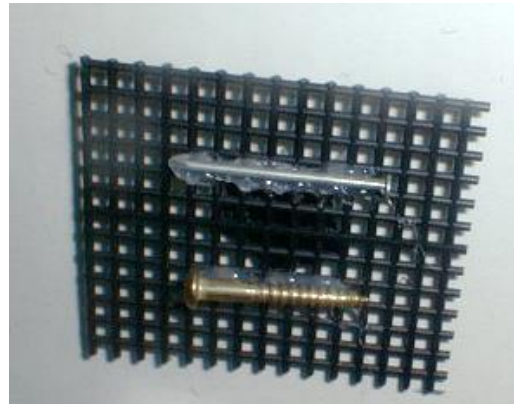


Possible ways to modify materials

- ▶ Use representative objects to allow exploration of the content and to provide options for answers.



Issue Permits



Provide More Jobs



Content and Bias Reviews

- ▶ Prior to implementation of items, all items go through separate content and bias reviews.
- ▶ Content reviews ensure that items
 - link back to the standards and assessment targets
 - avoid discrete skills
 - have a range of DOK
 - are related to what is taught in general education setting
 - evidence referenced understanding, skills, or concepts



Content & Bias Reviews Continued



- ▶ **Bias reviews ensure that items**
 - **avoid stereotypes and anti-stereotypes**
 - **provide equal access and opportunity to all students**
 - **avoid sensitive topics (e.g., socioeconomic status, gender identity, culture, topics of race or ethnicity, religion, etc...)**
 - **show respect to all groups**



Alternate K-PREP Standard Setting

June 2022



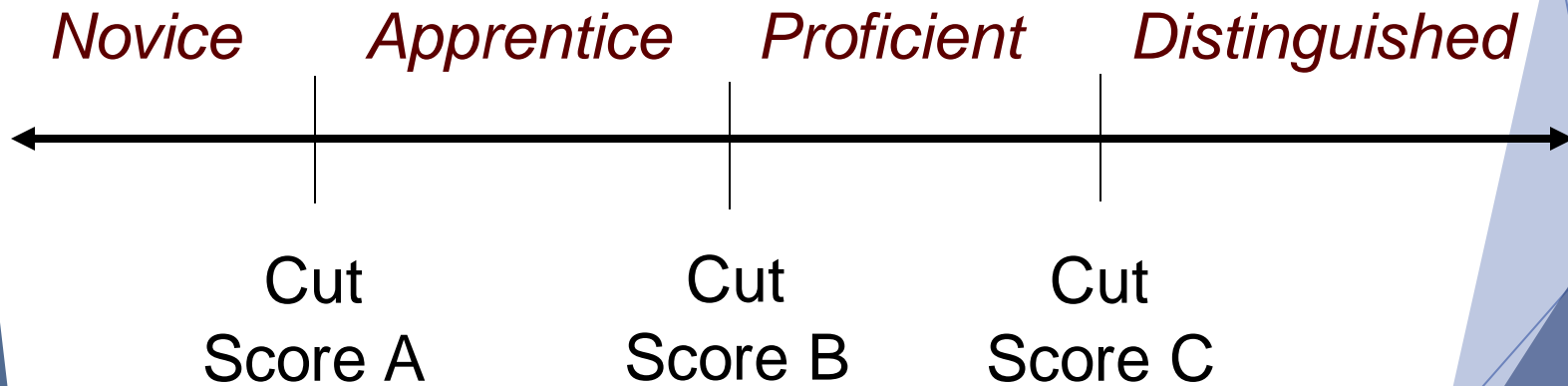
Types of Standards

- **Content Standards:** Specify the grade-level or course **content** that students should learn
- **Achievement Standards:** Specify the **amount** of knowledge and/or skills relative to the content standards required to achieve an outcome or classification
 - **Performance Level Descriptors (PLDs)**
 - **Cut Scores**

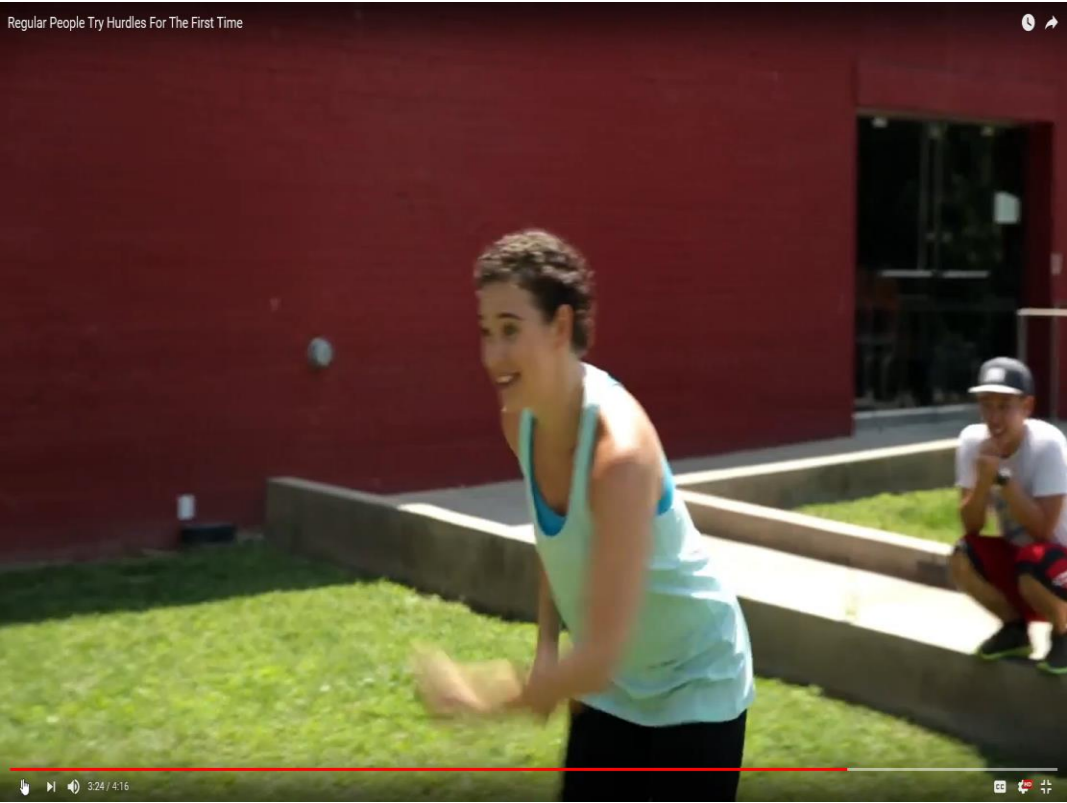


What Is a Cut Score?

Minimum test score a student must earn to be considered at a certain performance level



Think about cut scores as hurdles



Think about cut scores as hurdles



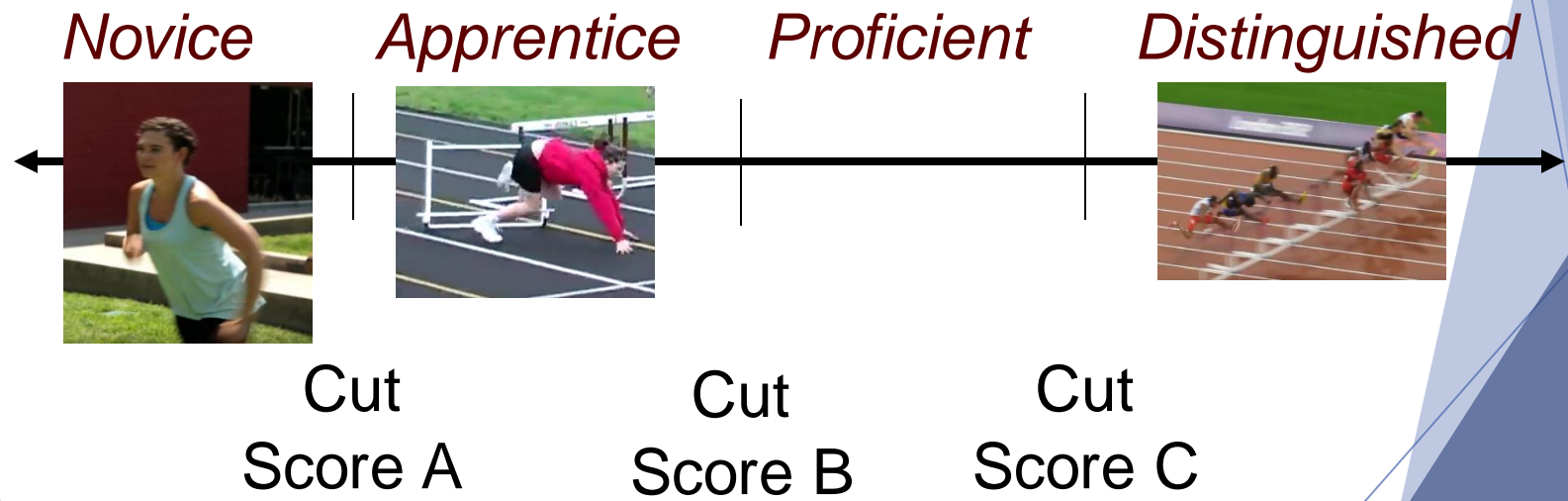
Think about cut scores as hurdles





What Is a Cut Score?

Minimum test score a student must earn to be considered at a certain performance level



The Angoff Procedure

- ▶ Research-based procedure used since the early 1970s
- ▶ The most commonly used standard setting method – used in many other state testing programs as well as on certification tests
- ▶ Has undergone many modifications over the years and is often referred to as the Modified Angoff or Extended Angoff procedure



Angoff Procedure (cont.)

- ▶ Original Angoff procedure asked panelists to examine each item on a test and determine whether a student who was just barely Proficient would be able to answer it correctly
- ▶ Yes or No?





The Work

We Need Your Expert Judgments

- ▶ **What does each test item measure? (i.e., what do you have to know and be able to do to answer it correctly?)**

- ▶ **Would a barely Proficient student be able to perform this item (yes/no)**



Borderline Performance

- ▶ The idea of **borderline performance** is key to the Angoff procedure (REMEMBER THE HURDLES)
- ▶ What does it mean to be borderline – or just barely - Apprentice, Proficient, and Distinguished



During the Process, Panelists Should Consider...

- ▶ **Kentucky Academic Standards**, which specify the content that should be learned by students
 - ▶ PDFs found in folders
- ▶ **Test items**, which enact the content standards
 - ▶ PDFs found in folders
- ▶ **Performance Level Descriptors** , which describe in words what is required at each level, and the cut scores, or the minimum score students must earn to reach each level
 - ▶ PDFs found in folders



Ratings

- ▶ **Cut scores are determined over three rounds of rating**
- ▶ **Ratings will always be made independently**
- ▶ **After each set of ratings, you will see your cut score and those of your peers**
- ▶ **You will have a chance to discuss your ratings with the group before the next round**



Feedback

▶ **After** Round 1 Ratings

- Variance in participant ratings for each item
- Highest, lowest, average cut scores

▶ **After** Round 2 Ratings

- Variance in participant ratings for each item
- Highest, lowest, and average cut scores

▶ Round 3

- Make recommendations and receive impact data
- Review impact data
- Make final evaluations



Calculating the Cut Score

- ▶ Consider the ratings as probabilities
- ▶ Sum the total (probabilities) to obtain cut scores for each content area



Round 1

- ▶ Start with the first item and determine if a **barely** Proficient student would be able to perform it
- ▶ Type YES into your google doc if the answer is yes, leave it blank if no
 - Continue through each item
 - If a barely proficient student would be able to perform the item indicate “YES” in the Google Doc for that item under proficient. If “NO” then leave the item blank
- ▶ Once all items have a proficient determination; start over and repeat the process making this determination for **borderline** Apprentice and **borderline** Distinguished



Google Sheets



	A	B	C	D
1	Rater ID:	110		
2				
3	Begin with Proficient and review all 30 items to determine if a barely proficient student should be able to respond correctly to the item. Repeat for Apprentice and Distinguished.			
4	Task A	Apprentice	Proficient	Distinguished
5	Item 1			
6	Item 2			
7	Item 3			
8	Item 4			
9	Item 5			

	A	B	C	D	E
1	Rater ID:	110			
2					
3	Begin with Proficient and review all 30 items to determine if a barely proficient student should be able to respond correctly to the item. Repeat for Apprentice and Distinguished.				
4	Task A	Apprentice	Proficient	Distinguished	
5	Item 1				
6	Item 2				
7	Item 3				
8	Item 4				
9	Item 5				
10					
11	Task B	Apprentice	Proficient	Distinguished	
12	Item 1				
13	Item 2				
14	Item 3				
15	Item 4				
16	Item 5				
17					
18	Task C	Apprentice	Proficient	Distinguished	
19	Item 1				
20	Item 2				
21	Item 3				
22	Item 4				
23	Item 5				
24					
25	Task D	Apprentice	Proficient	Distinguished	
26	Item 1				
27	Item 2				
28	Item 3				
29	Item 4				
30	Item 5				
31					
32	Task E	Apprentice	Proficient	Distinguished	
33	Item 1				
34	Item 2				
35	Item 3				
36	Item 4				
37	Item 5				
38					
39	Task F	Apprentice	Proficient	Distinguished	
40	Item 1				
41	Item 2				
42	Item 3				
43	Item 4				





- ▶ **Receive feedback on your cut scores and the cut scores for the group**
- ▶ **Look at the range of ratings for each item**
- ▶ **Discuss the items with the most variance in ratings**
- ▶ **Independently re-evaluate your ratings and change any you feel need to be changed**
 - **REPEAT the process for individual ratings from Round 1**

Round 3

- ▶ Receive feedback on the high, low, and average cut scores
- ▶ Discuss cut scores and individual items
- ▶ Determine Composite cut scores as a group
- ▶ Receive impact data
- ▶ Conduct final discussions
- ▶ Submit your final group rating form



What Happens After You Are Done?

- ❑ We create tables showing the recommended cut scores and the resulting impact data.
- ❑ The Kentucky Department of Education reviews these recommendations with the commissioner, who approves final cut scores.



Initial Evaluation

- ▶ Please click the link below to complete an initial evaluation. Results are confidential but give us an idea of how prepared you are to start the process. Please rate your comfort level with the process we have described using the initial evaluation form.



Appendix K: Standard Setting Evaluations

INITIAL EVALUATION OF THE TRAINING ON THE STANDARD SETTING PROCEDURE FOR THE KY ATTAINMENT TASKS

June 2022

The purpose of this evaluation form is to secure your feedback about the training and the standard setting process. Your feedback will provide a basis for evaluating the training and materials in the standard setting process and making any adjustments necessary before continuing with Round 1 ratings.

Please complete the information below. Do not put your name on the form as we want your feedback to be anonymous.

Group representing: Special Education Teacher Content specialist Parent Educational Administrator Higher Education Community/Other

Type of district you teach/work in: Urban Suburban Rural

Gender: Female Male

How many years of teaching experience do you have? _____

Race/ethnicity: Asian African American Hispanic Caucasian Other : _____

1. Please read each of the following statements carefully. Place a check mark (✓) under one category (Strongly agree, Agree, Disagree, or Strongly disagree) to indicate the degree to which you agree with each statement.

	Strongly Agree	Agree	Disagree	Strongly Disagree
a. I understand the purpose of this workshop.				
b. I understand the purpose of the assessment.				
c. I understand who the students are that take this assessment.				
d. I have a clear understanding of the content standards.				
e. I have a good sense of what it means to be "Proficient" on this assessment.				
f. I have a good sense of what it means to be "Distinguished" on this assessment.				
g. I have a good sense of what it means to be "Apprentice" on this assessment.				
h. The training on the Angoff method was sufficient and gave me the information I needed to make my first set of ratings.				

i. I feel prepared to make my first set of ratings.				
---	--	--	--	--

2. Have you participated in a standard setting workshop before today? No ____ Yes ____

3. Do you feel like you are ready to proceed with making ratings of the reading, writing, math, social studies, or science assessments? No ____ Yes ____

4. If No, what additional questions do you have about this process?

FINAL EVALUATION OF THE STANDARD SETTING PROCEDURE FOR THE KY ATTAINMENT TASKS

June 2022

The purpose of this final evaluation form is to secure your feedback about the overall standard setting process. Your feedback will provide a basis for evaluating the training, methods, and materials in the standard setting process.

Please complete the information below. Do not put your name on the form as we want your feedback to be anonymous.

Group representing: Special Education Teacher Content specialist Parent Educational Administrator Higher Education Community/Other

Type of district you teach/work in: Urban Suburban Rural

Gender: Female Male Other

How many years of teaching experience do you have? _____

Race/ethnicity: Asian African American Hispanic Caucasian Other : _____

1. Please read each of the following statements carefully. Place a check mark (✓) under one category (Strongly agree, Agree, Disagree, or Strongly disagree) to indicate the degree to which you agree with each statement.

	Strongly Agree	Agree	Disagree	Strongly Disagree
a. I understood the purpose of this workshop.				
b. The training included all the information I needed to complete my assignment.				
c. The training on options for determining the cut score was clear and sufficient				
d. The Angoff rating task was clear.				

2. Please rate the clarity of the following materials used in the standard setting process.

	Very clear	Somewhat clear	Somewhat unclear	Very unclear
a. Instructions provided in the training materials				
b. Instructions provided by the facilitators				

c. Performance level descriptors				
----------------------------------	--	--	--	--

3. Please rate the usefulness of the following materials or procedures in completing the standard setting process.

	Very useful	Somewhat useful	Not at all useful
a. Overview of the Assessments			
b. Overview of the Standard Setting Workshop			
c. Discussing the Angoff ratings with the group			
d. Impact information (% of students in each level)			

4. How influential was each of the following factors in determining your cut score?

	Very influential	Somewhat influential	Not influential
a. The content standards			
b. My personal experiences with students			
c. Discussions with other panelists			
d. Ratings of other panelists			
e. The percentage of students who will probably reach proficient			
f. The importance of the test			

5. Do you have any suggestions on how to improve the training and implementation of the standard setting workshop?

6. How comfortable would you be defending this process to your peers?

___Very comfortable ___Somewhat comfortable ___Somewhat uncomfortable ___Very uncomfortable

7. What could be changed to make you more comfortable defending this process?

8. Do you have additional comments about this process?

9. How comfortable are you with the final group average cut scores? (*Check one.*)

Very comfortable Somewhat comfortable Somewhat uncomfortable Very uncomfortable

10. Do you feel the Final Cut Scores are too low, too high, or about right? (*Check one.*)

Too Low About Right Too High Not Sure

11. If you could set the Final whole score cut scores, what would they be?

Please provide your recommendations on what you think the cut scores should be this year and in the future.

Thank you!

Appendix L: Cut Scores for Reading, Math, Social Studies, Writing, and Science

Reading Cut Scores

Grade 3

		Novice	Apprentice	Proficient	Distinguished
	Range	0-9	10-16	17-23	24 - 30
N=	548	165	263	98	22
		30.11%	47.99%	17.88%	4.01%

**Grade 4 – for this year, there is one item removed due to two correct answers; this will revert to 24-30

		Novice	Apprentice	Proficient	Distinguished
	Range	0-8	9-15	16-23	24-29
N=	537	116	274	136	11
		21.60%	51.02%	25.33%	2.05%

Grade 5

		Novice	Apprentice	Proficient	Distinguished
	Range	0-8	9-15	16-23	24-30
N=	577	130	302	124	21
		22.53%	52.34%	21.49%	3.64%

Grade 6

		Novice	Apprentice	Proficient	Distinguished
	Range	0-6	7-16	17-26	27-30
N=	509	50	281	171	7
		9.82%	55.21%	33.60%	1.38%

Grade 7

		Novice	Apprentice	Proficient	Distinguished
	Range	0-7	8-15	16-25	26-30
N=	571	77	376	115	3
		13.49%	65.85%	20.14%	0.53%

Grade 8

		Novice	Apprentice	Proficient	Distinguished
	Range	0-8	9-16	17-25	26-30
N=	600	89	317	177	17
		14.83%	52.83%	29.50%	2.83%

Grade 10

		Novice	Apprentice	Proficient	Distinguished
	Range	0-9	10-17	18-25	26-30
N=	581	156	297	117	11
		26.85%	51.12%	20.14%	1.89%

Mathematics Cut Scores

Grade 3

		Novice	Apprentice	Proficient	Distinguished
	Range	0-8	9-15	16 -23	24-30
N=	548	138	305	97	8
		25.18%	55.66%	17.70%	1.46%

Grade 4

		Novice	Apprentice	Proficient	Distinguished
	Range	0- 7	8- 14	15 - 22	23 - 30
N=	537	101	335	91	10
		18.81%	62.38%	16.95%	1.86%

Grade 5

		Novice	Apprentice	Proficient	Distinguished
	Range	0 -7	8-15	16-23	24 -30
N=	577	109	376	82	10
		18.89%	65.16%	14.21%	1.73%

Grade 6

		Novice	Apprentice	Proficient	Distinguished
	Range	0-6	7-14	15-22	23-30
N=	509	59	346	102	2
		11.59%	67.98%	20.04%	0.39%

Grade 7

		Novice	Apprentice	Proficient	Distinguished
	Range	0-6	7-13	14-20	21-30
N=	571	63	364	134	10
		11.03%	63.75%	23.47%	1.75%

Grade 8

		Novice	Apprentice	Proficient	Distinguished
	Range	0-7	8-13	14-22	23-30
N=	600	84	403	111	2
		14.00%	67.17%	18.50%	0.33%

Grade 10

		Novice	Apprentice	Proficient	Distinguished
	Range	0-7	8-14	15-22	23-30
N=	581	83	358	134	6
		14.29%	61.62%	23.06%	1.03%

Science Cut Scores

Grade 04			
Novice	Apprentice	Proficient	Distinguished
0- 9	10-15	16 - 22	23 - 30

Grade 07			
Novice	Apprentice	Proficient	Distinguished
0- 8	9-14	15-21	22 - 30

Grade 11			
Novice	Apprentice	Proficient	Distinguished
0- 8	9-15	16-23	24 - 30

Social Studies Cut Scores

Grade 5

	Novice	Apprentice	Proficient	Distinguished
Range	0 - 9	10 - 15	16 - 23	24 -30
N= 577	146	296	124	11
	25.30%	51.30%	21.49%	1.91%

Grade 8

	Novice	Apprentice	Proficient	Distinguished
Range	0-6	7-14	15-22	23-30
N= 600	63	400	120	17
	10.50%	66.67%	20.00%	2.83%

Grade 11

	Novice	Apprentice	Proficient	Distinguished
Range	0 -8	9 -16	17 -23	24 -30
N= 547	114	285	127	21
	20.84%	52.10%	23.22%	3.84%

Writing Cut Scores
Editing and Mechanics

Grade 5

		Novice	Apprentice	Proficient	Distinguished
	Range	0-4	5-8	9-11	12-15
N=	577	168	335	66	8
		29.12%	58.06%	11.44%	1.39%

Grade 8

		Novice	Apprentice	Proficient	Distinguished
	Range	0-4	5-8	9-12	13-15
N=	600	115	309	152	24
		19.17%	51.50%	25.33%	4.00%

Grade 11

		Novice	Apprentice	Proficient	Distinguished
	Range	0-4	5-8	9-12	13 - 15
N=	547	123	264	143	17
		22.49%	48.26%	26.14%	3.11%

On-Demand

Grade 5

		Novice	Apprentice	Proficient	Distinguished
	Range	0-3	4-7	8-10	11-15
N=	577	108	338	112	19
		18.72%	58.58%	19.41%	3.29%

Grade 8

		Novice	Apprentice	Proficient	Distinguished
	Range	0-3	4-7	8-11	12-15
N=	600	93	359	122	26
		15.50%	59.83%	20.33%	4.33%

Grade 11

		Novice	Apprentice	Proficient	Distinguished
	Range	0-3	4-7	8-11	12-15
N=	547	106	314	111	16
		19.38%	57.40%	20.29%	2.93%