

A Longitudinal Analysis of State Accommodations Policies on the Participation Rate and the Proficiency Rate for Students with Disabilities

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Abstract

This study explored the relations among accommodations policies for seven accommodations and participation and proficiency rates for students with disabilities across years, as well as by content area and school level. Regression analyses indicated several predictors of participation and proficiency, but they varied by year, content area, and grade. The implications of the findings are explored, and future research avenues suggested.

Assessment accommodations for some time have been proposed as one of the most important avenues for access to assessments for students with disabilities (Thurlow, 2007). Although conversations about the purpose of accommodations have changed over time, from simply providing access to assessments, to ensure that the results for students with disabilities are valid, there continue to be concerns about whether accommodations change what is measured (Cormier, Altman, Shyyan, & Thurlow, 2010; Johnstone, Altman, Thurlow, & Thompson, 2006; Thompson, Blount, & Thurlow, 2002; Thurlow, Christensen, & Lail, 2008; Zenisky & Sireci, 2007). In addition, there are concerns about the highly variable nature of accommodation policies (Christensen, Lazarus, Crone, & Thurlow, 2008; Lazarus, Thurlow, Lail, & Christensen, 2009), the inconsistency and confusion of decision makers (Ketterlin-Geller, Alonzo, Braun-Monegan, & Tindal, 2007; Lazarus, Thompson, & Thurlow, 2006), and the implementation of accommodations on test day (Paul Sherlock Center on Disabilities, 2002; Shriner & DeStefano, 2003).

These concerns emerged despite indications that the provision of accommodations historically has resulted in increased participation in assessments by students with disabilities. Evidence of the increase in participation rates has been clear (Thurlow, Quenemoen, Altman, & Cuthbert, 2007). Research on the National Assessment of Educational Progress (NAEP) showed that participation rates increased not in response to changes in participation criteria, but rather due to the provision of accommodations (Anderson, Jenkins, & Miller, 1996; Mazzeo, Carlson, Boelkl, & Lutkus, 2000)

Although suggestive, these data do not confirm that the participation of students with disabilities, much less their performance, has increased as a result of the provision of accommodations. Two previous analyses have attempted to confirm the relationship of accommodations to these variables. For example, Cox, Herner, Demczyk, and Nieberding (2006) found that higher participation rates were correlated with the total number of unrestricted accommodations. Harr, Perez, McLaughlin, and Blankenship (2005) found a significant

relationship between changes in accommodation policies and participation rates, at least for the two accommodations (*extended time* and *scribe*) for which analyses could be conducted.

States have continued to refine their accommodation policies with the intent of increasing the validity of results obtained when accommodations are used, as well as with the aim of ensuring the participation of all students with disabilities. At the same time, analyses of accommodation policies have become more refined over time. In the early years of the analysis of accommodation policies by the National Center on Educational Outcomes (NCEO), analyses of policies simply indicated whether they were allowed. In the 2007 NCEO analysis, each accommodation was rated in terms of whether it was allowed without any restrictions, or allowed in certain circumstances only, or allowed with implications for scoring, or simply prohibited. This kind of detailed analysis opens up the possibility for more refined analyses of the relationship between accommodation policies and participation rates as well as an initial analysis of the relationship between accommodation policies and performance.

The purpose of this study was to (a) obtain a longitudinal view of whether states' accommodation policies for students with disabilities shifted from 2003 through 2007, (b) explore the relation between accommodations policies for state assessments and the assessment participation rate for students with disabilities, and (c) investigate the relation between accommodation policies and the percentage of students with disabilities whose performance was proficient or above on the state assessment.

Methods

Database. The data used in this study were the accommodations policies¹ for each state in 2003, 2005, and 2007. Also, the participation rate and the proficiency rate for each state on the statewide achievement assessment for both reading and math in 2003-2004, 2005-2006, and 2007-2008 were included in the dataset; the participation and performance data were from the states' annual performance reporting submission to the U.S. Department of Education.

Coding. Seven accommodations were examined in this study—read aloud questions, sign interpret questions, calculator², scribe, spell checker, extended time, and multiple days. These accommodations, which generally are considered controversial, were defined as follows:

Read Aloud Questions: assessment items are read to the student.

Sign Interpret Questions: assessment items are presented to the student via sign language.

Calculator: standard calculator or special function calculator.

Scribe: student responds verbally and a proctor or scribe then translates this to an answer sheet; for writing extended responses, specific instructions are provided about how spelling and punctuation may be included.

Spell Checker: spell checker as a separate device or within a word-processing program.

Extended Time: student may take longer than the time typically allowed.

¹ In this study, we focused only on the accommodation policies for states' Criterion Reference Tests (CRTs). Accommodation policies for Norm Referenced Tests (NRTs) were not included.

² For the reading assessment, most states did not have policy for the calculator accommodation. Thus, coding of the calculator for reading assessments is included only in the descriptive analyses, not in the regression analyses.

Multiple Days: administered over several days when the assessment is normally administered in one day.

Seven accommodation codes were used to indicate the nature of the policy for each accommodation in each state, based on school levels (elementary school, middle school, and high school) and assessment content (reading and math). The seven accommodation codes were:

- A:** The policy states that the accommodation is allowed in the designated state test. If the policy states specifically that the accommodation is not allowed for one content area (e.g., reading), then it is interpreted that the accommodation is allowed for the other content area (e.g., math).
- A*:** The policy states a caution about the interpretation and validity of scores when the accommodation is used, but also indicates that the use of the accommodation does not affect score reporting. This code was used in 2003 and 2005.
- AS:** The policy states a caution for interpretation and validity of scores (these accommodations were often called “non-standard accommodations” or “modifications,” but there was clear indication that the accommodation does not affect score reporting. This code was used in 2007.
- AC:** The policy states that the accommodation is allowed in certain circumstances (e.g., allowed only in a certain section of a test, allowed only for those who have specific type of disabilities, etc.). There are some cases in which how the accommodation must be used or what particular kind of that accommodation is allowed is specified. Those cases are coded as “A.” Some policies explicitly require that the accommodation must be specified in the student’s IEP, but this is also considered as “A.”
- AI:** The policy states that there will be some restrictions applied to scoring and reporting if the test is taken with the accommodation, whether the policy explicitly allows or prohibits the use of the accommodation. Restrictions include counting the scores as invalid or excluding scores.
- P:** The policy states that the accommodation is prohibited. If the policy specifically states that the accommodation is allowed for one content area (e.g., math) tests, then it is interpreted that the accommodation is prohibited for the other content area (e.g., reading) tests.
- B:** (Blank) There is no mention of the accommodation in the policy, or it is clear from the policy description that the accommodation is not applicable. If the policy is directed to a specific section or portion of a test in a subject area (e.g., “non-calculator portion” of a math test) and there is no mention about the other subject area (e.g., reading), the latter subject area is left blank.

Two raters independently coded the policies for each year, content area, and school level. They then compared the results, discussed discrepancies, and reached agreement on the codes.

Analytical coding. The distribution of the eight accommodation codes was skewed. In addition, some of the codes were closely related in terms of meaning (and implications for use). As a result, the codes A, A*, and AS were combined to form one code indicating that the accommodation was allowed without restrictions (student was given a score when the accommodation was used). The remaining codes were combined into another code indicating the

accommodation was not allowed without restrictions – it either had restrictions in use, was prohibited, or a policy was not delineated for it (student’s score was affected or there was no policy).

Analyses. Descriptive analyses were used to examine the nature of accommodations over time for each content area and grade level. Stepwise linear regressions were used to analyze the relationships between accommodation policies and assessment participation and performance rates. Four sets of regression analyses were performed to explore:

1. The relationship between the percentages of unrestricted accommodations and participation rates. In this set of regressions, the percentages of the unrestricted accommodations among the seven accommodations were calculated and entered as the independent variable (predictor). The response variable was the participation rate.
2. The relationship between the percentages of unrestricted accommodations and proficiency rates. The percentages of the unrestricted accommodations were calculated and entered as the independent variable (predictor). The response variable was the proficiency rate.
3. The extent to which the seven unrestricted accommodation policies predict the participation rate. The seven accommodations (read aloud questions, sign interpret questions, calculator³, scribe, spell checker, extended time, and multiple days) were entered as predictors, and the participation rate was entered as a response variable.
4. The extent to which the seven unrestricted accommodation policies predict the proficiency rate. The seven accommodations (read aloud questions, sign interpret questions, calculator³, scribe, spell checker, extended time, and multiple days) were entered as predictors, and the proficiency rate was entered as a response variable.

Results

Descriptive Analyses

Frequency of policies. Tables 1-3 present the frequency tables for the seven accommodations for each content area (reading, math) and school level (elementary, middle, high school). For *read aloud questions* in math, the number of states allowing this accommodation without any restrictions increased over the years (2003 to 2005 to 2007). This accommodation was allowed without restrictions in fewer than 10 states for the reading assessment; most states restricted its use for reading assessments. A similar trend was evident for the *sign interpret questions* accommodation; however, 11-13 states (depending on content and school level) did not have an explicit policy to address this accommodation.

The *calculator* accommodation was mentioned by very few states for reading; for math the accommodation was allowed without restrictions in 17 to 22 states, with the numbers slightly higher at the high school level, but decreasing over time at that level. Consistently, about 90% of states allowed the *scribe* accommodation without any restrictions. The number of states allowing the *spell checker* accommodation without restrictions increased slightly over years, to the point

³ The calculator accommodation policy was used only to analyze the Math assessments; it was omitted in analyses for Reading assessments.

where about 15 states allowed it for reading and 20 states allowed in for math. Across years, the number of states that did not address the *extended days* accommodation increased slightly. For *multiple days*, about 20 states allowed testing across *multiple days*; about one-half of the states did not have an explicit policy to address this accommodation.

Policy changes. Table 4 shows the number of states that changed their accommodation policies from 2003 to 2007. As seen in this table, for reading assessments across the school levels the policies for *sign interpret questions* and *scribe* accommodations were the most stable; policies for *read aloud questions* and *multiple days* were the least stable. For math assessments, *read aloud questions*, *sign interpret questions*, and *scribe* were the most stable policies; policies for *calculator*, *extended time*, and *multiple days* were least stable.

Participation and proficiency rates. Table 5 presents the average participation rate and the average proficiency rate for students with IEPs who participated the regular state assessment. These data are broken down by year, content area, and school level (see Appendices 1-3 for specific data). As evident in Table 5, there was little variation in participation rates. Across three years, the range of participation rates at the elementary school level was 87% to 89%; the range at the middle school was 84% to 86%, and at the high school level the range was 81% to 83%. The participation rate decreased slightly as the school level increased.

No matter the school level, the average rate of proficient performance increased across years for both math and reading. The highest proficiency rate was at the elementary school level, and the lowest proficiency rate was at the high school level (see Appendices 4-6 for specific data).

Regression Analyses

Percentage of unrestricted accommodations in policy. Stepwise regression analyses were performed to explore the relations between participation rate and proficiency rate and the percentage of the unrestricted accommodation policies (A/A*/AS) for the seven selected accommodations. The predictor was the percentage of unrestricted accommodation policies.

For the response variable of *participation rate*, no relation was found between participation rate and the percentage of unrestricted accommodation policies. In contrast, there were significant relations found when the response variable was *proficiency rate* for 2007-2008; the only exception was for the reading assessment at the middle school level. Table 6 presents the regression equations based on the regression results for the proficiency rate and the percentage of the unrestricted policies for the seven selected accommodations. The equations in Table 6 show that as the percentage of unrestricted policies for the accommodations increased, the proficiency rate also increased.

Prediction of accommodations policies. Two sets of stepwise regression analyses were performed to explore the relations between participation rate and proficiency rate and the seven accommodations. The regression equations are presented in Table 7.

In the first set of regression analyses, the predictors were the seven accommodations coded as either *restricted* or *unrestricted*, and the response variable was *participation rate*. Table 8

shows the results of regression analyses for participation rate and accommodation policies. The results are discussed here by school year.

For 2003-2004, *sign interpret questions* and *extended time* significantly predicted the participation rate for both math and reading assessments at the high school level. In both regression equations, *sign interpret questions* and *extended time* accommodation policies were entered into the equations (see equations 1 & 2). When there were *extended time* without restrictions accommodations, the participation rate increased. In contrast when there were *sign interpret questions* without restrictions accommodations, the participation rate decreased.

For 2005-2006, only the *read aloud questions* accommodation was found to significantly predict the participation rate for math assessments at elementary and middle school levels (see equations 3-4). As seen in the equations, when there were *read aloud questions* without restrictions accommodations, the participation rate increased.

For 2007-2008, the *extended time* accommodation was found to significantly predict the participation rate for both math and reading assessments at the elementary and middle school levels (see equations 5-8). As seen in the equations, when there were *extended time* without restrictions accommodations, the participation rate increased.

In the second set of regression analyses, the predictors were the seven accommodations coded as either *restricted* or *unrestricted*, and the response variable was *proficiency rate*. Table 9 shows the results of regression analyses for proficiency rate and accommodation policies. The results are discussed here by school year.

For 2003-2004, *spell checker* significantly predicted the proficiency rate for both math and reading assessments at some school levels (see equations 9-11), and the *sign interpret question* significantly predicted the proficiency rate for reading assessments at elementary and middle school levels (see equations 10-11). As seen in the equations, when there were *spell checker* without restrictions accommodations, the proficiency rate decreased; when there were *sign interpret questions* without restrictions accommodations, the proficiency rate increased.

In 2005-2006 for the math assessment at the middle school level, the *multiple days* accommodation significantly predicted the proficiency rate (see equation 12). As seen in the equation, when there were *multiple days* without restrictions accommodations, the proficiency rate decreased. Also, at the high school level, the *read aloud questions* accommodation significantly predicted the proficiency rate. Specifically, when there were *read aloud questions* without restrictions accommodations, the proficiency rate decreased.

For 2005-2006 reading assessment, *scribe*, *spell check*, and *extended time* significantly predicted the proficiency rate (see equations 14-16). As seen in the equations, when there were *spell checker* and *extended time* without restrictions accommodations, the proficiency rate decreased; when there were *scribe* without restrictions accommodations, the proficiency rate increased.

For 2007-2008 math assessments, *calculator*, *scribe*, and *spell checker* accommodations significantly predicted the proficiency rate at different school levels (see equation 17-19). As seen in the equations, when there were any of these three accommodations without restrictions, the proficiency rate increased. Also, for reading assessments the *sign interpret questions* accommodation significantly predicted the proficiency rate (see equations 20-22). As seen in the equations, when there were *sign interpret questions* without restrictions accommodations, the participation rate increased.

Discussion

The goal of obtaining clear and conclusive evidence of the contribution of accommodations to increased participation and performance of students with disabilities remains elusive. This study had the advantage of detailed information on accommodation policies across years and broken down by school level and content area, as well as specific data on participation rates and proficiency rates across years and broken down by school level and content area. Unfortunately, because of the skewed distributions of the accommodations policies, the advantage of detailed information on accommodation policies had to be set aside, with analyses based on the contrast between *restricted* and *unrestricted* accommodations.

Several relationships were found from the analyses, but they varied by accommodation, by school level, and by year. The most consistently emerging accommodation, *sign interpret questions*, is one that was related to a decrease in participation (2003-2004) and an increase in proficiency (2003-2004, 2007-2008). Other accommodations that emerged in more than a single analysis often varied in the relations (e.g., extended time associated with increased participation in 2003-2004 and 2007-2008, but with decreased performance in 2005-2006; spell checker associated with decreased proficiency in 2003-2004 and 2005-2006, but with increased proficiency in 2007-2008).

It may be that attempts to use policies as the source of impact on participation and performance is just too much to expect. This seems likely given the documented challenges surrounding decisions for individual students about the accommodations that are needed for assessments (Ketterlin-Geller et al., 2007; Lazarus et al., 2006) and the implementation of accommodations on test day (Paul Sherlock Center on Disabilities, 2002; Shriner & DeStefano, 2003). A possibly more realistic look at the impact of accommodations on participation and performance would emerge from analyses that used as predictors the percentages of students actually using specific accommodations. Unfortunately, most states do not report these data, instead reporting simply the number of students receiving specific accommodations.

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Table 1. Frequency of Assessment Policies for Seven Accommodations at the Elementary School Level

Accommodations	Year Content	2003		2005		2007	
		Math	Reading	Math	Reading	Math	Reading
Read Aloud Questions	P	1	21	0	18	1	14
	AC	2	9	0	6	0	11
	B	4	3	5	5	1	1
	AI	1	9	0	13	0	16
	A/A*/AS	42	8	45	8	48	8
Sign Interpret Questions	P	0	11	0	14	0	17
	AC	1	6	1	4	0	3
	B	12	12	12	12	11	11
	AI	0	4	0	4	0	4
	A/A*/AS	37	17	37	16	39	15
Calculator	P	9	0	8	1	9	1
	AC	10	0	4	0	6	0
	B	8	47	11	48	4	49
	AI	5	1	9	1	14	0
	A/A*/AS	18	2	18	0	17	0
Scribe	AC	1	2	2	2	0	1
	B	3	3	2	2	1	1
	AI	0	0	2	2	0	0
	A/A*/AS	46	45	44	44	49	48
Spell Checker	P	11	14	12	15	15	18
	AC	0	2	0	3	2	4
	B	21	21	18	18	13	13
	AI	0	1	0	0	0	0
	A/A*/AS	18	12	20	14	20	15
Extended Time	P	1	1	2	2	0	0
	AC	2	2	0	0	1	1
	B	4	4	6	6	10	10
	AI	1	1	0	0	0	0
	A/A*/AS	42	42	42	42	39	39
Multiple Days	P	4	5	2	2	4	4
	AC	1	0	2	2	0	0
	B	25	25	25	25	25	25
	A/A*/AS	20	20	21	21	21	21

Note. P: prohibited; AC: allowed in certain circumstances; B: no policy addressed; AI; allowed with some restriction applied to scoring and reporting; A/A*/AS: allowed.

Table 2. Frequency of Assessment Policies for Seven Accommodations at the Middle School Level

Accommodations	Year Content	2003		2005		2007	
		Math	Reading	Math	Reading	Math	Reading
Read Aloud Questions	P	1	21	0	18	1	14
	AC	2	10	0	6	0	11
	B	4	3	5	5	1	1
	AI	1	8	0	12	0	15
	A/A*/AS	42	8	45	9	48	9
Sign Interpret Questions	P	0	11	0	14	0	17
	AC	1	6	1	3	0	3
	B	12	12	12	13	11	11
	AI	0	4	0	4	0	4
	A/A*/AS	37	17	37	16	39	15
Calculator	P	7	0	6	1	8	1
	AC	10	0	5	0	6	0
	B	8	47	11	48	4	49
	AI	4	1	9	1	13	0
	A/A*/AS	21	2	19	0	19	0
Scribe	AC	1	2	2	2	0	1
	B	3	3	2	2	1	1
	AI	0	0	2	2	0	0
	A/A*/AS	46	45	44	44	49	48
Spell Checker	P	11	14	11	14	15	18
	AC	0	2	0	3	2	4
	B	21	21	18	18	13	13
	AI	0	1	1	1	0	0
	A/A*/AS	18	12	20	14	20	15
Extended Time	P	1	1	2	2	0	0
	AC	2	2	0	0	1	1
	B	4	4	6	6	10	10
	AI	1	1	0	0	0	0
	A/A*/AS	42	42	42	42	39	39
Multiple Days	P	4	5	2	2	4	4
	AC	1	0	2	2	1	1
	B	25	25	25	25	25	25
	A/A*/AS	20	20	21	21	20	20

Note. P: prohibited; AC: allowed in certain circumstances; B: no policy addressed; AI: allowed with some restriction applied to scoring and reporting; A/A*/AS: allowed.

Table 3: Frequency of Assessment Policies for Seven Accommodations at the High School Level

Accommodations	Year Content	2003		2005		2007	
		Math	Reading	Math	Reading	Math	Reading
Read Aloud Questions	P	0	20	0	18	0	14
	AC	2	9	0	5	0	11
	B	4	4	5	5	1	1
	AI	0	7	0	12	0	15
	A/A*/AS	44	10	45	10	49	9
Sign Interpret Questions	P	0	11	0	14	0	17
	AC	1	6	1	3	0	3
	B	12	12	12	13	11	11
	AI	0	4	0	4	0	4
	A/A*/AS	37	17	37	16	39	15
Calculator	P	6	0	5	1	10	1
	AC	10	0	4	0	6	0
	B	8	46	11	48	4	49
	AI	4	1	9	1	12	0
	A/A*/AS	22	3	21	0	18	0
Scribe	AS	0	1	0	0	0	0
	AC	1	2	2	2	0	1
	B	3	3	2	2	1	1
	AI	0	0	2	2	0	0
	A/A*/AS	46	45	44	44	49	48
Spell Checker	P	11	14	12	16	15	19
	AC	0	2	0	3	2	4
	B	21	21	18	18	13	13
	AI	0	1	0	0	0	0
	A/A*/AS	18	12	20	13	20	14
Extended Time	P	1	1	2	2	1	1
	AC	2	2	0	0	1	1
	B	4	4	6	6	9	10
	AI	1	1	0	0	0	0
	A/A*/AS	42	42	42	42	39	38
Multiple Days	P	6	6	2	2	5	5
	AC	0	0	2	2	1	1
	B	25	25	25	25	25	25
	A/A*/AS	19	19	22	22	20	20

Note. P: prohibited; AC: allowed in certain circumstances; B: no policy addressed; AI: allowed with some restriction applied to scoring and reporting; A/A*/AS: allowed.

Table 4. Number of States Changing Policies for Each of Seven Accommodations from 2003 to 2007

Content/School Level	Reading			Math		
	ES	MS	HS	ES	MS	HS
Read Aloud Question	19	20	22	6	6	6
Sign Interpret Question	13	13	13	10	10	10
Calculator	4	4	5	21	21	24
Scribe	5	5	5	3	3	3
Spell Checker	14	13	14	16	15	16
Extended Time	11	11	12	11	11	13
Multiple Days	22	22	24	22	22	24

Note. ES = Elementary School, MS = Middle School, HS = High School.

Table 5. Average Rates of Participation and Proficient Performance for Students with IEPs Who Participated State Assessments by Year and

		2003-2004			2005-2006			2007-2008		
		ES	MS	HS	ES	MS	HS	ES	MS	HS
Participation Rate	M	.88 (.12)	.86 (.14)	.81 (.18)	.89 (.09)	.86 (.12)	.82 (.17)	.89 (.08)	.86 (.09)	.82 (.10)
	R	.87 (.13)	.86 (.15)	.82 (.14)	.87 (.17)	.84 (.17)	.81 (.20)	.88 (.10)	.86 (.09)	.83 (.09)
Proficiency Rate	M	.33 (.15)	.16 (.10)	.15 (.11)	.40 (.15)	.21 (.11)	.19 (.13)	.40 (.15)	.23 (.12)	.21 (.16)
	R	.30 (.13)	.20 (.12)	.20 (.12)	.39 (.15)	.27 (.14)	.24 (.17)	.38 (.16)	.29 (.16)	.27 (.17)

Note. ES = Elementary School, MS = Middle School, HS = High School. M = math, R = reading. The numbers in parentheses () are standard deviations.

Table 6. Regression Analyses Results for Proficiency Rate by Content Area and School Level in 2007-2008

Content	School Level		
	ES	MS	HS
Math	PF=.327* Restricted $t = 2.40 (.02)$	PF=.297* Restricted $t = 2.15 (.04)$	PF=.410* Restricted $t = 3.12 (.00)$
Reading	PF=.325* Restricted $t = 2.38 (.02)$		PF=.341* Restricted $t = 2.51 (.02)$

Note. ES = Elementary School, MS = Middle School, HS = High School. The numbers in parentheses () are *p*-value.

Table 7. List of Regression Equations

Equation number	Equation
1	PT = -.295 * sign interpret questions + .442 *Extended Time
2	PT = -.290 * sign interpret questions + .326 *Extended Time
3	PT = .415 * Read aloud questions
4	PT = .344 *Read aloud questions
5	PT = .307 * Extended time
6	PT = .345 * Extended time
7	PT = .320 * Extended time
8	PT = .336 * Extended Time
9	PF = -.32*Spell checker
10	PF = .316*Sign interpret question-.295*spell checker
11	PF = .329*Sign interpret question-.29*spell checker
12	PF = -.353*Multiple days
13	PF = -.330*Read aloud questions
14	PF = .3*Scribe - .346*Extended time
15	PF = - .305*spell checker
16	PF = - .299*Extended time
17	PF = .288*Scribe
18	PF = .309*Calculator
19	PF = .288*spell checker
20	PF = .394*sign interpret question
21	PF = .299*sign interpret question
22	PF = .349*sign interpret question

Note. PT = Participation Rate; PF = Proficiency Rate.

Table 8. Regression Results for Participation Rate by Year and School Level

Content	Accommodations	2003-2004			2005-2006			2007-2008		
		E	M	H	E	M	H	E	M	H
Math	Read Aloud Questions				{.415}	{.344}				
					[3.09]	[2.49]				
					(.00)	(.02)				
	Sign Interpret Question			{-.295}						
				[-2.17]						
				(.04)						
	Calculator									
	Scribe									
	Spell Checker									
	Extended Time			{.442}			{.307}	{.345}		
				[3.25]			[2.24]	[2.54]		
				(.00)			(.03)	(.01)		
	Multiple Days									
Reading	Read Aloud Questions									
	Sign Interpret Question			{-.290}						
				[-2.2]						
				(.04)						
	Calculator	-	-	-	-	-	-	-	-	-
	Scribe									
	Spell Checker									
	Extended Time			{.326}			{.320}	{.336}		
				[2.42]			[2.34]	[2.48]		
				(.02)			(.02)	(.02)		
	Multiple Days									

Note. The numbers in curly brackets { } are standardized beta. The numbers in square brackets [] are *t*-value. The numbers in parentheses () are p-values. ES = Elementary School; MS = Middle School; HS = High School.

Table 9. Regression Results for Proficiency Rate by Year and School Level

Content	Accommodations	2003-2004			2005-2006			2007-2008		
		ES	MS	HS	ES	MS	HS	ES	MS	HS
Math	Read Aloud Questions						{-.330} [-2.40] (.02)			
	Sign Interpret Question									
	Calculator							{.309} [2.25] (.03)		
	Scribe							{.288} [2.09] (.04)		
	Spell Checker		{-.320} [-2.31] (.03)						{.288} [2.09] (.04)	
	Extended Time									
	Multiple Days						{-.353} [-2.56] (.01)			
	Reading	Read Aloud questions								
Sign Interpret Questions		{.316} [2.33] (.024)	{.329} [2.43] (.019)					{.394} [2.97] (.00)	{.299} [2.17] (.04)	{.349} [2.58] (.01)
Calculator		-	-	-	-	-	-	-	-	-
Scribe							{.300} [2.18] (.03)			
Spell Checker		{-.295} [-2.18] (.03)	{-.290} [-2.15] (.04)				{-.305} [-2.2] (.04)			
Extended Time							{-.346} [-2.52] (.02)		{-.299} [-2.17] (.04)	
Multiple Days										

Note. The numbers in curly brackets { } are standardized beta. The numbers in square brackets [] are *t*-value. The numbers in parentheses () are p-values. ES = Elementary School; MS = Middle School; HS = High School.

Appendix 1. Average Participation Rates for Students with IEPs Who Participated in Statewide Assessment by Year and Content at the Elementary School Level

		2003-2004				2005-2006				2007-2008			
		Math		Reading		Math		Reading		Math		Reading	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Read Aloud Questions	Restricted	.87	.17	.87	.13	.78	.24	.86	.18	.92	.01	.87	.10
	Unrestricted	.88	.11	.84	.16	.90	.05	.88	.06	.89	.08	.91	.07
Sign Interpret Questions	Restricted	.93	.05	.88	.12	.87	.17	.89	.12	.91	.04	.87	.10
	Unrestricted	.86	.13	.83	.17	.90	.06	.81	.24	.88	.09	.91	.07
Calculator	Restricted	.87	.13	.86	.14	.89	.11	.87	.17	.89	.07	.88	.10
	Unrestricted	.89	.10	.95	.03	.89	.05	.	.	.89	.10	.	.
Scribe	Restricted	.89	.07	.82	.12	.90	.07	.89	.09	.92	.	.90	.03
	Unrestricted	.88	.12	.87	.14	.89	.10	.86	.18	.89	.08	.88	.10
Spell Checker	Restricted	.88	.12	.87	.13	.88	.11	.85	.19	.88	.10	.88	.10
	Unrestricted	.88	.12	.85	.17	.90	.06	.91	.05	.89	.05	.89	.08
Extended Time	Restricted	.83	.16	.82	.18	.82	.19	.81	.22	.84	.13	.82	.15
	Unrestricted	.89	.11	.88	.12	.90	.05	.88	.16	.90	.06	.90	.07
Multiple Days	Restricted	.87	.12	.86	.14	.88	.12	.84	.21	.89	.08	.89	.10
	Unrestricted	.89	.11	.88	.13	.90	.05	.90	.06	.88	.08	.87	.10

Appendix 2. Average Participation Rates for Students with IEPs Who Participated in Statewide Assessment by Year and Content at the Middle School Level

		2003-2004				2005-2006				2007-2008			
		Math		Reading		Math		Reading		Math		Reading	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Read Aloud Questions	Restricted	.84	.20	.86	.15	.74	.28	.85	.18	.91	.00	.86	.09
	Unrestricted	.86	.14	.85	.13	.87	.08	.83	.12	.86	.09	.89	.07
Sign Interpret Questions	Restricted	.92	.06	.87	.14	.85	.20	.87	.13	.89	.06	.85	.10
	Unrestricted	.83	.16	.82	.16	.86	.08	.79	.24	.85	.10	.89	.06
Calculator	Restricted	.86	.14	.85	.15	.87	.14	.84	.17	.87	.08	.86	.09
	Unrestricted	.85	.16	.96	.01	.84	.09	.	.	.85	.11	.	.
Scribe	Restricted	.88	.07	.84	.10	.88	.09	.88	.09	.93	.	.91	.03
	Unrestricted	.85	.15	.86	.15	.85	.12	.84	.18	.86	.09	.86	.09
Spell Checker	Restricted	.86	.13	.87	.12	.85	.13	.83	.19	.86	.10	.86	.10
	Unrestricted	.85	.17	.82	.21	.87	.10	.86	.11	.86	.07	.86	.08
Extended Time	Restricted	.81	.19	.80	.19	.77	.23	.77	.23	.80	.15	.81	.15
	Unrestricted	.87	.13	.87	.14	.87	.08	.86	.16	.88	.06	.88	.06
Multiple Days	Restricted	.85	.14	.85	.15	.86	.14	.84	.21	.86	.10	.86	.10
	Unrestricted	.86	.15	.86	.15	.85	.09	.85	.10	.86	.07	.87	.07

Appendix 3. Average Participation Rates for Students with IEPs Who Participated in Statewide Assessment by Year and Content at the High School Level

		2003-2004				2005-2006				2007-2008			
		Math		Reading		Math		Reading		Math		Reading	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Read Aloud Questions	Restricted	.76	.21	.83	.14	.75	.27	.79	.22	.82	.	.83	.09
	Unrestricted	.82	.17	.78	.15	.83	.15	.87	.06	.82	.10	.85	.09
Sign Interpret Questions	Restricted	.87	.12	.85	.12	.83	.18	.81	.19	.82	.08	.82	.10
	Unrestricted	.79	.19	.76	.17	.82	.16	.80	.22	.82	.11	.86	.06
Calculator	Restricted	.84	.17	.82	.14	.84	.17	.81	.20	.83	.08	.83	.09
	Unrestricted	.78	.18	.91	.05	.80	.15	.	.	.80	.13	.	.
Scribe	Restricted	.90	.03	.83	.08	.84	.09	.84	.09	.89	.	.86	.05
	Unrestricted	.81	.18	.82	.15	.82	.17	.81	.21	.82	.10	.83	.09
Spell Checker	Restricted	.78	.20	.81	.14	.79	.20	.79	.22	.81	.11	.83	.09
	Unrestricted	.86	.12	.87	.14	.88	.06	.88	.06	.83	.09	.84	.08
Extended Time	Restricted	.64	.32	.70	.23	.79	.21	.79	.19	.80	.16	.80	.14
	Unrestricted	.84	.13	.84	.11	.83	.16	.81	.20	.82	.08	.84	.06
Multiple Days	Restricted	.80	.20	.80	.17	.80	.20	.78	.25	.80	.12	.82	.10
	Unrestricted	.84	.13	.85	.06	.85	.10	.85	.09	.84	.07	.84	.06

Appendix 4. Average Participation Rates for Students with IEPs Who Participated in Statewide Assessment by Year and Content at the Elementary School Level

		2003-2004				2005-2006				2007-2008			
		Math		Reading		Math		Reading		Math		Reading	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Read Aloud Questions	Restricted	.36	.17	.30	.13	.49	.08	.39	.15	.43	.07	.38	.15
	Unrestricted	.33	.15	.32	.13	.39	.15	.39	.19	.39	.15	.43	.18
Sign Interpret Questions	Restricted	.34	.15	.28	.13	.35	.15	.37	.15	.35	.15	.34	.14
	Unrestricted	.33	.15	.36	.12	.41	.15	.43	.16	.41	.15	.48	.16
Calculator	Restricted	.34	.16	.31	.14	.39	.15	.39	.15	.38	.13	.38	.16
	Unrestricted	.33	.14	.23	.04	.41	.15	.	.	.43	.18	.	.
Scribe	Restricted	.43	.18	.35	.17	.31	.21	.29	.18	.10	.	.18	.07
	Unrestricted	.33	.15	.30	.13	.41	.14	.40	.15	.40	.14	.39	.15
Spell Checker	Restricted	.36	.14	.32	.13	.42	.12	.41	.13	.37	.14	.38	.15
	Unrestricted	.30	.16	.24	.14	.36	.18	.32	.19	.43	.16	.39	.18
Extended Time	Restricted	.39	.16	.29	.15	.48	.08	.49	.10	.35	.15	.36	.16
	Unrestricted	.32	.15	.30	.13	.38	.15	.37	.15	.41	.15	.39	.16
Multiple Days	Restricted	.31	.14	.28	.12	.42	.17	.40	.16	.38	.14	.38	.17
	Unrestricted	.37	.16	.34	.14	.37	.12	.37	.14	.43	.16	.39	.14

Appendix 5. Average Participation Rates for Students with IEPs Who Participated in Statewide Assessment by Year and Content at the Middle School Level

		2003-2004				2005-2006				2007-2008			
		Math		Reading		Math		Reading		Math		Reading	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Read Aloud Questions	Restricted	.18	.12	.20	.12	.30	.07	.27	.14	.30	.12	.28	.15
	Unrestricted	.16	.10	.19	.10	.20	.11	.27	.16	.23	.12	.35	.17
Sign Interpret Questions	Restricted	.15	.11	.18	.11	.19	.11	.24	.14	.19	.11	.26	.14
	Unrestricted	.17	.10	.25	.11	.22	.11	.33	.14	.24	.12	.37	.18
Calculator	Restricted	.16	.11	.20	.12	.21	.11	.27	.14	.20	.09	.29	.16
	Unrestricted	.16	.10	.17	.15	.21	.11	.	.	.28	.14	.	.
Scribe	Restricted	.21	.16	.24	.13	.18	.16	.23	.16	.03	.	.23	.11
	Unrestricted	.16	.10	.20	.11	.21	.11	.28	.14	.24	.12	.30	.16
Spell Checker	Restricted	.19	.11	.22	.12	.23	.10	.30	.13	.23	.11	.29	.16
	Unrestricted	.12	.08	.14	.10	.17	.12	.20	.16	.24	.13	.30	.15
Extended Time	Restricted	.19	.12	.24	.12	.26	.06	.33	.07	.20	.09	.30	.10
	Unrestricted	.16	.10	.19	.11	.20	.12	.26	.15	.24	.12	.29	.17
Multiple Days	Restricted	.17	.10	.19	.10	.24	.12	.30	.15	.22	.11	.30	.16
	Unrestricted	.15	.11	.21	.13	.16	.09	.23	.13	.25	.13	.28	.16

Appendix 6. Average Participation Rates for Students with IEPs Who Participated in Statewide Assessment by Year and Content at the High School Level

		2003-2004				2005-2006				2007-2008			
		Math		Reading		Math		Reading		Math		Reading	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Read Aloud Questions	Restricted	.16	.10	.20	.11	.32	.11	.23	.16	.11	.	.25	.16
	Unrestricted	.15	.11	.19	.17	.17	.13	.28	.19	.21	.16	.35	.20
Sign Interpret Questions	Restricted	.15	.09	.18	.12	.21	.11	.21	.14	.14	.13	.23	.16
	Unrestricted	.16	.12	.22	.13	.18	.14	.31	.20	.23	.16	.36	.18
Calculator	Restricted	.15	.08	.20	.12	.17	.11	.24	.17	.19	.17	.27	.17
	Unrestricted	.17	.14	.14	.18	.21	.16	.	.	.24	.14	.	.
Scribe	Restricted	.23	.09	.17	.13	.17	.14	.21	.17	.03	.	.28	.17
	Unrestricted	.15	.11	.20	.12	.19	.13	.25	.17	.21	.16	.27	.18
Spell Checker	Restricted	.15	.09	.18	.10	.18	.12	.25	.17	.17	.11	.25	.17
	Unrestricted	.17	.15	.24	.18	.20	.15	.24	.17	.27	.20	.32	.19
Extended Time	Restricted	.15	.07	.19	.10	.28	.15	.36	.14	.18	.19	.25	.16
	Unrestricted	.16	.12	.20	.13	.17	.12	.22	.17	.22	.15	.28	.18
Multiple Days	Restricted	.16	.11	.21	.12	.19	.13	.28	.18	.18	.15	.26	.17

Unrestricted	.15	.12	.18	.13	.18	.13	.20	.14	.26	.17	.28	.19
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